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Annotated World Bibliography of Host Plants of the Melon Fly, *Bactrocera cucurbitae* (Coquillett) (Diptera: Tephritidae)

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Bactrocera cucurbitae (Coquillett) (Diptera: Tephritidae)

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Abstract. The melon fly, *Bactrocera cucurbitae* (Coquillett) (Diptera: Tephritidae), is a widespread, economically important tephritid fruit fly species. *Bactrocera cucurbitae* infests fruits and vegetables of a number of different plant species, with many host plants in the plant family Cucurbitaceae, but with additional hosts scattered across many other plant families. Although thought to be native to India, its distribution has spread throughout many countries in Oriental Asia, into a number of Pacific Island nations, and into Africa. The documented introductions into countries outside its native distribution show that this species could establish in other countries where it does not presently occur, particularly through the movement of infested fruit. As with other tephritid fruit fly species, establishment of *B. cucurbitae* can have significant economic consequences, including damage and loss of food production, as well as requirements for implementation of costly quarantine treatments to permit export of commodities susceptible to infestation by *B. cucurbitae* and inspection of susceptible imported commodities. In order to avoid these adverse economic consequences, one needs to prevent the entry, establishment and spread of *B. cucurbitae* into a new habitat. To successfully achieve this, an accurate knowledge of the fly's host plants is essential. Cognizant of this need, we prepared, and present here, a worldwide list of host plants for *B. cucurbitae*, with annotations on reported laboratory and field infestation data. Overall, 136 plant taxa from 62 plant genera and 30 plant families are identified as hosts of *B. cucurbitae*, based on reported field infestation data. The predominant family, as expected, is Cucurbitaceae, with 56 plant taxa (41.2% of all host plant taxa) in which field infestation by *B. cucurbitae* has been documented. The family with the 2nd highest number of documented infested plant taxa is Solanaceae, for which there are published field infestation data for 20 plant taxa (14.7% of plant taxa for which there is documented field infestation). Papers that list plants as hosts of *B. cucurbitae* based only on laboratory data, those that list plants as a host but do not report any field infestation data, and those that report interception data add an additional 137 host plant taxa, representing a total of 80 genera and 39 plant families, 20 of which are additional plant families beyond those for which there is field infestation data. These additional species must be considered “undetermined” hosts for which additional data are needed to document actual host status. This paper is a comprehensive documentation of host plants of the melon fly based on recorded infestations in laboratory and/or field, interceptions at ports of entry, or “listing only” associations. Host records presented here will be used in vetting and developing the official USDA list of host plants of the melon fly, which will be published by APHIS as a federal order.

Key words. Field infestation, lab infestation, interception, Cucurbitaceae, Solanaceae, tephritid fruit fly

Introduction

The melon fly, *Bactrocera cucurbitae* (Coquillett) (Fig. 1, 2), is a widespread economically important tephritid fruit fly species. Although not endemic to Hawaii, U.S.A., it was first described in Honolulu,

Hawaii, by Coquillett (1899), after introduction there from South East Asia (Drew 1989). It was originally described as *Dacus cucurbitae* Coquillett, but has been placed in other genera, including *Chaetodacus* and *Strumeta* (Drew 1989) and, most recently, *Zeugodacus* (De Meyer et al. 2015, Virgilio et al. 2015). In the present paper, we have chosen to refer to this species as *B. cucurbitae*. Although there is good support for revising the genus placement to *Zeugodacus* (De Meyer et al. 2015, Virgilio et al. 2015), there has not been universal acceptance of this change among scientists familiar with tephritid fruit fly taxonomy, so we will use what has been most commonly used, while further data are accumulated in regards to the desirability of making this change.

Although *B. cucurbitae* is thought to be native to India (Dhillon et al. 2005), its distribution has spread throughout many countries in Oriental Asia (White and Elson-Harris 1992), and into a number of Pacific Island nations (Dhillon et al. 2005, Drew 1982). The first report of *B. cucurbitae* on the African continent was in Tanzania in 1936. Up until 1999, it was only reported in East Africa and the Indian Ocean islands of Mauritius and Réunion (De Meyer et al. 2015), but has now been recovered in West Africa, first in Gambia in 1999. It is now regarded to be present throughout West Africa (Vayssières et al. 2007). The current geographic range of *B. cucurbitae* is presented in Fig. 3. The distribution presented shows the countries where field infestation by *B. cucurbitae* has been reported, as well additional countries where adult flies have been reported to be present (Xia et al. 2015, CABI 2016).

The documented introductions of *B. cucurbitae* into countries outside its native distribution show that this species could establish in countries where it does not presently occur, particularly through the movement of infested fruit. As with other tephritid fruit fly species, establishment of *B. cucurbitae* can have significant economic consequences, including damage and loss of food production, as well as requirements for implementation of costly quarantine treatments to permit export of commodities susceptible to infestation by *B. cucurbitae* and inspection of susceptible imported commodities. In order to avoid these adverse economic consequences, one needs to prevent the entry, establishment and spread of *B. cucurbitae*, or any other new tephritid fruit fly species, into a new habitat. To successfully achieve this, an accurate knowledge of the fly's host plants is essential. Cognizant of this need, we have devoted effort to prepare worldwide annotated lists of host plants for tephritid fruit fly species of economic importance. The first species for which such an annotated host list was prepared was the Mediterranean fruit fly, *Ceratitis capitata* (Wiedemann). The annotated list was first prepared as a hard copy publication (Liquido et al. 1991), but was subsequently organized into an electronic searchable data base that has made it easy for quarantine regulatory officials to check on the risk of introduction of Mediterranean fruit fly in imported or exported fruits and vegetables (Liquido et al. 1997). This data base was subsequently updated, improved and migrated to a searchable online website (MEDHOST, version 3.0, <https://medhost.cphst.org/>; Liquido et al. 2015a). The second species of tephritid fruit fly for which we prepared a worldwide annotated list of host plants was *Bactrocera latifrons* (Hendel) (McQuate and Liquido 2013). The host summaries for *B. latifrons* have now, also, been incorporated into a searchable online website to which comparable data for other tephritid fruit fly species of economic importance have also been entered (The **Compendium of Fruit Fly Host Information (CoFFHI), Version 1.0** [<https://coffhi.cphst.org/>]; Liquido et al. 2015b). CoFFHI, released online in 2015, is an interactive web application integrating comprehensive botanical, geographic, and infestation biology information on host plants of multiple exotic fruit fly species posing threats to the health of U.S. agriculture and natural resources. The initial release included succinct summaries of laboratory and field infestation data, as well as interception data and "listing only" references for *Ceratitis capitata*, *Bactrocera correcta* (Bezzi), and *B. latifrons*. Additionally, it included updated host lists for *Bactrocera dorsalis* (Hendel), *Bactrocera carambolae* Drew and Hancock, and *B. cucurbitae*. As CoFFHI is developed further, comprehensive succinct summaries will be incorporated for species for which only updated host lists were initially provided as well as for additional tephritid fruit fly species of economic importance. It is intended that the host data summarized here will subsequently be incorporated into CoFFHI, which is anticipated to develop into a "one stop shop" for host data of tephritid flies of economic importance.

The data presented herein on the host plants of *B. cucurbitae* are designed to enable regulatory scientists and regulatory officials to assess the risk of *B. cucurbitae* being moved in fresh horticultural commodities, and to serve as a decision tool in the design and implementation of effective fruit fly detection, monitoring, suppression, and eradication programs of USDA and various state regulatory agencies. The present publication provides succinct summaries of reports of field and laboratory infestation by

B. cucurbitae. In our attempt to present all reported records, in addition to reporting data published in peer-reviewed scientific publications, we also present pertinent data from websites that report on host status and from pest interceptions reported by U.S. federal and state governments and by governments of other countries.

Methods

Host plants of *B. cucurbitae* are presented in alphabetical order by genus and species. Presented for each scientific name are the plant family, common names, synonyms and an indication of the geographic areas where the plant is native and where it is cultivated, most of which is based on the Germplasm Resources Information Network (GRIN) taxonomy for plants (USDA-ARS-National Genetic Resources Program 2015). In the few cases where a scientific name is not included in the GRIN system database, standardization of the plant scientific name was based either on The Plant List or on Tropicos. The Plant List, a collaborative project of The Royal Botanic Gardens, Kew Gardens, the Missouri Botanical Garden, along with several other collaborators, is an effort to comprehensively list all known plant species, and is available online at: <http://www.theplantlist.org/>. Tropicos was originally developed for internal use by the Missouri Botanical Garden, but is now publically available online (<http://www.tropicos.org/>).

For most of the common names listed for each plant species, the ethnicity of the name is included in parentheses after the common name. Common names listed in GRIN plant summaries come from a variety of sources, including floras, agronomic or horticultural works, or economic botany literature. Some additional common names have been added where they were used in cited publications. The focus in the present publication was to include common names that are in wider usage, rather than attempting to include every locally used common name appearing in the literature. Common names presented in this publication are cross referenced to scientific names in a common name index at the back of the publication.

Plant geographical distributions are given for Native, Naturalized and Cultivated distributions, where such data are presented in GRIN plant species summaries. The geographical distributions presented in GRIN plant species summaries are based on grouping of world terrestrial distribution records by Hollis and Brummitt (1992) into nine areas: Africa, Antarctic, Asia-Temperate, Asia-Tropical, Australasia, Europe, Northern America, Pacific, and Southern America.

Following the description of geographical distributions for a plant species, citations are given for references that list the plant species as a host of *B. cucurbitae* based on “Field Infestation,” “Interception,” “Lab Infestation” or simply list this plant as a host, but provide no data (“Listing Only”). Infestation data presented as “Field Infestation” result from situations where fruits/vegetables have been subject to infestation by flies from wild populations. Once these fruits/vegetables were harvested/collected, they were held for assessment of infestation by *B. cucurbitae*, as well as, in some publications, other tephritid fruit fly species. Infestation data presented as “Lab Infestation” result from situations where fruits/vegetables were intentionally exposed to fertile flies. The flies used could have come from an established laboratory colony or could have come directly from harvested/collected fruits infested by wild fly populations. Fruits/vegetables could have been harvested before presentation to the flies or could have still been intact on plants over the course of exposure to flies. Of these two categories, “Field Infestation” provides the more reliable data on host status as the fruit/vegetable is “naturally” infested from wild fly populations, the situation to which fruits and vegetables of commerce would be exposed. Where citations to field data or lab data are provided, a succinct summary of the infestation data is provided along with the citation. For each field infestation summary provided in this publication, the country in which the field infestation was recorded (often with further “within-country” location data as well) is listed just below the literature citation and above the succinct infestation summary. “Lab Infestation” data, on the other hand, result from use of flies that had a “forced” association with a fruit/vegetable. The flies, if originating from a laboratory colony, may have had an increased propensity for oviposition, and/or the flies may have been exposed to fruits/vegetables that were modified to improve chances of oviposition, e.g., through addition of holes in the fruit/vegetable, by provision of fruit sections rather than intact fruit, or simply by having fruits excised from their host plants or “aged” following harvest-

ing from the parent plant. Although a less reliable indicator of natural host status, “Lab Infestation” data can provide insights on the possibility of infestation of fruits/vegetables to which a fruit fly species is ordinarily not exposed in the field. “Interception” data come from documented pest interceptions reported by U.S. federal and state governments and by governments of other countries, as well as from some publications that report on insects recovered from fruits and vegetables confiscated from airline passengers passing state or international boundaries. The major sources of interception data reported here come from the USDA-APHIS-PPQ Pest Interception Database (PestID) (1988–2016) and earlier interception data summarized in the USDA List of Intercepted Plant Pests (LIPP) (USDA 1924–USDA 1966). From the latter source, we have only reported on data that documented infestation of specific fruits by *B. cucurbitae*, and did not reference reports where *B. cucurbitae* was recovered from collections of multiple fruit species. “Listing only” data come from publications where a fruit or vegetable is listed as a host of *B. cucurbitae*, but no infestation data are provided. A “+” sign is added in front of citations in which the host species was only named by a common name, and not by a scientific name. In these cases, the scientific name used was assigned by the authors of the present publication. Assignment of scientific names was based on assessed common usage in the area where the research was conducted. Assignment of scientific name, though, was not always possible. For example, one common name where assignment of a scientific name often proved to be difficult, if not impossible, was “pumpkin.” Pumpkin is used as a common name for *Cucurbita maxima* Duchesne, *C. moschata* Duchesne, and *C. pepo* L.. Typically, infestation data associated with these “pumpkin” references were not included in the present host summarization for *B. cucurbitae*, unless common regional use or association of the common name with a scientific name in other publications by the author(s) clarified the scientific name of “pumpkin” intended. In all of the cases where only a common name was used in a reference, the common name that was used is presented parenthetically either in the succinct summary (for field or laboratory infestation or interception data), or following the citation (for “listing only” references).

Synonyms listed in a GRIN species account are presented both at the end of the presentation of host data for a given species as well as listed separately in the listing of scientific names and cross-referenced to the currently accepted scientific name for the plant species. In addition to differences in scientific name, synonyms can also be presented where there is a change in understanding of the scientific name, as has occurred among *Capsicum* spp. In all cases where the plant host name listed in the original reference differed from any updated scientific name in which it is presented in the present publication, the original name is listed parenthetically in the text of the succinct summary.

Overview of the Host Plants of the Melon Fly

Although *B. cucurbitae* is commonly referred to as the “melon fly,” seemingly suggesting that it primarily infests fruits in the plant family Cucurbitaceae, its range of hosts, for which there is documented field infestation, encompasses a total of 30 plant families (Table 1). These 30 plant families include 62 genera in which field infestation has been documented and a total of 136 plant taxa. The predominant family, as expected, is Cucurbitaceae, with 56 plant taxa (41.2% of all host plant taxa) in which field infestation by *B. cucurbitae* has been documented. The family with the 2nd highest number of documented infested plant taxa is Solanaceae, for which there are published field infestation data for 20 plant taxa (14.7% of plant taxa for which there is documented field infestation). The family with the 3rd highest number of documented infested plant taxa is Fabaceae, for which there are published field infestation data for 7 plant taxa (5.1% of plant taxa for which there is documented field infestation). Three plant families (Brassicaceae, Moraceae, and Rutaceae) include five plant taxa with documented field infestation while an additional two plant families (Passifloraceae and Rosaceae) include four plant taxa with documented field infestation. It is interesting to note that, for the two families with the most reported host species (Solanaceae, Cucurbitaceae), no other families in their respective plant orders (Solanales and Cucurbitales, respectively) have any plant taxa for which there is documented field infestation data by *B. cucurbitae*. In contrast, three other plant orders have three families in which host plants are reported: Brassicales (Brassicaceae, Capparaceae, and Caricaceae); Rosales (Moraceae, Rhamnaceae, and Rosaceae); and Sapindales (Anacardiaceae, Rutaceae, and Sapindaceae) (Rydeheard 2011).

It can be difficult to compare infestation rates among different host plants because infestation rates are reported in many different ways. However, looking just at those reports where infestation is reported as number of *B. cucurbitae* individuals per kg fruit, the highest field infestation rates are all reported from cucurbitaceous fruits (Table 2). The highest field infestation rate for any non-cucurbitaceous fruit was 42.70 larvae and pupae/kg fruit for *Physalis philadelphica* Lam. (Solanaceae) (Liquido et al. 1994), followed by 31.0 pupae/kg fruit for *Abelmoschus esculentus* (L.) Moench (Malvaceae) (Wong et al. 1989) and 30.7 flies/kg fruit in *Solanum lycopersicum* L. (Harris et al. 1986). The highest documented *B. cucurbitae* infestation rates in other plant families include 2.0 pupae/kg fruit in *Mangifera indica* L. (Anacardiaceae) (Vayssières et al. 2007), and 1.48 pupae/kg fruit in *Hylocereus undatus* (Haw.) Britton and Rose (Cactaceae) (McQuate 2010) (Table 2). It should be noted, however, that wide variation in how data are collected (e.g., environmental conditions, fruit maturity, fruit holding conditions, fruit processing methods) and the means of reporting infestation rates among recorded hosts preclude objective quantitative rate comparisons.

Papers that list plants as hosts of *B. cucurbitae* based only on laboratory data, papers that list plants as a host but do not report any field infestation data, and those that report interception data add an additional 137 host plant taxa, representing a total of 80 genera and 39 plant families, 20 of which are additional plant families (Table 3). These additional species must be considered “undetermined” hosts, or even questionable as indicated in some references (e.g., see White and Elson-Harris 1992). We have included comments of the questionable host status of some plant species in our reference annotations wherein any question of the validity of host status was raised. It is interesting that a number of the plant species included in this “undetermined” list comes from the “listing only” category where the plant species was listed as a host in only one publication, e.g., *Aegle marmelos* (L.) Corrêa (Kapoor 1970); *Amaranthus spinosus* L. (Botha et al. 2004), *Berberis lyceum* Royle (Singh et al. 2004), *Blighia sapida* K. D. Koenig (Holbrook 1967), *Brassica oleracea* L. (Chawla 1966), *Cestrum nocturnum* L. (USDA 1986), *Coccinia trilobata* (Cogn.) C. Jeffrey (De Meyer et al. 2015), *Crotalaria incana* L. (listed as *Crotalaria incana* L.; Botha et al. 2004), *Euphorbia heterophylla* L. (Botha et al. 2004), *Helianthus annuus* L. (Dhillon et al. 2005a), *Ipomoea batatas* (L.) Lam. (EcoPort 2008), *Juglans regia* L. (USDA-APHIS-PPQ-CSDA 1984), *Lagenaria hispida* Ser. (Cantrell et al. 1999), *Litchi chinensis* Sonn. (Dhillon et al. 2005a), *Momordica rostrata* A. Zimm. (De Meyer et al. 2015), *Opuntia ficus-indica* (L.) Mill. (Holbrook 1967), *Passiflora subpeltata* Ortega (Holbrook 1967), *Sandoricum koetjape* (Burm. f.) Merr. (Cantelo and Pholboon 1965), *Sicyos hispidus* Hillebr. (Hawaii Department of Agriculture 2009), *Syzygium malaccense* (L.) Merr. and L. M. Perry (Meksongsee et al. 1991), *Vitis vinifera* L. (Kapoor 1970), and *Zea mays* L. (Dhillon et al. 2005a). These could represent isolated cases where a plant has been used as a host by *B. cucurbitae*, and the literature does indicate that, when favored cucurbit fruits are scarce, *B. cucurbitae* infestation can be found on unusual hosts or atypical plant parts such as in the report of infestation of kohlrabi stems by McBride and Tanada (1949) or in infestation of cucurbit vines by Back and Pemberton (1917, 1918) or Mathew et al. (1999). One fruit that has exhibited considerable variation in host use by *B. cucurbitae* is papaya, *Carica papaya* L. *Bactrocera cucurbitae* can heavily infest ripe papaya fruits in some parts of Hawaii, while showing very low to no infestation in other areas. Infestation of papaya by *B. cucurbitae* has not been found, thus far, in either Réunion Island or Mauritius.

For the most part, the plant part on which *B. cucurbitae* larvae feed is the fruit of the host plant. However, *B. cucurbitae* infestation has also been reported on other plant parts, including flowers, roots, stems, and galls generated by other insect species. Infestation of flowers by *B. cucurbitae* has been reported for a number of cucurbit species, including *Benincasa hispida* (Thunb.) Cogn., *Coccinia grandis* (L.) Voigt. (Allwood et al. 1999), *Cucumis sativus* L. (Pradhan 1977), *Cucurbita moschata* Duchesne (Pradhan 1977, Allwood et al. 1999, and Kittayapong et al. 2000), *Cucurbita pepo* (Back and Pemberton 1917, 1918; Sapkota et al. 2010), *Diplocyclos palmatus* (L.) C. Jeffrey (Tsuruta et al. 1997), *Lagenaria siceraria* (Miloina) Standl. (Pradhan 1977), *Luffa aegyptiaca* Mill (Pradhan 1977, and Allwood et al. 1999), *Momordica charantia* L. (Pradhan 1977), and *Trichosanthes tricuspidata* Lour. (Kittayapong et al. 2000). Flower infestation has also been found in the plant family Fabaceae, where infestation in flowers of *Sesbania grandiflora* (L.) Poir. has been documented (Nakagawa and Yamada 1965, Nakagawa et al. 1968). Although most literature does not present details on infestation rates in flowers, Back and Pemberton (1917) indicated that a staminate bloom, while still in bud, may support as many as 37 well-grown *B. cucurbitae* larvae, and Nakagawa and Yamada (1965) and Nakagawa et al. (1968)

reported recovery of adult *B. cucurbitae* from collected *Sesbania grandiflora* flowers. Root infestation has been reported on potato, *Solanum tuberosum* L., and on daikon radish, *Raphanus sativus* L. For potato, Chawla (1966) reported that female *B. cucurbitae* can oviposit into cut potato tubers in the laboratory, and emerged larvae can subsequently develop through adult emergence. For daikon radish, infestation has been reported both on field-collected rotting roots (Nakahara 1980) and on roots infested in the laboratory with 1st instar larvae (Rajamannar 1962). Stem infestation has been documented in bittermelon (*Momordica charantia* L.) (Mathew et al. 1999), cantaloupe (*Cucumis melo* L. subsp. *melo* var. *cantalupo* Ser.) (Back and Pemberton 1917,1918), cucumber (*Cucumis sativus*) (Mathew et al. 1999), kohlrabi (*Brassica oleracea* L. var. *gongylodes* L.), and tomato (*Solanum lycopersicum* L.) (Back and Pemberton 1917,1918), under field conditions. Stem infestation has also been documented under hydroponic growth conditions for cantaloupe (Vijaysegaran 1985). Carey and Dowell (1989) have also reported (but didn't provide supporting data) that tomato stems can also be infested by *B. cucurbitae*, when tomato is grown in hydroponic systems. Leaf and stem infestation has also been reported for cabbage, *Brassica oleracea* L. var. *capitata* L. (Rajamannar 1962). *Bactrocera cucurbitae* infestation has also been reported in stem galls on *Cayratia trifolia* (L.) Domin (Narayanan and Batra 1960), *Coccinia grandis* (Bhatia and Mahto 1968), *Cucumis maderaspatanus* L. (Syed 1971), and on *Diplocyclos palmatus* (L.) C. Jeffrey (Tsuruta et al. 1997).

Some of the plant species that have been listed as hosts of *B. cucurbitae* may be erroneously based on observations of adults resting on plants, feeding on honeydew, or based on *B. cucurbitae* adults caught in traps set in non-host plants (Dhillon et al. 2005a, White and Elson-Harris 1992). The fact that *B. cucurbitae* adults do preferentially use some plant species as “roosting hosts”, i.e., plants in which they seek shelter or food (McQuate and Vargas 2007, McQuate 2011), could enhance the possibility of erroneous attribution of host status. This seems to account for plant species known to be roosting hosts, such as castor bean (*Ricinus communis* L.) (Botha et al. 2004), sweet corn (*Zea mays* L.) (White and Elson-Harris 1992, Dhillon et al. 2005a) or *Crotalaria incana* L. (listed as *Crotalaria incana* L.; Botha et al. 2004) being included in host lists for *B. cucurbitae* (although, there is an interception record for *Crotalaria* sp. [Pest ID 2016]).

Although we have attempted to summarize *B. cucurbitae* infestation records throughout the world, we realize that there are many areas where *B. cucurbitae* populations exist, but from where we have limited reports of infestation. This could be because there has, thus far, been little to no documentation of tephritid fruit fly infestation in the region or because publications are primarily “within country” documents or concerted translation efforts are needed to recover infestation data. Badii et al. (2015) reported that there had previously been no comprehensive study on the diversity of tephritid fruit flies and their hosts in Ghana, especially in the northern part of the country. The published data from their research have now provided host information for this region. In Japan, there had been extensive fruit collections made in support of eradication programs targeting invasive *Bactrocera* spp. (*B. cucurbitae* and *B. dorsalis*), but the data from these collections were mostly published in “in-country” documents of Japanese public institutions, and were all written in Japanese. The gathered data for *B. cucurbitae* from those eradication programs have now been summarized in English and made available to an international audience (McQuate and Teruya 2015), and are also summarized herein. Similar “within country” host data undoubtedly exist in many other countries, and it would be good to incorporate these additional data into the melon fly host list.

Overall, this paper provides comprehensive documentation of host plants of the melon fly based on recorded infestations in laboratory and/or field, interceptions at ports of entry, or “listing only” associations. Host records presented here will be used in vetting and developing the official USDA list of host plants of the melon fly, which will be published by APHIS as a federal order.

Host plants of the melon fly, *Bactrocera cucurbitae*

Abelmoschus esculentus (L.) Moench

Family: Malvaceae

Grin Nomen Number: 619

Common Names: bamiâ (translated Russian), eßbarer Bisameibisch (German), gombo (French), gombo (Italian), gombo (Spanish), gumbo (English), ka fei huang kui (transcribed Chinese), kacang bendi (Malay), kopi arab (Indonesian), lady's-fingers (English), Ocker (German), ocrà (Italian), okra (English), okra (French), okra (Swedish), quiabo (Portuguese – Brazil).

Cultivated: AFRICA – *Macaronesia*: Cape Verde; *Northern Africa*: Egypt; *Northeast Tropical Africa*: Chad, Eritrea, Ethiopia, Somalia, Sudan; *East Tropical Africa*: Kenya, Tanzania, Uganda; *West-Central Tropical Africa*: Cameroon, Gabon, Zaire; *West Tropical Africa*: Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali, Mauritania, Niger, Nigeria; *South Tropical Africa*: Malawi, Mozambique, Zambia, Zimbabwe; *Southern Africa*: Botswana, Namibia; *Western Indian Ocean*: Comoros, Madagascar; ASIA-TEMPERATE – *Arabian Peninsula*: Kuwait, Qatar, Saudi Arabia, Yemen; *Western Asia*: Afghanistan, Cyprus, Iran, Jordan, Lebanon, Syria, Turkey; *China*: China; *Eastern Asia*: Japan; ASIA-TROPICAL – *Indian Subcontinent*: Bangladesh, India, Pakistan, Sri Lanka; *Indo-China*: Myanmar, Thailand; *Malesia*: Malaysia, Philippines; EUROPE – *Southeastern Europe*: Former Yugoslavia, Greece; NORTHERN AMERICA – Mexico, United States; PACIFIC – *Southwestern Pacific*: Fiji; SOUTHERN AMERICA – *Caribbean*: Barbados; *Central America*: Belize, Guatemala; *Brazil*: Brazil.

Field Infestation:

McBride and Tanada 1949:

Island of Oahu, Hawaii, U.S.A.

Observation by O. C. McBride: “In 1945, 16 melon flies (listed as *Dacus cucurbitae*) emerged from 1 okra pod (listed as *Hibiscus esculentus*) picked from the garden of the Pineapple Research Institute at the University of Hawaii. Melon flies also oviposited in stems of okra plants that were about 3 feet tall and growing on the University Farm.”

+*Wong et al. 1989:*

Rota, Commonwealth of the Northern Mariana Islands

On the island of Rota, 12 *A. esculentus* fruits (listed as okra) (from 5 collections) were collected in 1986, and 8 fruits (from 1 collection) were collected in 1987. Fruits were held over moist sand in plastic containers with screened lids for recovery of *B. cucurbitae* pupae and adult emergence. *Bactrocera cucurbitae* recovery averaged 31.0 pupae/kg fruit (1986) and 0.0 pupae/kg fruit (1987).

Lab Infestation:

Chawla 1966:

In captivity, female *B. cucurbitae* adults (listed as *Dacus cucurbitae*) laid eggs on cut fruits of *A. esculentus*. The eggs hatched out and the development of the larvae proceeded normally through adult emergence.

Kumagai et al. 1996:

An average of 3.0±4.2 (standard deviation) adult *B. cucurbitae* was recovered from sets of 12 punctured (15 punctures per fruit) *A. esculentus* fruits (ca. 100 g) exposed to 10 gravid female *B. cucurbitae* (five replications). No flies were recovered from comparable trials with intact (unpunctured) fruits (but a few adults emerged from intact fruit in a previous [unpublished] test under similar conditions). Additionally, an average of 10.3±6.7 (standard deviation) adult melon flies was recovered following insertion of 20 eggs in each of 5 okra fruits (six replications), giving an average of 11.3% survival rate (egg to adult), following correction for egg hatchability (average of 91.4 viable eggs out of 100). Authors concluded that okra is a sufficient fruit for *B. cucurbitae* to survive on during immature stages and develop to adult stage, but may not be as good for development as in a major host fruit.

Rajamannar 1962:

An average of 39% of *B. cucurbitae* (listed as *Dacus cucurbitae*) 1st-instar larvae (obtained from eggs oviposited on bottle gourd [*Lagenaria siceraria*; listed as *L. vulgaris*]), raised on *A. esculentus* (listed as lady's finger) pupated, with an average time to pupation of 7.2 days. In a separate test, 17 out of 100 (17%) 1st instar larvae were found to feed on *A. esculentus* fruits (an average of 3.4 out of 20 larvae, based on five replicated trials).

Listing Only: Cantrell et al. 1999; Dhillon et al. 2005a; Holbrook 1967 (listed as *Hibiscus esculentus* L., listed as “rarely infested”); Hollingsworth and Allwood 2000 (listed as *Hibiscus esculentus*); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Hibiscus esculentus* L.); +Margosian et al. 2009 (“possibly”; listed as okra); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as *Hibiscus esculentus* L.; listed as a rarely injured plant); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as *Hi-*

biscus esculentus); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *Hibiscus esculentus*); Pacific Fruit Fly Web 2002 (listed as *Hibiscus esculentus*); Syed 1971 (listed as *Dacus cucurbitae*; listed as *Hibiscus esculentus*); USDA 1986 (listed as *Dacus cucurbitae*; listed as *Hibiscus esculentus*); USDA-APHIS 2008 (listed as *Hibiscus esculentus*); USDA-APHIS 2000 (listed as *Hibiscus esculentus*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Hibiscus esculentus*; insufficient data to justify regulation); +Walker 2005 (listed as okra); White and Elson-Harris 1992 (authors state “requires confirmation”).

Synonyms: *Hibiscus esculentus* L.

Abelmoschus moschatus Medik.

Family: Malvaceae

Grin Nomen Number: 623

Common Names: ambrette (French), gandapura (Indonesian), kasturi (Indonesian), musk-mallow (English), musk okra (English), tropical jewel-hibiscus (English).

Native: ASIA-TEMPERATE – *China:* China – Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Yunnan; *Eastern Asia:* Taiwan; ASIA-TROPICAL – *Indian Subcontinent:* Bangladesh, India, Sri Lanka; *North Indian Ocean:* India – Andaman, Nicobar; *Indo-China:* Cambodia, Laos, Thailand, Vietnam; *Malesia:* Indonesia, Malaysia, Papua New Guinea, Philippines; AUSTRALASIA – *Australia:* Australia – Northern Territory, Queensland, Western Australia.

Naturalized: PACIFIC – *Southwestern Pacific:* Fiji.

Cultivated: AFRICA – *Western Indian Ocean:* Madagascar; ASIA-TROPICAL – *Indian Subcontinent:* India; *Malesia:* Indonesia – Java; SOUTHERN AMERICA – *Central America:* Central America.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, India

In 1992, *B. cucurbitae* was recovered from 1 sample of *A. moschatus*. Infestation rate data not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Listing Only: CABI 2016 (listed as a secondary host); Cantrell et al. 1999; De Meyer et al. 2014; Plantwise Knowledge Bank 2015.

Acaciaceae E. Mey., see *Fabaceae* Lindl., nom. cons.

Acca sellowiana (O. Berg) Burret

Family: Myrtaceae

Grin Nomen Number: 319761

Common Names: falso guayabo (Spanish), Feijoa (German), feijoa (Portuguese), feijoa (Swedish), goiaba-do-campo (Portuguese), goiabeira-serrana (Portuguese), guayaba brasileira (Spanish), guayaba chilena (Spanish), pineapple-guava (English).

Native: SOUTHERN AMERICA – *Brazil:* Brazil – Minas Gerais, Parana, Rio Grande do Norte, Rio Grande do Sul, Santa Catarina, Sao Paulo; *Southern South America:* Argentina – Misiones; Paraguay, Uruguay.

Cultivated: widely cultivated in subtropics.

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Seven (7) live adult *B. cucurbitae* were recovered by USDA-APHIS-PPQ (“interceptions”) from *Acca sellowiana* fruit(s), originating in Hawaii, at the airport in Kahului, Island of Maui.

Synonyms: *Feijoa sellowiana* (O. Berg) O. Berg, *Orthostemon sellowianus* O. Berg

Achradelpha mammosa O. F. Cook, see *Manilkara zapota* (L.) P. Royen

Achras lucuma Blanco, see *Pouteria sapota* (Jacq.) H.E. Moore and Stearn

Achras mammosa Auct., see *Manilkara zapota* (L.) P. Royen

Achras spp., see *Manilkara* spp.

Achras zapota L., see *Manilkara zapota* (L.) P. Royen

Achras zapota var. *zapotilla* Jacq., see *Manilkara zapota* (L.) P. Royen

Achras zapotilla (Jacq.) Nutt., see *Manilkara zapota* (L.) P. Royen

Adenia heterophylla (Blume) Koord.

Family: Passifloraceae

Grin Nomen Number: Not listed in GRIN; naming authority taken from The Plant List.

Listing Only: Vijaysegaran 1991 (listed as *Dacus cucurbitae*; listed as *Adenia populifolia* Engl.); Yunus and Hua 1980 (listed as *Dacus cucurbitae*; listed as *Adenia populifolia* Engl.).

Synonyms: *Adenia populifolia* Engl.

Adenia hondala (Gaertn.) W. J. de Wilde

Family: Passifloraceae

Grin Nomen Number: 449019

Common Names: hondala (Sinhala-Sri Lanka), potahonda (Sinhala-Sri Lanka).

Native: ASIA-TROPICAL – *Indian Subcontinent:* India, Sri Lanka.

Field Infestation:

Tsuruta et al. 1997:

Sri Lanka

Three (3) adult *B. cucurbitae* were recovered from an unspecified number of *A. hondala* fruits (listed as *Adenia palmata* [Lam.] Engl.) collected from the Kotiyakumbura area of Sri Lanka.

Synonyms: *Adenia palmata* (Lam.) Engl., *Granadilla hondala* Gaertn., *Modecca palmata* Lam.

Adenia palmata (Lam.) Engl., see *Adenia hondala* (Gaertn.) W. J. de Wilde

Adenia populifolia Engl., see *Adenia heterophylla* (Blume) Koord.

Aechmandra Arn., see *Kedrostis* Medik.

Aegle marmelos (L.) Corrêa

Family: Rutaceae

Grin Nomen Number: 1560

Common Names: bael (English), baeltree (English), bel indien (French), bela (Spanish), Belbaum (German), belfruit-tree (English), beli (India), Bengal-quince (English), golden-apple (English), Indian baelfruit (English), milva (Spanish), mu ju (transcribed Chinese).

Native: ASIA-TROPICAL – *Indian Subcontinent:* India – Andhra Pradesh, Bihar, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal; Nepal; *North Indian Ocean:* India – Andaman, Nicobar; *Indo-China:* Myanmar.

Cultivated: ASIA-TROPICAL – *Indian Subcontinent:* India, Sri Lanka; *Indo-China:* Thailand; *Malesia:* Indonesia, Malaysia.

Listing Only: Kapoor 1970 (listed as *Dacus cucurbitae*).

Synonyms: *Belou marmelos* (L.) A. Lyons, *Crateva marmelos* L.

Aeschynomene grandiflora (L.) L., see *Sesbania grandiflora* (L.) Pers.

Agati grandiflora (L.) Desv., see *Sesbania grandiflora* (L.) Pers.

Akebia quinata (Thunb. Ex Hoult.) Decne.

Family: Lardizabalaceae

Grin Nomen Number: 2103

Common Names: akebi (Japanese Rōmaji), Akébie à cinq feuilles (French), chocolate-vine (English), eureumdeonggul (transcribed Korean), fembladig akebia (Swedish), fingerblättrige Akebie (German), fiveleaf (English), five-leaf akebia (English), mu tong (transcribed Chinese).

Native: ASIA-TEMPERATE – *China:* China – Anhui, Fujian, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shandong, Sichuan, Zhejiang; *Eastern Asia:* Japan – Honshu, Kyushu, Shikoku; Korea.

Naturalized: AUSTRALASIA – *New Zealand:* New Zealand; EUROPE – Europe; NORTHERN AMERICA – United States.

Cultivated: AUSTRALASIA – *New Zealand:* New Zealand; EUROPE – Europe; NORTHERN AMERICA – United States.

Lab Infestation:

Iwaizumi et al. 1994:

Intact, mature *A. quinata* fruits were exposed to 10 gravid female *B. cucurbitae* for 24 hours in a screen-net cage. An average (over three replications) of 26.7±8.7 adults was recovered. Akebia fruit punctured several times with insect pins were similarly exposed to 10 gravid females, with an average recovery of 18.3±11.1 adult flies.

Synonyms: *Rajania quinata* Thunb. Ex Houtt.

Allium ascalonicum auct., see *Allium cepa* L.

Allium cepa L.

Family: Amaryllidaceae

Grin Nomen Number: 2244

Common Names: basal (Arabic), cipolla (Italian), lök (Swedish), ogpa (transcribed Korean), onion (English), shallot (English), yangpa (transcribed Korean).

Cultivated: AFRICA – Africa; ASIA-TEMPERATE – *Caucasus:* Armenia, Azerbaijan, Georgia, Russian Federation – Ciscaucasia; *Siberia:* Russian Federation – Eastern Siberia, Western Siberia; *Middle Asia:* Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan; *Russian Far East:* Russian Federation – Far East; *China:* China; *Eastern Asia:* Korea, Taiwan; ASIA-TROPICAL – *Indian Subcontinent:* India; *Indo-China:* Indochina; *Malesia:* Papua New Guinea, Philippines; AUSTRALASIA – *Australia:* Australia; EUROPE – Europe; NORTHERN AMERICA – Canada, Mexico, United States; SOUTHERN AMERICA – *Caribbean:* West Indies; *Central America:* Central America; *Brazil:* Brazil.

Interception Data:

USDA 1932a:

One *B. cucurbitae* pupa was recovered from among dried onions (*A. cepa*) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in stores) between 1 January 1930 and 30 June 1931. Taxonomic identification was done by agricultural specialists of the states of California, Florida, and Hawaii, and the Bureau of Entomology and Plant Quarantine, USDA.

Lab Infestation:

Chawla 1966:

In captivity, female *B. cucurbitae* adults (listed as *Dacus cucurbitae*) laid eggs on cut dry *A. cepa*. The eggs hatched out and the development of the larvae proceeded normally through adult emergence.

Listing Only: Dhillon et al. 2005a; Holbrook 1967 (listed as “rarely infested”); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as a doubtful host); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as a doubtful host); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); White and Elson-Harris 1992 (authors refer to as a “doubtful host”).

Synonyms: *Allium cumaria* Buch.-Ham., nom. inval.

Allium cepa var. *solaninum* Alef., see *Allium cepa* L.

Allium cumaria Buch.-Ham., nom. inval., see *Allium cepa* L.

Amaranthus spinosus L.

Family: Amaranthaceae

Grin Nomen Number: 2804

Common Names: blede espinoso (Spanish), bredo-bravo (Portuguese-Brazil), bredo-de-espinho (Portuguese-Brazil), carelessweed (English), carurú-bravo (Portuguese-Brazil), carurú-de-espinho (Portuguese-Brazil), ci xian (transcribed Chinese), dorniger Fuchsschwanz (German), edlebur (English), épinard cochon (French), épinard malabre (French), espinaca de Malabar (Spanish), kanta chaulai (India-Hindi), kante math (India-Malathi), Malabarspinat (German), needle burr (English), prickly amaranth (English), prickly calulu (English), Prince-of-Wales feather (English), spiny amaranth (English), spiny pigweed (English), taggamarant (Swedish), thorny amaranth (English), thorny pigweed (English).

Naturalized: Tropic, subtropic, and warm-temperate regions.

Origin: Neotropics.

Listing Only: Botha et al. 2004 (listed as a wild host).

Amygdalus nairica Fed. and Takht., see *Prunus* spp.

Amygdalus persica L., see *Prunus persica* (L.) Batsch var. *persica*

Amygdalus persica L. var. *camelliiflora* (hort. ex L. H. Bailey) Ricker, see *Prunus persica* (L.) Batsch var. *persica*

Amygdalus persica L. var. *densa* (Makino) Ricker, see *Prunus persica* (L.) Batsch var. *persica*

Amygdalus persica L. var. *nectarina* Aiton, see *Prunus persica* (L.) Batsch var. *nucipersica* (Suckow) C. K. Schneid.

Amygdalus persica L. var. *nucipersica* Suckow, see *Prunus persica* (L.) Batsch var. *nucipersica* (Suckow) C. K. Schneid.

Amygdalus pseudopersica (Tamamsch.) Fed. and Takht., see *Prunus* spp.

Amygdalus spp., see *Prunus* spp.

Anacardium microcarpum Ducke, see *Anacardium occidentale* L.

Anacardium occidentale L.

Family: Anacardiaceae

Grin Nomen Number: 3060

Common Names: acajoeboom (Dutch), Acajubaum (German), anacardier (French), anacardo (Spanish), cajou (French), cajú (Portuguese), cajueiro (Portuguese), cajuil (Spanish), cashew (English), cashew (Swedish), cashewnut (English), Kaschubaum (German), marañón (Spanish), merey (Spanish), Nierenbaum (German), westindische Nierenboom (Dutch), yao Guo (transcribed Chinese).

Native: SOUTHERN AMERICA – *Northern South America:* French Guiana, Guyana, Suriname, Venezuela; *Brazil:* Brazil; *Western South America:* Colombia.

Cultivated: AFRICA – *East Tropical Africa:* Tanzania; *South Tropical Africa:* Angola, Mozambique; ASIA-TEMPERATE – *China:* China; *Eastern Asia:* Taiwan; ASIA-TROPICAL – *Indian Subcontinent:* India, Sri Lanka; *Indo-China:* Myanmar, Thailand; *Malesia:* Indonesia, Malaysia, Philippines; AUS-TRALASIA – *Australia:* Australia; SOUTHERN AMERICA – *Brazil:* Brazil.

Field Infestation:

Vayssières et al. 2007:

Benin and Burkina Faso, West Africa

Tephritid fruit fly-infested *Anacardium occidentale* fruits were collected from untreated orchards in Benin and Burkina Faso. Fruits were placed on mesh supports over sand. Tephritid fruit fly pupae, recovered through weekly sieving of the sand, were transferred to small hatching boxes

lined with wet blotting paper and held for adult emergence. *Bactrocera cucurbitae* was recovered in 2005 and 2006 from *A. occidentale* fruits collected in both Benin and Burkina Faso. Infestation level was relatively low: 4–5 pupae/kg fruit. Authors suggest that average *A. occidentale* infestation levels in West Africa fall in the range of 1–25 pupae/kg fruit.

Listing Only: De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*).

Synonyms: *Anacardium microcarpum* Ducke

Annona asiatica L., see *Annona squamosa* L.

Annona biflora cinerea

Family: Annonaceae

Grin Nomen Number: This is an unresolved name. There is no listing in GRIN for this sp. The Plant List lists *Annona biflora* Sessé and Moc. as a synonym of *Rollinia mucosa* (Jacq.) Baill. and lists *Annona cinerea* Dunal as a synonym of *Annona squamosa* L.

Listing Only: USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation).

Annona forskahlii DC., see *Annona squamosa* L.

Annona lutescens Saff., see *Annona reticulata* L.

Annona macrocarpa auct., see *Annona muricata* L.

Annona muricata L.

Family: Annonaceae

Grin Nomen Number: 3492

Common Names: anona (Spanish), anone (French), araticum-grande (Portuguese-Brazil), araticum-manso (Portuguese-Brazil), cachiman épineux (French), coração-de-rainha (Portuguese-Brazil), corossol épineux (French), grand corossol (French), graviola (Portuguese), guanábana (Spanish), guanábano (Spanish), jaca-de-pobre (Portuguese-Brazil), jaca-do-Pará (Portuguese-Brazil), Sauersack (German), soursop (English), Stachelannone (German), taggannona (Swedish), zuurzak (Dutch).

Naturalized: Widely naturalized in tropics.

Cultivated: AFRICA – Africa; ASIA-TEMPERATE – *China*: China; *Eastern Asia*: Taiwan; ASIA-TROPICAL – *Indian Subcontinent*: India, Sri Lanka; *Indo-China*: Cambodia, Laos, Thailand, Vietnam; *Malesia*: Indonesia, Malaysia, Papua New Guinea, Philippines; AUSTRALASIA – *Australia*: Australia; NORTHERN AMERICA – Mexico; PACIFIC – *South-Central Pacific*: French Polynesia; SOUTHERN AMERICA – *Central America*; *Caribbean*: West Indies.

Origin: West Indies.

Listing Only: California Department of Food and Agriculture 2001; Cantrell et al. 1999; Dhillon et al. 2005a; Holbrook 1967; Kapoor 1970 (listed as *Dacus cucurbitae*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as *Annona muricata*); Oakley 1950 (listed as *Dacus cucurbitae*); Phillips 1946 (listed as *Annona muricata*); Ponce 1937 (listed as *Dacus cucurbitae*); Rajamannar 1962 (listed as *Dacus cucurbitae*; listed as *Annona muricata*); Syed 1971 (listed as *Dacus cucurbitae*; listed as *Annona muricata*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); White and Elson-Harris 1992 (authors state “requires confirmation”).

Synonyms: *Annona macrocarpa* auct.

Annona reticulata L.

Family: Annonaceae

Grin Nomen Number: 3498

Common Names: annone réticulée (French), anona corazón (Spanish), anoneira (Portuguese), anonillo (Spanish), biribá (Portuguese-Brazil), bullock’s-heart (English), cachiman (French), coeur

de boeuf (French), coração-de-boi (Portuguese), corazón de buey (Spanish), corossol reticulé (French), custard-apple (English), fruta-de-condessa (Portuguese-Brazil), fruta-do-conde (Portuguese-Brazil), mamán (Spanish), nātannona (Swedish), Netzannone (German), Ochsenherz (German), ox-heart (English).

Cultivated: AFRICA – Africa; ASIA-TEMPERATE – *China*: China; *Eastern Asia*: Taiwan; ASIA-TROPICAL – *Indian Subcontinent*: India; *Indo-China*: Cambodia, Laos, Thailand, Vietnam; *Malesia*: Indonesia, Malaysia, Philippines; AUSTRALASIA – *Australia*: Australia; PACIFIC – *Northwestern Pacific*: Micronesia; *South-Central Pacific*: French Polynesia; SOUTHERN AMERICA – *Caribbean*: West Indies; *Central America*.

Origin: Central America.

Listing Only: California Department of Food and Agriculture 2001; Dhillon et al. 2005a; Kandybina 1987 (listed as *Dacus cucurbitae*); Holbrook 1967 (listed as “non-host or host of undetermined status”); Kapoor 1970 (listed as *Dacus cucurbitae*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as *Anona reticulata*); Oakley 1950 (listed as *Dacus cucurbitae*); Phillips 1946 (listed as *Anona reticulata*); Ponce 1937 (listed as *Dacus cucurbitae*); Rajamannar 1962 (listed as *Dacus cucurbitae*; listed as *Anona reticulata*); Syed 1971 (listed as *Dacus cucurbitae*; listed as *Anona reticulata*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); White and Elson-Harris 1992 (authors state “requires confirmation”).

Synonyms: *Annona lutescens* Saff.

Annona senegalensis Pers.

Family: Annonaceae

Grin Nomen Number: 3501

Common Names: pomme cannelle du Sénégal (French), wild custard-apple (English).

Native: AFRICA – *Northeast Tropical Africa*: Ethiopia, Sudan; *East Tropical Africa*: Kenya, Tanzania, Uganda; *West-Central Tropical Africa*: Cameroon, Central African Republic, Rwanda, Zaire; *West Tropical Africa*: Benin, Côte d’Ivoire, Gambia, Ghana, Guinea, Mali, Nigeria, Senegal, Togo; *South Tropical Africa*: Angola, Malawi, Mozambique, Zimbabwe; *Southern Africa*: Botswana, South Africa – KwaZulu-Natal, Limpopo, Mpumalanga; Swaziland; *Western Indian Ocean*: Comoros, Madagascar.

Field Infestation:

Vayssières et al. 2007:

Benin, Burkina Faso, and Mali, West Africa

Tephritid fruit fly-infested *Annona senegalensis* fruits were collected from untreated orchards in Benin and Burkina Faso. Fruits were placed on mesh supports over sand. Tephritid fruit fly pupae, recovered through weekly sieving of the sand, were transferred to small hatching boxes lined with wet blotting paper and held for adult emergence. *Bactrocera cucurbitae* was recovered from *A. senegalensis* fruits collected in Benin, Burkina Faso and Mali. The average infestation levels in West Africa fall in the range of 1–25 pupae/kg fruit.

Listing Only: De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*).

Annona spp.

Family: Annonaceae

Grin Nomen Number: 300030

Listing Only: Cantrell et al. 1999; Chawla 1966 (listed as *Dacus cucurbitae*); Isnadi 1991 (listed as *Dacus cucurbitae*).

Synonyms: *Rollinia* spp.

Annona squamosa L.

Family: Annonaceae

Grin Nomen Number: 3503

Common Names: annone écaïlleuse (French), anón (Spanish), anona blanca (Spanish), ata (Portuguese), cachiman cannelle (French), chirimoyo (Spanish), custard-apple (English), fan li zhi (transcribed)

Chinese), fruta de condesa (Spanish), fruta del conde (Spanish), fruta-do-conde (Portuguese-Brazil), kaneelappel (Dutch), mela canella (Italian), pinha (Portuguese), pomme canelle (French), pomo canella (Italian), Rahmapfel (German), saramuyo (Spanish), Schuppenannone (German), sockerannona (Swedish), Süßsack (German), sugar-apple (English), sweetsop (English), Zimtapfel (German), Zuckerapfel (German).

Naturalized: Widely naturalized in tropics.

Cultivated: AFRICA – Africa; ASIA-TEMPERATE – *China*: China; *Eastern Asia*: Taiwan; ASIA-TROPICAL – *Malesia*: Indonesia, Philippines; AUSTRALASIA – *Australia*: Australia – Queensland; NORTHERN AMERICA – Mexico; PACIFIC – *North-Central Pacific*: United States – Hawaii; *Northwestern Pacific*: Micronesia; *South-Central Pacific*: French Polynesia; *Southwestern Pacific*: Fiji; SOUTHERN AMERICA – *Caribbean*: West Indies; *Central America*.

Origin: West Indies.

Listing Only: Cantrell et al. 1999; Dhillon et al. 2005a; Holbrook 1967 (listed as “non-host or host of undetermined status”); Kapoor 1970 (listed as *Dacus cucurbitae*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as *Anona squamosa*); Oakley 1950 (listed as *Dacus cucurbitae*); Orian and Moutia 1960 (listed as *Dacus cucurbitae*; listed as *Anona squamosa* L.); Phillips 1946 (listed as *Anona squamosa*); Ponce 1937 (listed as *Dacus cucurbitae*); Rajamannar 1962 (listed as *Dacus cucurbitae*; listed as *Anona squamosa*); Syed 1971 (listed as *Dacus cucurbitae*; listed as *Anona squamosa*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as both *Annona forskahli* and as *A. squamosa*; insufficient data to justify regulation); White and Elson-Harris 1992 (authors state “requires confirmation”).

Synonyms: *Annona asiatica* L.

Anthurium sp.

Family: Araceae

Grin Nomen Number: 312255

Interception Data:

USDA 1955:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from *Anthurium* sp. which originated and was intercepted at a port in Hawaii (1 interception in consumption host) between 1 July 1953 and 30 June 1954 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

Arbutus obliquifolia, see *Citrullus lanatus* (Thunb.) Matsum. and Nakai

Arduina bispinosa L., see *Carissa bispinosa* (L.) Desf. ex Brenan

Armeniaca mume Siebold, see *Prunus mume* Siebold and Zucc.

Artocarpus heterophyllus Lam.

Family: Moraceae

Grin Nomen Number: 70095

Common Names: árbol del pan (Spanish), bo luo mi (transcribed Chinese), jaca (Portuguese), jaca (Spanish), jack (English), Jackfruchtbaum (German), jackfruit (English), jackfrukt (Swedish), jacquier (French), jak (English), jaqueira (Portuguese-Brazil), jaqueiro (Spanish), kathal (India), Nangka (German).

Native: ASIA-TROPICAL – *Indian Subcontinent*: India.

Cultivated: Widely cultivated in tropics.

Field Infestation:

Clausen et al. 1965:

Sabah, Malaysia (referred to as North Borneo; place names listed are in present day Sabah, Malaysia)

From collections of *A. heterophyllus* from April to May 1951 in Sabah, Malaysia (referred to as North Borneo), 3,470 puparia, a mix of three predominant species: *Bactrocera cucurbitae* (listed as *Dacus cucurbitae* Coq), *Dacus umbrosus* F, and *Bactrocera tau* (Walker) (listed as *Dacus hageni* Meij) (ratio not stated), were recovered.

Listing Only: Botha et al. 2004 (listed as a secondary host); CABI 2016; Cantrell et al. 1999; Hollingsworth et al. 1996; Kapoor 2005–2006; Plantwise Knowledge Bank 2015; Rejesus et al. 1991 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); White and Elson-Harris 1992.

Synonyms: *Artocarpus integer* auct., *Artocarpus integrifolius* auct.

Artocarpus integer auct., see *Artocarpus heterophyllus* Linn.

Artocarpus integrifolius auct., see *Artocarpus heterophyllus* Linn.

Aspalathaceae Martinov, see *Fabaceae* Lindl., nom. cons.

Astragalaceae Bercht. and J. Presl, see *Fabaceae* Lindl., nom. cons.

Aurantium maximum Burm., see *Citrus maxima* (Burm.) Merr.

Averrhoa carambola L.

Family: Oxalidaceae

Grin Nomen Number: 6158

Common Names: carambola (English), carambolier (French), carambolo (Spanish), five-corner (English), karambola (Swedish), Karambole (German), starfruit (English), Sternfrucht (German).

Cultivated: Cultivated throughout tropics.

Origin: Java.

Field Infestation:

Clausen et al. 1965:

Malaysia (Sabah) (referred to as North Borneo; place names listed are in present day Sabah, Malaysia)

From collections of *A. carambola* fruits from January to May 1951, in Sabah, Malaysia (referred to as North Borneo), *B. cucurbitae* (listed as *Dacus cucurbitae* Coq) was recovered. Recovery was in smaller numbers than had been recovered from cucurbitaceous hosts.

Vayssières et al. 2007:

Benin and Côte d'Ivoire, West Africa

Tephritid fruit fly-infested *A. carambola* fruits were collected from untreated orchards in West Africa. Fruits were placed on mesh supports over sand. Tephritid fruit fly pupae, recovered through weekly sieving of the sand, were transferred to small hatching boxes lined with wet blotting paper and held for adult emergence. *Bactrocera cucurbitae* was recovered in 2 of 8 (25%) *A. carambola* fruit samples taken in 2006 in Benin. In the positive samples, infestation rate was low (6 pupae/kg fruit). The authors indicated that *B. cucurbitae* infestation level in *A. carambola* fruits in West Africa falls in the range of 1–25 pupae/kg fruit.

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS PPQ (“interceptions”) from *Averrhoa carambola* fruit(s), originating in Hawaii, at an airport in Hawaii (Honolulu) on one occasion in 2005. Recovery was five live larvae.

Listing Only: Botha et al. 2004 (listed as a wild host); De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Dhillon et al. 2005a; Holbrook 1967 (listed as “non-host or host of undetermined status”); Isnadi 1991 (listed as *Dacus cucurbitae*); +NAPPO, PAS 2015 (listed as starfruit); Oakley 1950 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insuf-

ficient data to justify regulation); Vijaysegaran 1991 (listed as *Dacus cucurbitae*); White and Elson-Harris 1992 (authors state “requires confirmation”); +Yong 1992 (listed as *Dacus cucurbitae*; listed as carambola); Yunus and Hua 1980 (listed as *Dacus cucurbitae*).

Baccaurea angulata Merr.

Family: Phyllanthaceae

Grin Nomen Number: 316151

Common Names: red angle tampoi (English).

Native: ASIA-TROPICAL – *Malesia*: Indonesia – Kalimantan; Malaysia – Sabah, Sarawak.

Field Infestation:

Clausen et al. 1965:

Malaysia (Sabah) (referred to as North Borneo; place names listed are in present day Sabah, Malaysia)

From collections of *B. angulata* in May 1951 in Sabah, Malaysia (referred to as North Borneo), 450 puparia, a mix of two predominant species: *Bactrocera cucurbitae* (listed as *Dacus cucurbitae* Coq) and *Dacus dorsalis* Hendel (ratio not stated), were recovered.

Listing Only: USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*).

Belou marmelos (L.) A. Lyons, see *Aegle marmelos* (L.) Corrêa

Benincasa cerifera Savi., see *Benincasa hispida* (Thunb.) Cogn.

Benincasa fistulosa (Stocks) H. Schaef. and S. S. Renner

Family: Cucurbitaceae

Grin Nomen Number: 463034

Common Names: dilpasand (India), round gourd (English), round-melon (English), squash-melon (English), tinda (French), tinda (India-Hindi), tindamelon (Swedish).

Cultivated: AFRICA – *East Tropical Africa*: Kenya, Tanzania, Uganda; *West Tropical Africa*: Ghana; ASIA-TEMPERATE – *Western Asia*: Afghanistan; ASIA-TROPICAL – *Indian Subcontinent*: India, Pakistan; NORTHERN AMERICA – United States.

Field Infestation:

+*Gupta and Verma 1978:*

Hisar (listed as Hissar), State of Haryana, India

Benincasa fistulosa (listed as squash melon, var. ‘Hissar Selection’) was grown from seed planted 28 February 1975, in a randomized complete block design with ten other cucurbit crops in Hissar, Haryana State, India. Fallen and marketable sized fruits were collected/picked every 3 days and assessed for infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). Infestation results were summarized weekly. *Bactrocera cucurbitae* infestation was found in 9 of 10 weekly summaries (90%). Overall, 171 (3.54 kg) fruits were collected, of which 25 were infested, for an average of 17.1 fruits collected per week with an average infestation rate of 13.9%.

+*Inayatullah et al. 1993:*

Faisalabad, Pakistan

Based on observation, the average rate of infestation of *B. fistulosa* fruits (listed as tinda) by *B. cucurbitae* (listed as *Dacus cucurbitae*) in the vicinity of the University of Agriculture in Faisalabad was about 93%.

+*Jakhar and Pareek 2005:*

Jobner, State of Rajasthan, India

Seeds of nine cucurbit species were sown in a randomized block design with four replications at the Horticultural Farm of S.K.N. College of Agriculture in Jobner, India during the kharif season in 2000. The infestation rate of *B. fistulosa* fruits (listed as round gourd) by *B. cucurbitae* averaged 35.08% (range: 18.30–52.52%) over the course of ten collection dates, each 3 days apart during August to September, 2000.

Khan et al. 1993:

Faisalabad, Pakistan

One hundred (100) *Benincasa fistulosa* fruits (listed as both *Citrullus lanatus* var. *fistulosus* and as squashmelon) were randomly observed in the field monthly from 1985 to 1986 and percentage infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) calculated. High *B. fistulosa* infestation (76–100%) was observed from June to October.

Nath and Bhushan 2006:

Varanasi, State of Uttar Pradesh, India

Benincasa fistulosa (listed as *Praecitrullus fistulosus*) was sown, with three replications, in Varanasi, India, the last week of March (summer season) in both 2001 and 2002. Percentage infestation by *B. cucurbitae* averaged 4.2% (range: 3.8–4.6%).

+*Pareek and Kavadia 1994:*

Jobner and Udaipur, state of Rajasthan, India

Benincasa fistulosa fruits (listed as round gourd, variety 'Arka tinda') were raised in a randomized block design with nine other cucurbit crops (each with three replicated plots) for assessment of preference of *B. cucurbitae* (listed as *Dacus cucurbitae*). The trials were conducted from February to June in 1979, and again in 1981, in Udaipur (semi-humid agroclimatic conditions) and in 1980 and 1981 in Jobner (semi-arid agroclimatic condition). Fruits were harvested twice a week, examined for fruit fly damage, and then percentage of fruits infested by *B. cucurbitae* calculated. Overall percentage infestation averaged 80.0% (1979, 1981: 76.6%, 83.4%) in Udaipur and 82.0% (1980, 1981: 85.5%, 78.6%) in Jobner.

Qureshi et al. 1974:

Hyderabad, Sindh Province, Pakistan

In order to document the relative abundance of *B. cucurbitae* (listed as *Dacus cucurbitae*) and *Dacus ciliatus* Loew, random samples of *Benincasa fistulosa* fruits (listed as *Citrullus vulgaris* Schrad var. *fistulosus* Stocks) were collected from various vegetable growing areas near Hyderabad, Pakistan from 1970 to 1972. Fruits were held separately in wooden boxes with wire-gauze screen at the bottom, and placed over another box containing sterilized sand. The sand was sieved daily and recovered pupae were held in Petri plates until adult emergence. Ninety-six (96) *B. cucurbitae* adults were recovered from 33.1 kg of *B. fistulosa* fruits overall. *Bactrocera cucurbitae* adults were recovered from 4 of 7 collections (57.1%), with a collection average of 3.70 adults recovered per kg fruit.

+*Singh et al. 2000:*

Kanpur, State of Uttar Pradesh, India

Benincasa fistulosa fruits (listed as round gourd) were collected weekly at growers' fields at the bank of the river Ganga in Kanpur beginning in February 1997. Percentage infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) was determined (by observation) at each picking. The overall average *B. cucurbitae* infestation rate was 25.0%.

Syed 1971:

Hyderabad, Sindh Province, Pakistan

Based on studies in Hyderabad, Pakistan, during 1964–1965, it was observed that 6% of *Benincasa fistulosa* fruits (listed as *Cucumis vulgaris* var. *fistulosus*) were infested by tephritid fruit flies in October, with the infestation rate dropping to 4% in November. Infesting species were *B. cucurbitae* (listed as *Dacus cucurbitae*) and *Dacus ciliatus*, in a ratio of about 40%:60%, respectively. Total number of fruits collected not given.

Lab Infestation:

Doharey 1983:

A colony of *B. cucurbitae* was maintained on *B. fistulosa* fruits (listed both as *Citrullus vulgaris* var. *fistulosus* and as squash gourd). Eggs laid in fruits were removed daily and placed on sterilized sand in glass rearing jars. Freshly formed pupae were transferred to smaller glass jars and held on sterile sand until adult emergence. Holding temperature was 27±1°C. The incubation period on squash gourd averaged 4.2 days, the larval period averaged 3.8 days, and the pupal period averaged 7.2 days, totaling 15.2 days from egg to adult.

Koul and Bhagat 1994b:

Bottle gourd (*Lagenaria siceraria*) was used to rear *B. cucurbitae* (listed as *Dacus cucurbitae*) in the lab. Eggs obtained from flies maintained on bottle gourd were placed on a thin slice of

tender and fresh *B. fistulosus* fruit (listed as *Citrullus fistulosus*). Newly emerged *B. cucurbitae* larvae were transferred to freshly cut *B. fistulosus* slices placed in glass tubes for 2–5 days and then held over sand (4-cm thick) until pupation. Pupae were sieved daily and individually transferred to glass tubes with a 3 cm sand layer moistened with water and held until adult emergence. Freshly emerged flies were held in glass tubes after pairing, provided with a slice of *B. fistulosus* fruit and a cotton plug soaked in 10% honey solution. Larval duration averaged 4.7 days, compared to 3.5, 4.2, 4.7, and 5.7 days, when reared on *Momordica charantia*, *Lagenaria siceraria*, *Cucumis sativus*, and *Cucurbita pepo*, respectively. No temperature or relative humidity data were provided.

Rajamannar 1962:

Using *B. cucurbitae* (listed as *Dacus cucurbitae*) 1st instar larvae obtained from eggs oviposited on bottle gourd (*Lagenaria siceraria*; listed as *L. vulgaris*), 83 of 100 (83%) larvae were found to feed on *B. fistulosa* fruit (listed as *Citrullus vulgaris* var. *fistulosus* and *tinda*). In a separate test, 83 out of 100 (83%) 1st instar larvae were found to feed on cucumber discs (an average of 16.6 out of 20 larvae, based on five replicated trials).

Listing Only: +Agrawal and Mathur 1991 (listed as *Dacus cucurbitae*; listed as squash melon); Chaturvedi 1947 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* var. *fistulosus*); Dhillon et al. 2005a (listed as *Cucumis vulgaris* var. *fistulosus*); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* var. *fistulosus*); Kapoor 1991 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* Schrad. var. *fistulosus* Schrad.); +Kapoor 2005–2006 (listed as squash melon); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* var. *fistulosus*); Kazi 1976 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* var. *fistulosus* Stock.); Moiz et al. 1967 (listed as *Dacus cucurbitae*; listed as *Citrullus fistulosus* Stock); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* var. *fistulosus*); Nishida 1963 (listed as *Dacus cucurbitae*; listed both as *tinda* and as *Citrullus fistulosus* Stock); Singh et al. 2004 (listed as *Citrullus vulgaris* var. *fistulosus*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*; listed as *Praecitrullus fistulosus*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* var. *fistulosus*; listed as a preferred host).

Synonyms: *Citrullus fistulosus* Stocks, *Citrullus vulgaris* Schrad. var. *fistulosus* (Stocks) J. L. Stewart, *Praecitrullus fistulosus* (Stocks) Pangalo

Benincasa hispida (Thunb.) Cogn.

Family: Cucurbitaceae

Grin Nomen Number: 6746

Common Names: abóbora-d'água (Portuguese), ash gourd (English), ash-pumpkin (English), benincasa (French), calabaza blanca (Spanish), Chinese preserving-melon (English), Chinese-watermelon (English), courge à cire (French), courge cireuse (French), dong gua (transcribed Chinese), donga (transcribed Korean), kundor (Malay), kundur (Indonesian), paitha (India), pastèque de Chine (French), petha (India), tōgan (Japanese Rōmaji), vaxpumpa (Swedish), Wachskürbis (German), wax gourd (English), white gourd (English), white-pumpkin (English), winter-melon (English).

Cultivated: AFRICA – *East Tropical Africa:* Kenya, Tanzania; *South Tropical Africa:* Malawi, Mozambique, Zambia, Zimbabwe; ASIA-TEMPERATE – *China:* China; *Eastern Asia:* Japan, Korea, Taiwan; ASIA-TROPICAL – *Indian Subcontinent:* India; *Indo-China:* Cambodia, Laos, Thailand, Vietnam; *Malesia:* Indonesia, Malaysia, Philippines; AUSTRALASIA: *Australia:* Australia; NORTH-ERN AMERICA – Mexico, North America; PACIFIC – *North-Central Pacific:* United States – Hawaii; SOUTHERN AMERICA – *Central America:* Guatemala, *Northern South America* – Venezuela; *Brazil* – Brazil; *Western South America* – Bolivia, Colombia, Peru; *Southern South America* – Argentina, Chile.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, southern India

In 1992, *B. cucurbitae* was recovered from 19 samples of both fruits and flowers of *B. hispida*. Infestation rate data not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Amin et al. 2011:

Dinajpur, Bangladesh

From April through July 2009, *B. hispida* was grown in a randomized complete design with four other cucurbit species (four replicates) at the Entomology Farm Laboratory, Hajee Mohammad Danesh Science and Technology University, in Dinajpur, Bangladesh. Fruits were observed for infestation by *B. cucurbitae*, and harvested at maturity stage. An average of about 64% of *B. hispida* fruits was infested by *B. cucurbitae*. Adult *B. cucurbitae* were also recovered from field-infested *B. hispida* fruits brought to the laboratory.

Chinajariyawong et al. 2000:

Thailand

Bactrocera cucurbitae was reared from 3 samples of *B. hispida* collected in Thailand.

No infestation rate data given.

Clarke et al. 2001:

Thailand

Ninety-nine (99) (26.5 kg) infested *B. hispida* fruits were collected in Thailand from 1986 to 1994. Two regions of Thailand (Chiang Rai and Bangkok) recorded infestation rates of 16.3 and 7.8 *B. cucurbitae* per infested fruit and 16.0 and 31.8 *B. cucurbitae* per kg infested fruits, respectively. *Bactrocera cucurbitae* were identified by either R.A.I. Drew or D. L. Hancock.

+*Inayatullah et al. 1993:*

Faisalabad, Pakistan

Based on observation, the average rate of infestation of *B. hispida* fruits (listed as paitha) by *B. cucurbitae* (listed as *Dacus cucurbitae*) in the vicinity of the University of Agriculture in Faisalabad was about 5%.

Liquido et al. 1994:

Island of Hawaii, Hawaii, U.S.A.

From July 1990 to October 1992, 12 (4.27 kg) ripe “on vine” or ground *B. hispida* fruits were collected (through collections made once or twice a month) from several sites on Hawaii Island, Hawaii. Fruits were weighed, counted, split into groups of 5 or 10, and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* larvae and pupae were recovered from infested *B. hispida* fruits with an overall infestation rate of 46.67 larvae and pupae per fruit (131.15 larvae and pupae/kg fruit).

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 2140 *B. hispida* fruits were collected (45 collections overall) from five islands/island groups (Amami, Kume, Miyako, Okinawa, and Yaeyama) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 174 fruits, giving an average percentage infestation rate (weighted by the number of collections in each of the islands/island groups) of 10.6%.

Nath and Bhushan 2006:

Varanasi, State of Uttar Pradesh, India

Benincasa hispida was sown, with three replications, in Varanasi, India, the last week of March (summer season) in both 2001 and 2002. Percentage infestation by *B. cucurbitae* averaged 2.6% (range: 2.5–2.7%).

+*Qureshi et al. 1987:*

Pakistan

In order to document the relative abundance of *B. cucurbitae* (listed as *Dacus cucurbitae*) and *Dacus ciliatus*, infested fruits of *Benincasa hispida* fruits (listed as white gourd) were collected weekly in Pakistan during November through December, 1986. Fruits were held separately in wooden boxes with wire-gauze screen at the bottom, and placed over another box containing vermiculite for pupation. Adults were separated into species upon emergence. *Bactrocera cucurbitae* adults were recovered from all 7 collections (100%), with a collection average of 29.9 adults recovered per kg fruit.

Syed 1971:

Faisalabad and Gujranwala, Province of Punjab, Pakistan

Based on observations in Faisalabad and Gujranwala, Pakistan, during 1962 and 1963, *B. cucurbitae* larvae (listed as *Dacus cucurbitae*) were found in *B. hispida* fruits in January. Total number of fruits collected not given.

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Benincasa hispida* fruit(s), originating in Hawaii, at an airport in Hawaii (Kahului) on one occasion in 2001. Recovery was seven live larvae.

Lab Infestation:

Amin et al. 2011:

Bactrocera cucurbitae larvae and *B. cucurbitae*-infested *B. hispida* fruits were collected from a field at the Entomology Farm Laboratory, Hajee Mohammad Danesh Science and Technology University, in Dinajpur, Bangladesh and held in jars in a laboratory at 25±2°C, 60±5% RH and a 12:12 (L:D) h photoperiod. Adult male and female *B. cucurbitae* that emerged were kept in the same jar and provided fresh *B. hispida* fruit for oviposition. Larvae, pupae and adults that emerged from these stock cultures were used for observation of *B. cucurbitae* life history parameters.

Khan et al. 2011:

In a choice test, 50.0 g of *B. hispida* fruits, along with 50.0 g of each of eight other natural hosts, were exposed for 20 minutes to 50 pairs of 15–20-day-old *B. cucurbitae* and 50 pairs of 15–20-day-old *B. tau* inside a small cage, after which fruit samples were removed and placed separately on sawdust inside a cloth-covered plastic bowl for pupation. The sawdust was sieved after 6 to 8 days to recover pupae (of both fly species) which were held for adult emergence. Out of a mean infestation of 64±0.57 pupae recovered (mixed infestation of *B. cucurbitae* and *B. tau*), 75% (48.0) of the recovered pupae emerged as adult *B. cucurbitae*.

In a no-choice test, 50.0 g of *B. hispida* fruits, as well as 50.0 g of each of eight other natural hosts, were exposed for 20 minutes to 5 pairs of 15–20-day-old *B. cucurbitae* and 5 pairs of 15–20-day-old *B. tau* inside separate small cages, after which fruit samples were removed and placed separately on sawdust inside a cloth-covered plastic bowl for pupation. The sawdust was sieved after 6 to 8 days to recover pupae (of both fly species) which were held for adult emergence. Out of a mean infestation of 41±1.15 pupae recovered (mixed infestation of *B. cucurbitae* and *B. tau*), 85.36% (35.0) of the recovered pupae emerged as adult *B. cucurbitae*.

+*Qureshi et al. 1987:*

In studies looking at interspecific competition between *B. cucurbitae* (listed as *Dacus cucurbitae*) and *Dacus ciliatus*, one-half of each of 3 fresh fruits of 9–12-day-old *Benincasa hispida* fruits (listed as white gourd) were exposed for 8 hours in a wood and wire screen cage to 30 pairs of *Bactrocera cucurbitae* adults. Adult *B. cucurbitae* recovery averaged 28.7 and 71.0 adults from each half-exposed fruit, respectively.

Saha et al. 2007:

The relative quality of seven different *B. cucurbitae* fruit hosts was assessed by comparing pupal recovery (in F₁ and F₂ generations) following exposure of 500 g of each fruit to 200 gravid *B. cucurbitae* adults (from laboratory-adapted stock culture) for 30 minutes. For *B. hispida*, 466 and 535 pupae (932 and 1,070 pupae/kg fruit) and 298 and 412 adults (596 and 824 adults per kg fruit) were recovered in the F₁ and F₂ generations, respectively, the most from any of the seven host fruits tested.

Listing Only: Botha et al. 2004 (listed as a secondary host); CABI 2016 (listed as a secondary host); California Department of Food and Agriculture 2001; Cantrell et al. 1999; Chawla 1966 (listed as *Dacus cucurbitae*); +Chen 1960 (listed as *Dacus cucurbitae*; listed as wax gourd); De Meyer et al. 2014; Dhillon et al. 2005a; Government of Western Australia Department of Agriculture and Food 2015; Holbrook 1967 (listed as “heavily or generally infested”); Isnadi 1991 (listed as *Dacus cucurbitae*); Kapoor 1970 (listed as *Dacus cucurbitae*); Leblanc et al. 2013b; McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as a frequently injured plant); +Mau et al. 2007 (listed as Chinese wax gourd and togan); Moiz et al. 1967 (listed as *Dacus cucurbitae*; listed as *Benincasa cerifera* Sari.); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Nishida 1963 (listed as *Dacus cucurbitae*; listed as both petha and as *Benincasa cerifera* Sari.); Oakley 1950 (listed as *Dacus cucurbitae*); +Okinawa Prefectural Fruit Fly

Eradication Project 1987 (listed as *Dacus cucurbitae*; listed as wax gourd); Plantwise Knowledge Bank 2015; Qureshi et al. 1974 (listed as *Dacus cucurbitae*; listed as *Benincasa cerifera* Savi); +Rajamannar 1962 (listed as *Dacus cucurbitae*; listed as both ash gourd and as wax gourd); Singh et al. 2004; USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host); Vijaysegaran 1991 (listed as *Dacus cucurbitae*; listed as *Benincasa cerifera* Savi.); Yunus and Hua 1980 (listed as *Dacus cucurbitae*; listed as *Benincasa cerifera* Savi.); White and Elson-Harris 1992; +Yong 1992 (listed as *Dacus cucurbitae*; listed as white gourd).

Synonyms: *Benincasa cerifera* Savi, *Cucurbita hispida* Thunb.

Berberis lycium Royle

Family: Berberidaceae

Grin Nomen Number: 6909

Native: ASIA-TROPICAL – *Indian Subcontinent*: India – Himachal Pradesh, Jammu and Kashmir, Madhya Pradesh, Tamil Nadu, Uttar Pradesh; Nepal; Pakistan.

Listing Only: Singh et al. 2004.

Blighia sapida K. D. Koenig

Family: Sapindaceae

Grin Nomen Number: 7271

Common Names: ackee (unknown), akee (English), akée (French), akee-apple (English), akí (Spanish), aki (Swedish), Akibaum (German), castanheiro-da-África (Portuguese), fisanier (French), huevo vegetal (Spanish), seso vegetal (Spanish).

Native: AFRICA – *West-Central Tropical Africa*: Cameroon, Gabon, Sao Tome and Principe; *West Tropical Africa*: Benin, Burkina Faso, Côte d'Ivoire, Ghana, Guinea, Guinea-Bissau, Mali, Nigeria, Senegal, Sierra Leone, Togo.

Cultivated: Cultivated elsewhere in tropics.

Listing Only: Holbrook 1967 (listed as “rarely infested”).

Synonyms: *Cupania sapida* Voigt

Brassica besseriana Andrz., see *Brassica juncea* (L.) Czern.

Brassica caulorapa (DC.) Pasq., see *Brassica oleracea* L. var. *gongylodes* L.

Brassica chenopodiifolia Sennen and Pau, see *Brassica juncea* (L.) Czern.

Brassica gongylodes (L.) Mill., see *Brassica oleracea* L. var. *gongylodes* L.

Brassica juncea (L.) Czern.

Family: Brassicaceae

Grin Nomen Number: 7654

Common Names: brauner Senf (German), brown mustard (English), Chinese mustard (English), gas (transcribed Korean), haradali (Swahili), India mustard (English), Indian mustard (English), jie cai (transcribed Chinese), kai choy (Malay), karashi-na (Japanese Rōmaji), leaf mustard (English), mastadi (Swahili), mostarda-indiana (Portuguese), mostarda-vermelha (Portuguese), mostaza india (Spanish), moutarde brune (French), moutarde de Chine (French), moutarde de Sarepta (French), moutarde frisée (French), moutarde indienne (French), Oriental mustard (English), Ruten-Kohl (German), sareptasenap (Swedish), Sarepta-Senf (German), sawi (Indonesian), sawi pahit (Malay), senape indiana (Italian), sesawi (Indonesian), vegetable mustard (English)

Naturalized: AFRICA – *Macaronesia*: Spain – Canary Islands; *East Tropical Africa*: Kenya, Tanzania; *West-Central Tropical Africa*: Zaire; *South Tropical Africa*: Angola, Malawi, Mozambique, Zimbabwe; *Southern Africa*: Botswana, South Africa; *Western Indian Ocean*: Mauritius, Réunion; ASIA-TEMPERATE – *Arabian Peninsula*: Yemen; *Caucasus*: Azerbaijan, Georgia; *Siberia*: Russian Federation – Eastern Siberia, Western Siberia; *China*: China; *Eastern Asia*: Japan; ASIA-TROPICAL – *Indian*

Subcontinent: Bhutan, India, Sri Lanka; *Malesia* – Philippines; AUSTRALASIA – *Australia*: Australia; *New Zealand*: New Zealand; EUROPE – *Northern Europe*: Norway, Sweden; *Middle Europe*: Austria, Czech Republic, Germany, Hungary, Switzerland; *East Europe*: Belarus, Estonia, Latvia, Lithuania, Russian Federation – European part, Ukraine; *Southeastern Europe*: Bulgaria, Romania; *Southwestern Europe*: Spain; NORTHERN AMERICA – Canada, Mexico, United States; PACIFIC – *North-Central Pacific*: United States – Hawaii; *South-Central Pacific*: French Polynesia; *Southwestern Pacific*: Fiji, New Caledonia, Niue; SOUTHERN AMERICA – *Caribbean*: Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, Grenada, Guadeloupe, Hispaniola, Jamaica, Martinique, Netherlands Antilles, Puerto Rico, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Trinidad and Tobago – Trinidad, Virgin Islands (British) – Virgin Gorda, Virgin Islands (U.S.) – St. Croix; *Central America*: Belize, Guatemala, Nicaragua; *Northern South America*: French Guiana; *Brazil*: Brazil; *Western South America*: Peru; *Southern South America*: Argentina, Paraguay – Alto Paraguay.

Adventive: AFRICA – *Northern Africa*: Tunisia.

Uncertain: ASIA-TEMPERATE – *Middle Asia*: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan; *Mongolia*: Mongolia.

Cultivated: AFRICA – Africa; ASIA-TEMPERATE – *China*: China; *Eastern Asia*: Japan, Korea; ASIA-TROPICAL – *Indian Subcontinent*: India, Pakistan, Sri Lanka; *Indo-China*: Thailand; *Malesia*: Indonesia, Malaysia, Philippines; EUROPE – Europe; NORTHERN AMERICA – North America; SOUTHERN AMERICA – South America.

Field Infestation:

Hardy 1948:

Hilo, Hawaii, U.S.A.

Bactrocera cucurbitae (listed as *Dacus cucurbitae* Coquillett) was reared from *B. juncea* (also listed as kai choy). This was a new host record at that time and established the fact that this fly can attack at least some of the cabbages. Infestations were reported to be rather general in the Hilo area, causing severe damage in some fields.

Listing Only: California Department of Food and Agriculture 2001; Chawla 1966 (listed as *Dacus cucurbitae*); Holbrook 1967 (listed as “rarely infested”); Hollingsworth et al. 1996; Kapoor 1970 (listed as *Dacus cucurbitae*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as a rarely injured plant); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); White and Elson-Harris 1992.

Synonyms: *Brassica besseriana* Andrz., *Brassica chenopodiifolia* Sennen and Pau, *Brassica timoriana* (DC.) F. Muell., *Sinapis timoriana* DC.

Brassica oleracea L.

Family: Brassicaceae

Grin Nomen Number: 7668

Common Names: cabbage (English), cavolo (Italian), kål (Swedish), kale (English), kanran (Japanese Rōmaji), Kohl (German), wild cabbage (English), ye gan lan (transcribed Chinese).

Native: EUROPE – *Northern Europe*: United Kingdom; *Middle Europe*: Germany – Schleswig-Holstein; *Southwestern Europe*: France, Spain.

Cultivated: Widely cultivated.

Listing Only: Chawla 1966 (listed as *Dacus cucurbitae*).

Brassica oleracea L. forma *alba* DC., see *Brassica oleracea* L. var. *capitata* L.

Brassica oleracea L. var. *botrytis* L.

Family: Brassicaceae

Grin Nomen Number: 7671

Common Names: Blumenkohl (German), cauliflower (English), cavolfiore (Italian), cavolo fiore (Italian), chou brocoli (French), chou fleur (French), chou fleur d’hiver (French), coliflor (Spanish), couve-

flor (Portuguese), hana-yasai (Japanese Rōmaji), hua ye cai (transcribed Chinese), kapusta cvetnaja (transliterated Russian), karifurawā (Japanese Rōmaji), Kopfbrokkoli (German).

Cultivated: Only cultivated

Field Infestation:

McBride and Tanada 1949:

Hawaii, U.S.A.

Brassica oleracea L. var. *botrytis* was reported as a host of melon fly for the first time; the authors reported that O. C. McBride had found wilted cauliflower with punctures on the stems below the head, where soft rot had begun to develop. When the stem was cut open, several larvae were found, from which 2 adult *B. cucurbitae* (listed as *Dacus cucurbitae*) emerged. Authors listed *Brassica oleracea* L. var. *botrytis* as a rarely infested plant.

Lab Infestation:

Rajamannar 1962:

Using *B. cucurbitae* (listed as *Dacus cucurbitae*) 1st instar larvae obtained from eggs oviposited on bottle gourd (*Lagenaria siceraria*; listed as *L. vulgaris*), 48 of 100 (48%) 1st instar larvae raised on *B. oleracea* var. *botrytis* (listed as cauliflower) inflorescence pupated, with an average time to pupation of 6.8 days. In a separate test, 86 of 100 (86%) 1st instar larvae were found to feed on *B. oleracea* var. *botrytis* inflorescence (an average of 17.2 out of 20 larvae, based on five replicated trials).

Listing Only: California Department of Food and Agriculture 2001; Dhillon et al. 2005a; Kapoor 1970 (listed as *Dacus cucurbitae*); +Margosian et al. 2009 (“possibly”; listed as cauliflower); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*; listed as *Brassica oleracea* Botrytis group); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as both *Brassica oleracea* and cauliflower; insufficient data to justify regulation).

Brassica oleracea L. var. *capitata* L.

Family: Brassicaceae

Grin Nomen Number: 7672

Common Names: Blaukraut (German), cabbage (English), cavolo cappuccio (Italian), cavolo cappuccio bianco (Italian), cavolo cappuccio rosso (Italian), cavolo cappuccio conico (Italian), chou cabus (French), chou pommé (French), chou rouge (French), col (Spanish), col repollo (Spanish), couve-repolho (Portuguese), gan lan (transcribed Chinese), hovedkaal (Danish), kočanaja kapusta (transliterated Russian), kyabetsu (Japanese Rōmaji), lombarda (Spanish), red cabbage (English), repollo (Portuguese), repollo (Spanish), Rotkohl (German), Shetland cabbage (English), Weißkohl (German), white cabbage (English).

Cultivated: Only cultivated.

Lab Infestation:

Rajamannar 1962:

Using *B. cucurbitae* (listed as *Dacus cucurbitae*) 1st instar larvae (which had developed from eggs that adult female *B. cucurbitae* oviposited on bottle gourd [*Lagenaria siceraria*; listed as *L. vulgaris*]), 43 of 100 (43%) 1st instar larvae raised on leaves and stems of *B. oleracea* var. *capitata* (listed as cabbage) pupated, with an average time to pupation of 6.6 days. In a separate test, 51 of 100 (51%) 1st instar larvae were found to feed on leaves and stems of *B. oleracea* var. *capitata* (an average of 10.2 out of 20 larvae, based on five replicated trials).

Listing Only: +Fullaway 1915 (listed as *Dacus cucurbitae*; listed as cabbage: “The melon fly (*Dacus cucurbitae*) has often been reported infesting the heart of cabbage, but the infestation is not at all common and is considered to be due to abnormal conditions in the plant”); Holbrook 1967 (listed as “rarely infested”); Kapoor 1970 (listed as *Dacus cucurbitae*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as a doubtful host); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation).

Synonyms: *Brassica oleracea* L. forma *alba* DC., *Brassica oleracea* L. subsp. *capitata* (L.) Schübl. and G. Martens, *Brassica oleracea* L. var. *conica* DC., *Brassica oleracea* L. var. *rubra* L.

Brassica oleracea L. subsp. *capitata* (L.) Schübl. and G. Martens, see *Brassica oleracea* L. var. *capitata* L.

Brassica oleracea L. subsp. *gongylodes* (L.) Schübl. and G. Martens, see *Brassica oleracea* L. var. *gongylodes* L.

Brassica oleracea L. var. *caulorapa* DC., see *Brassica oleracea* L. var. *gongylodes* L.

Brassica oleracea L. var. *conica* DC., see *Brassica oleracea* L. var. *capitata* L.

Brassica oleracea L. var. *gongylodes* L.

Family: Brassicaceae

Grin Nomen Number: 7676

Common Names: cabbage turnip (English), cavolo rapa (Italian), chou rave (French), col rabano (Italian), col rábano (Spanish), colinabo (Spanish), colirrábano (Spanish), couve-rábano (Portuguese), knol khol (India), kohlrabi (English), Kohlrabi (German), kol'rabi (transliterated Russian), pie lan (transcribed Chinese), stem turnip (English), turnip cabbage (English), turnip kale (English).

Cultivated: Only cultivated.

Field Infestation:

McBride and Tanada 1949:

Island of Oahu, Hawaii, U.S.A.

Brassica oleracea L. var. *gongylodes* (listed both as *Brassica caulorapa* [DC.] Pasq. and as kohlrabi) was collected by Y. Tanada from a garden located on Beretania Street in Honolulu, Hawaii. Stems collected were firm and had several deep cracks extending from the bases of leaves part way down the sides of the enlarged portion. From 3 fully enlarged stems, 31 *B. cucurbitae* (listed as *Dacus cucurbitae*) and 6 scavenger flies, *Atherigona excisa* (Thomson), emerged. Authors listed *Brassica oleracea* L. var. *gongylodes* as a plant that was rarely injured.

Ranganath et al. 1999:

Andaman Island, India

In field trials, *B. cucurbitae* adults were found ovipositing in cracks developed on the stems of *B. oleracea* var. *gongylodes* (listed as *Brassica caulorapa*), and in weaker surfaces of the stems. Damaged *B. oleracea* var. *gongylodes* stems were brought to the laboratory and placed over sand in a container to facilitate pupation and adult emergence of any infesting tephritid fruit flies. Adult *B. cucurbitae* flies were recovered.

Listing Only: Chawla 1966 (listed as *Dacus cucurbitae*; listed as *Brassica caulorapa* [DC] Pasq.); Dhillon et al. 2005a (listed as *Brassica culorapa*); Holbrook 1967 (spelled “gongyloides”; listed as “rarely infested”); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Brassica caulorapa*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as *Brassica caulorapa* and as kohlrabi); Oakley 1950 (listed as *Dacus cucurbitae*); +Rajamannar 1962 (listed as *Dacus cucurbitae*; listed as kohlrabi); Severin et al. 1914 (listed as *Dacus cucurbitae*; listed as kohlrabi); Syed 1971 (listed as *Dacus cucurbitae*; listed as *Brassica caulorapa*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*; listed as *Brassica oleracea* Gongylodes group); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); White and Elson-Harris 1992 (listed as a variety of *Brassica oleracea*).

Synonyms: *Brassica caulorapa* (DC.) Pasq., *Brassica gongylodes* (L.) Mill., *Brassica oleracea* L. var. *caulorapa* DC., *Brassica oleracea* L. subsp. *gongylodes* (L.) Schübl. and G. Martens

Brassica oleracea L. var. *italica* Plenck

Family: Brassicaceae

Grin Nomen Number: 105447

Common Names: asparagus broccoli (English), brécol (Spanish), brecolera (Spanish), broccoli (English), brócoli (Portuguese), brócoli (Spanish), broccoli asperge (French), Brokkoli (German), calabrese (English), Cape broccoli (English), cavolo broccolo (Italian), chou brocoli (French), heading broccoli (English), lu hua cai (transcribed Chinese), purple cauliflower (English), Spargelkohl (German), Sprossbrokkoli (German), sprouting broccoli (English), winter broccoli (English).

Cultivated: Only cultivated.

Field Infestation:

McBride and Tanada 1949:

Island of Oahu, Hawaii, U.S.A.

Brassica oleracea var. *italica* fruits (listed as both *Brassica oleracea* L. var. *botrytis* L. and as broccoli) were reported to be infested by *B. cucurbitae* (listed as *Dacus cucurbitae*) at two locations on the Island of Oahu: Koko Head and Waialua. Located at Koko Head, two farmers, who were familiar with identifying the melon fly, had reported melon fly infestation in their field and were thought of as authentic sources by the authors of this publication. Another source was a farmer from Waialua, Island of Oahu, who reported that the *B. cucurbitae* was infesting his broccoli. The authors listed broccoli as a doubtful host.

Listing Only: +Dhillon et al. 2005a (listed under common name “broccoli” and scientific name *Brassica oleracea* var. *capitata*); White and Elson-Harris 1992 (listed as a variety of *Brassica oleracea*).

Brassica oleracea L. var. *rubra* L., see *Brassica oleracea* L. var. *capitata* L.

Brassica spp.

Family: Brassicaceae

Grin Nomen Number: 300085

Common Names: wild mustard (English), wild turnip (English)

Listing Only: Isnadi 1991 (listed as *Dacus cucurbitae*).

Brassica timoriana (DC.) F. Muell., see *Brassica juncea* (L.) Czern.

Bryonia amplexicaulis Lam., see *Solena amplexicaulis* (Lam.) Gandhi

Bryonia collosa Rottler, see *Cucumis melo* L. subsp. *melo*

Bryonia cordifolia L., see *Cucumis maderaspatanus* L.

Bryonia cucumeroides Ser., see *Trichosanthes pilosa* Lour.

Bryonia laciniosa auct., see *Diplocyclos palmatus* (L.) C. Jeffrey

Bryonia palmata L., see *Diplocyclos palmatus* (L.) C. Jeffrey

Bryonia scabrella L., see *Cucumis maderaspatanus* L.

Bryonopsis laciniosa L. Naudin, see *Diplocyclos palmatus* (L.) C. Jeffrey

Bryonopsis Arn., see *Kedrostis* Medik.

Bryonopsis laciniosa auct., see *Diplocyclos palmatus* (L.) C. Jeffrey

Cactus decumanus Willd., see *Opuntia ficus-indica* (L.) Mill.

Cactus ficus-indica L., see *Opuntia ficus-indica* (L.) Mill.

Caesalpiniaceae R. Br., nom. cons., see *Fabaceae* Lindl., nom. cons.

Cajanus bicolor DC., see *Cajanus cajan* (L.) Huth

Cajanus cajan (L.) Huth

Family: Fabaceae

Grin Nomen Number: 8319

Common Names: ambrévade (French), arhar (India), cachito (Spanish), Congo-pea (English), duvårt (Swedish), feijão-guandu (Portuguese), gandul (Spanish), guandú (Portuguese), guisante-de-Angola (Portuguese), ki-mame (Japanese Rōmaji), mu dou (transcribed Chinese), pigeon-pea (English), pisello del Tropico (Italian), pois d'Angole (French), red gram (English), Straucherbse (German), tuver (India), yellow dhal (English).

Cultivated: Widely cultivated in tropics.

Origin: India

Interception Data:

USDA 1948b:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from pigeon pea (*C. cajan*) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1946 and 30 June 1947 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

Listing Only: Cantrell et al. 1999; Chawla 1966 (listed as *Dacus cucurbitae*); Dhillon et al. 2005a; Holbrook 1967 (listed as “rarely infested”); Isnadi 1991 (listed as *Dacus cucurbitae*); Kapoor 1970 (listed as *Dacus cucurbitae*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as a plant that is rarely injured); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); White and Elson-Harris 1992 (authors state “requires confirmation”).

Synonyms: *Cajanus bicolor* DC., *Cajanus flavus* DC., *Cajanus indicus* Spreng., *Cytisus cajan* L.

Cajanus flavus DC., see *Cajanus cajan* (L.) Huth

Cajanus indicus Spreng., see *Cajanus cajan* (L.) Huth

Calocarpum mammosum auct., see *Pouteria sapota* (Jacq.) H.E. Moore and Stearn

Calocarpum mammosum Pierre, see *Manilkara zapota* (L.) P. Royen

Calocarpum sapota (Jacq.) Merr., see *Manilkara zapota* (L.) P. Royen

Calophyllum inophyllum L.

Family: Calophyllaceae

Grin Nomen Number: 8631

Common Names: Alexandrian-laurel (English), alexandrinischer Lorbeer (German), balltree (English), beach calophyllum (English), beach touriga (English), beautyleaf (English), Borneo-mahogany (English), Indian doomba oiltree (English), Indian-laurel (English), kamani (Hawaiian), laurelwood (English), palo de Santa María (Spanish), palo María (Spanish), punnaga (India), satin touriga (English), tacamahac-tree (English), undi (Spanish).

Native: AFRICA – *East Tropical Africa:* Kenya, Tanzania; *South Tropical Africa:* Mozambique; *Western Indian Ocean:* Comoros, Madagascar, Mauritius, Seychelles; ASIA-TEMPERATE – *China:* China – Hainan; *Eastern Asia:* Japan – Ryukyu Islands, Taiwan; ASIA-TROPICAL – *Indian Subcontinent:* India, Sri Lanka; *Indo-China:* Cambodia, Myanmar, Thailand Vietnam; *Malesia:* Indonesia, Malaysia, Papua New Guinea, Philippines; AUSTRALASIA – *Australia:* Australia – Northern Territory, Queensland; PACIFIC – *Northwestern Pacific:* Guam, Marshall Islands, Micronesia, Northern Mariana Islands, Palau *South-Central Pacific:* Cook Islands, French Polynesia – Marquesas Islands, Society Islands; *Southwestern Pacific:* Fiji; Samoa.

Naturalized: Naturalized elsewhere.

Cultivated: also cultivated.

Listing Only: Holbrook 1967 (listed as “non-host or host of undetermined status”); Isnadi 1991 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); White and Elson-Harris 1992 (authors state “requires confirmation”).

Capparis citrifolia Lam., see *Capparis sepiaria* L.

Capparis sepiaria L.

Family: Capparaceae

Grin Nomen Number: 310623

Native: AFRICA – *Northeast Tropical Africa:* Chad, Ethiopia, Somalia, Sudan; *East Tropical Africa:* Kenya, Tanzania, Uganda; *West-Central Tropical Africa:* Burundi, Rwanda, Zaire; *West Tropical Africa:* Ghana, Mali, Niger, Nigeria, Senegal; *South Tropical Africa:* Angola, Malawi, Mozambique, Zambia, Zimbabwe; *Southern Africa:* South Africa – Eastern Cape, KwaZulu-Natal; Western Cape, Swaziland; *Western Indian Ocean:* Madagascar; ASIA-TEMPERATE – *China:* China – Guangdong, Guangxi, Hainan; ASIA-TROPICAL – *Indian Subcontinent:* Bangladesh, India, Nepal, Sri Lanka; *North Indian Ocean:* India – Andaman and Nicobar; Maldives; *Indo-China:* Cambodia, Laos, Myanmar, Thailand; *Malesia:* Indonesia – Celebes, Irian Jaya, Java, Lesser Sunda Islands, Moluccas; Malaysia, Papua New Guinea, Philippines; AUSTRALASIA – *Australia:* Australia – Northern Territory, Queensland, Western Australia.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, southern India

In 1992, *B. cucurbitae* was recovered from 1 sample of *C. sepiaria*. Infestation rate data not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Listing Only: CABI 2016 (listed as a wild host); Cantrell et al. 1999 (listed as *Capparis sepiaria*); De Meyer et al. 2014; Plantwise Knowledge Bank 2015.

Capparis thorellii Gagnep.

Family: Capparaceae

Grin Nomen Number: 467636

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, southern India

In 1992, *B. cucurbitae* was recovered from 1 sample of *C. thorellii*. Infestation rate data not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Listing Only: CABI 2016 (listed as *Capparis thorellii*; listed as a wild host); Cantrell et al. 1999 (listed as *Capparis thornellii*); De Meyer et al. 2014; Plantwise Knowledge Bank 2015.

Capsicum annuum L.

Family: Solanaceae

Grin Nomen Number: 8904

Common Names: ají (Spanish), American bird pepper (English), bell pepper (English), bird pepper (English), capsicum pepper (English), Cayenne pepper (English), Cayennepfeffer (German), cherry pepper (English), chile (Spanish), chile pequin (Spanish), chili pepper (English), chilipiquin (Spanish), chiltepe (Spanish), chiltepin (Spanish), chiltepinpeppar (Swedish), cone pepper (English), Gemüsepaprika (German), gochu (transcribed Korean), green capsicum (English-Australia), green pepper (English), guindilla (Spanish), jalapeno (Spanish), la liao (transcribed Chinese), long pepper (English), paprika (English), pasilla (Spanish), peperone (Italian), peperone dolce (Italian), peperoncino (Italian), piment annuel (French), piment doux (French), pimentão (Portuguese), pimento pepper (English), pimienta (Spanish), piquin (Spanish), poblano (Spanish), poivre de Cayenne (French), poivre d'Espagne (French), poivron (French), poivron doux (French), red capsicum (English), red cone pepper (English), red pep-

per (English), serrano (Spanish), spanischer Pfeffer (German), spanskpeppar (Swedish), sweet pepper (English), tō-garashi (Japanese Rōmaji), turkey pepper (English).

Native: NORTHERN AMERICA – *Southeastern U.S.A.*: United States – Florida, Georgia, Louisiana; *South-Central U.S.A.*: United States – Texas; *Southwestern U.S.A.*: United States – Arizona; *Northern Mexico*: Mexico – Baja Sur, Chihuahua, Nuevo Leon, San Luis Potosi, Sinaloa, Sonora, Tamaulipas; *Southern Mexico*: Mexico – Campeche, Chiapas, Guerrero, Jalisco, Michoacan, Morelos, Nayarit, Oaxaca, Queretaro, Quintana Roc, Tabasco, Veracruz, Yucatan; SOUTHERN AMERICA – *Caribbean*: Anguilla, Bahamas, Barbados, Cayman Islands, Dominica, Dominican Republic, Grenada, Guadeloupe, Haiti, Jamaica, Martinique, Montserrat, Netherlands Antilles, Puerto Rico, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines; *Central America*: Belize, Costa Rica, Guatemala, Honduras, Nicaragua, Panama; *Western South America*: Colombia.

Naturalized: Naturalized elsewhere.

Cultivated: Widely cultivated.

Field Infestation:

Liquido et al. 1994:

Hawaii island, Hawaii, U.S.A.

From July 1990 to October 1992, 5,066 (26.40 kg) ripe “on shrub” *C. annuum* fruits were collected (through collections made once or twice a month) from several sites on Hawaii Island, Hawaii. Fruits were weighed, counted, split into groups of 5 or 10, and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* was recovered from “on shrub” *C. annuum* fruits with an overall infestation rate of 0.0032 larvae and pupae per fruit (0.61 larvae and pupae/kg fruit).

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Capsicum annuum* fruit(s), originating in Hawaii, at an airport (Honolulu) in Hawaii on two occasions: once in 1992 and once in 1995. Average recovery was 2.5 live larvae.

Lab Infestation:

Chawla 1966:

In captivity, female *B. cucurbitae* adults (listed as *Dacus cucurbitae*) laid eggs on cut fruits of fresh green chillies (listed as *C. annum*). The eggs hatched out and the development of the larvae proceeded normally to adult emergence.

Listing Only: California Department of Food and Agriculture 2001 (listed as *Capsicum annum*); Cantrell et al. 1999; +Harris and Lee 1989 (listed as *Dacus cucurbitae*; listed as bell pepper); +Lall 1975 (listed as *Dacus cucurbitae*; listed as green pepper); +Margosian et al. 2009 (“possibly”; listed as bell pepper); Nishida and Bess 1957 (listed as *Dacus cucurbitae*; listed as peppers); +Okinawa Prefectural Fruit Fly Eradication Project 1987 (listed as *Dacus cucurbitae*; listed as green pepper); Rejesus et al. 1991 (listed as *Dacus cucurbitae*); Singh et al. 2004; Syed 1971 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host); Vargas et al. 2004; White and Elson-Harris 1992 (authors state “requires confirmation”).

Synonyms: *Capsicum cordiforme* Mill.

Capsicum annuum L. var. *annuum*

Family: Solanaceae

Grin Nomen Number: 311784

Common Names: ají (Spanish), bell pepper (English), capsicum pepper (English), Cayenne pepper (English), Cayennepfeffer (German), cherry pepper (English), chile (Spanish), chili pepper (English), cone pepper (English), Gemüsepaprika (German), green capsicum (English-Australia), green pepper (English), guindilla (Spanish), jalapeno (Spanish), long pepper (English), paprika (English), pasilla (Spanish), peperone (Italian), peperone dolce (Italian), peperoncino (Italian), piment doux (French), pimentão (Portuguese), pimento pepper (English), pimiento (Spanish), poblano (Spanish), poivre de Cayenne (French), poivre d’Espagne (French), poivron doux (French), red cone pepper (English), red

pepper (English), serrano (Spanish), spanischer Pfeffer (German), sweet pepper (English), tō-garashi (Japanese Rōmaji).

Cultivated: Only cultivated.

Field Infestation:

McBride and Tanada 1949:

Island of Oahu, Hawaii, U.S.A.

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was reared in 1946 by Y. Tanada from six varieties of bell pepper (Calwonder Early, Waialua, Large Early Neapolitan, Okamura M, Fordhook, and Manatu Wonder) which were growing on the farm of the University of Hawaii Agricultural Experiment Station. The infestation was rather severe, and many infested fruits dropped prematurely. The authors listed green pepper (listed as *C. frutescens* L. var. *grossum* [L.] Bailey) as an occasionally injured plant.

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 4,359 *C. annuum* var. *annuum* fruits (listed as *C. annuum* cv. *acuminatum*) were collected (23 collections overall) from three islands/island groups (Amami, Okinawa, Yaeyama) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 1 fruit, giving an average percentage infestation rate (weighted by the number of collections in the islands/island groups) of 0.0099%.

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 297,906 *Capsicum annuum* var. *annuum* fruits (listed as *C. annuum* cv. *glossum*) were collected (166 collections overall) from four islands/island groups (Amami, Miyako, Okinawa, and Yaeyama) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 106 fruits, giving an average percentage infestation rate (weighted by the number of collections in the islands/island groups) of 0.43%.

Mwatawala et al. 2010:

Morogoro Region, Tanzania

One thousand seven hundred forty-four (1,744) immature *C. annuum* var. *annuum* fruits (listed as *C. annuum* L. cov. *longum* and also referred to as paprika) (22.246 kg) were collected at irregular intervals between October 2004 and April 2008, from the Morogoro Region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupariation of infesting tephritid fruit flies. Emerged adults were removed and identified. *Bactrocera cucurbitae* flies were recovered from 5 of 147 collections (3.40%), with an overall infestation rate of 3.33 flies/kg fruit and 78.89 flies/kg infested fruit.

Nishida 1955:

Island of Oahu, Hawaii, U.S.A.

Infested *C. annuum* var. *annuum* fruits (listed as *Capsicum frutescens* L. var. *grossum* (L.) L. H. Bailey), with nearly full grown *B. cucurbitae* (listed as *Dacus cucurbitae*) larvae, were collected at cultivated areas in two locations on the Island of Oahu, Hawaii, between 1950 and 1951: Waiānae and Waimanalo. Larvae were extracted from fruits and placed in small wax paper cups containing pumpkin pulp. The cups were placed on sand in jars in which a high humidity was maintained. Forty (40) and 45 *B. cucurbitae* larvae were recovered from the fruits at the two sites, respectively. Number of fruits and infestation rate data were not given.

Interception Data:

USDA 1950:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from sweet bell pepper (*C. annuum* var. *annuum*; listed as *C. frutescens grossum*) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1947 and

30 June 1948 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1952a:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from sweet bell red pepper (*C. annuum* var. *annuum*; listed as *C. frutescens grossum*) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1949 and 30 June 1950 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1955:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from bell pepper (*C. annuum* var. *annuum*; listed as *C. frutescens grossum*) which originated in Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1952 and 30 June 1953 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1958:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from bell pepper (*C. annuum* var. *annuum*; listed as *C. frutescens grossum*) which originated in Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1956 and 30 June 1957 (number of individuals recovered and life stages not reported). Host was recovered by state inspectors in California.

USDA 1964:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from bell pepper (*C. annuum* var. *annuum*; listed as *C. annuum* var. *grossum*) which originated in Hawaii and was intercepted at stores in California (1 interception in non-entry host) between 1 July 1962 and 30 June 1963 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from chili pepper (*C. annuum* var. *annuum*; listed as *Capsicum annuum* var. *longum*) which originated in air baggage from Thailand (1 interception in consumption host) and intercepted in Hawaii between 1 July 1962 and 30 June 1963 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

Listing Only: De Meyer et al. 2014 (listed as *Capsicum annuum* cov. *longum*; also listed as paprika); De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*; listed as *Capsicum annuum* L. var. *longum* DC); Holbrook 1967 (listed as *Capsicum frutescens* L. var. *grossum* (L.) L. H. Bailey; listed as “rarely infested”); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *Capsicum frutescens grossum*); USDA 1986 (listed as *Dacus cucurbitae*; listed as *Capsicum annuum* var. *annuum* Group: *grossum*); USDA 1986 (listed as *Dacus cucurbitae*; listed as *Capsicum annuum* var. *annuum* Group: *longum*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as both *Capsicum frutescens* var. *grossum* and *C. frutescens* var. *longum*; insufficient data to justify regulation).

Synonyms: *Capsicum annuum* L. var. *acuminatum* Fingerh., *Capsicum annuum* L. var. *cerasiforme* (Mill.) Irish, *Capsicum annuum* L. var. *conoides* (Mill.) Irish, *Capsicum annuum* L. var. *fasciculatum* (Sturtev.) Irish, *Capsicum annuum* L. var. *grossum* (L.) Sendtn., *Capsicum annuum* L. var. *longum* Sendtn., *Capsicum cerasiforme* Mill., *Capsicum conoides* Mill., *Capsicum frutescens* L. var. *cerasiforme* (Mill.) L. H. Bailey, *Capsicum frutescens* L. var. *conoides* (Mill.) L. H. Bailey, *Capsicum frutescens* L. var. *fasciculatum* (Sturtev.) L. H. Bailey, *Capsicum frutescens* L. var. *grossum* (L.) L. H. Bailey, *Capsicum frutescens* L. var. *longum* (Sendtn.) L. H. Bailey, *Capsicum grossum* L., *Capsicum petenense* Standl.

Capsicum annuum L. var. *acuminatum* Fingerh., see *Capsicum annuum* L. var. *annuum*

Capsicum annuum L. var. *cerasiforme* (Mill.) Irish, see *Capsicum annuum* L. var. *annuum*

Capsicum annuum L. var. *conoides* (Mill.) Irish, see *Capsicum annuum* L. var. *annuum*

Capsicum annuum L. var. *fasciculatum* (Sturtev.) Irish, see *Capsicum annuum* L. var. *annuum*

Capsicum annuum L. var. *grossum* (L.) Sendtn., see *Capsicum annuum* L. var. *annuum*

Capsicum annuum L. var. *longum* Sendtn., see *Capsicum annuum* L. var. *annuum*

Capsicum assamicum Purkayastha and L. Singh, see *Capsicum frutescens* L.

Capsicum cerasiforme Mill., see *Capsicum annuum* L. var. *annuum*

Capsicum cordiforme Mill., see *Capsicum annuum* L.

Capsicum conoides Mill., see *Capsicum annuum* L. var. *annuum*

Capsicum frutescens L.

Family: Solanaceae

Grin Nomen Number: 8913

Common Names: ají (Spanish), bird pepper (English), capsicum (English), chile (Spanish), Chillies (German), fan jiang (transcribed Chinese), guindilla (Spanish), hot pepper (English), kidachi-tō-garashi (Japanese Rōmaji), pimenta-malagueta (Portuguese), poivre rouge (French), red chili (English), spur pepper (English), Tabasco pepper (English), tabascopeppar (Swedish).

Native: NORTHERN AMERICA – *Southern Mexico*: Mexico – Chiapas, Oaxaca, Tabasco, Veracruz; SOUTHERN AMERICA – Central America: Central America; *Northern South America*: French Guiana, Guyana, Suriname, Venezuela; *Brazil*: Brazil; *Western South America*: Colombia, Ecuador, Peru.

Cultivated: AFRICA – Africa; ASIA-TROPICAL – *Indian Subcontinent*: India; PACIFIC – *South-Central Pacific*: French Polynesia; widely cultivated in neotropics.

Field Infestation:

Liquido et al. 1994:

Hawaii island, Hawaii, U.S.A.

From July 1990 to October 1992, 2,180 (0.38 kg) ripe tree or ground *C. frutescens* fruits were collected (through collections made once or twice a month) from several sites on Hawaii Island, Hawaii. Fruits were weighed, counted, split into groups of 5 or 10, and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* larvae and pupae were recovered from infested *C. frutescens* fruits with an overall infestation rate of 0.00046 larvae and pupae per fruit (2.63 larvae and pupae/kg fruit).

Vayssières et al. 2007:

Benin, Burkina Faso and Mali, West Africa

Tephritid fruit fly-infested *Capsicum frutescens* fruits were collected from untreated orchards in West Africa. Fruits were placed on mesh supports over sand. Tephritid fruit fly pupae, recovered through weekly sieving of the sand, were transferred to small hatching boxes lined with wet blotting paper and held for adult emergence. The average *B. cucurbitae* infestation level in *C. frutescens* fruits in West Africa fell in the range of 1–25 pupae/kg fruit.

Interception Data:

USDA 1948a:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from pepper (*C. frutescens*) which originated in Hawaii and was intercepted at a port in Washington (3 interceptions in non-entry hosts) between 1 July 1945 and 30 June 1946 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1948b:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from pepper (*C. frutescens*) which originated from a port in Hawaii and was intercepted at ports in California and Washington (15 interceptions in non-entry hosts) between 1 July 1946 and 30 June 1947 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1953:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from pepper (*C. frutescens*) which originated from a port in Hawaii and was intercepted at a port in Texas (1 interception in non-entry host) between 1 July 1951 and 30 June 1952 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1954:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from pepper (*C. frutescens*) which originated from Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1952 and 30 June 1953 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1955:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from pepper (*C. frutescens*) which originated in Hawaii and was intercepted at a port in California (2 interceptions in non-entry hosts) between 1 July 1952 and 30 June 1953 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

Listing Only: California Department of Food and Agriculture 2001; Cantrell et al. 1999; Chawla 1966 (listed as *Dacus cucurbitae*); De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Dhillon et al. 2005a; Kapoor 1970 (listed as *Dacus cucurbitae*); Kapoor 1991 (listed as *Dacus cucurbitae*); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as *Capsicum frutescens* and as both chilli and green pepper); Singh et al. 2004; Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); Vijaysegaran 1991 (listed as *Dacus cucurbitae*); White and Elson-Harris 1992 (authors state “requires confirmation”); Yunus and Hua 1980 (listed as *Dacus cucurbitae*).

Synonyms: *Capsicum assamicum* Purkayastha and L. Singh, *Capsicum minimum* Blanco

Capsicum frutescens L. var. *cerasiforme* (Mill.) L. H. Bailey, see *Capsicum annuum* L. var. *annuum*

Capsicum frutescens L. var. *conoides* (Mill.) L. H. Bailey, see *Capsicum annuum* L. var. *annuum*

Capsicum frutescens L. var. *fasciculatum* (Sturtev.) L. H. Bailey, see *Capsicum annuum* L. var. *annuum*

Capsicum frutescens L. var. *grossum* (L.) L. H. Bailey, see *Capsicum annuum* L. var. *annuum*

Capsicum frutescens L. var. *longum* (Sendtn.) L. H. Bailey, see *Capsicum annuum* L. var. *annuum*

Capsicum grossum L., see *Capsicum annuum* L. var. *annuum*

Capsicum minimum Blanco, see *Capsicum frutescens* L.

Capsicum petenense Standl., see *Capsicum annuum* L. var. *annuum*

Capsicum spp.

Family: Solanaceae

Grin Nomen Number: 300105

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Capsicum* sp. fruit(s), originating in Hawaii, at an airport in Hawaii (Honolulu) on two occasions: once in 2001 and once in 2005. Average recovery was 5.5 live larvae.

Listing Only: +Hardy and Adachi 1956 (listed as *Dacus cucurbitae* Coquillett; listed as peppers); Hollingsworth et al. 1996; Isnadi 1991 (listed as *Dacus cucurbitae*); +Kalshoven 1981 (listed as *Dacus cucurbitae*; listed as pepper); Kandybina 1987 (listed as *Dacus cucurbitae*); +Kapoor 1989 (listed as *Dacus cucurbitae*; listed as chillies); +Kapoor 2005–2006 (listed as American chillies); +Mathew et al. 1999 (listed as chilli); +Mau et al. 2007 (listed as peppers); Meksongsee et al. 1991 (listed as *Dacus cucurbitae*; listed both as *Capsicum* sp. and as chilli); +NAPPO, PAS 2015 (listed as chili peppers); Oakley 1950 (listed as *Dacus cucurbitae*); +Rajamannar 1962 (listed as *Dacus cucurbitae*; listed as pepper); +Ramadan and Messing 2003 (listed as peppers); +Rejesus et al. 1991 (listed as *Dacus cucurbitae*; listed as peppers); +Tsatsia and Hollingsworth 1997 (listed as capsicum); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); +Yong 1992 (listed as *Dacus cucurbitae*; listed as chilli).

Carica papaya L.

Family: Caricaceae

Grin Nomen Number: 9147

Common Names: mamão (Portuguese-Brazil), mamón (Spanish), Melonenbaum (German), papia (Portuguese-Brazil), papaja (Swedish), Papajabaum (German), Papajapflanze (German), papaya (English), papayer (French), papayero (Spanish), pawpaw (English-Australia).

Native: NORTHERN AMERICA – Mexico; SOUTHERN AMERICA – *Central America*: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama.

Naturalized: AFRICA: *East Tropical Africa* – Tanzania, *South Tropical Africa* – Malawi; NORTHERN AMERICA – *Southeastern U.S.A.*: United States – Florida; SOUTHERN AMERICA – *Brazil*: Brazil; *Caribbean*: Bahamas, Cuba, Dominican Republic, Grenada, Guadeloupe, Haiti, Jamaica, Martinique, Puerto Rico, St. Vincent and Grenadines, Trinidad and Tobago, Virgin Islands (U.S.); *Northern South America*: French Guiana, Guyana, Suriname, Venezuela; *Brazil*: Brazil; *Western South America*: Bolivia, Colombia, Ecuador, Peru; *Southern South America*: Argentina, Paraguay.

Cultivated: ASIA-TROPICAL – *Malesia*: Philippines; AUSTRALASIA – *Australia*: Australia; PACIFIC – *North-Central Pacific*: United States – Hawaii.

Field Infestation:

+Back and Pemberton 1918:

Honolulu, Hawaii, U.S.A.

Carica papaya (listed as papaya) is listed as “occasionally infested” by *B. cucurbitae*. The authors state that adult melon flies have been reared from papaya, but that papaya does not serve regularly as a host; that it is attacked by melon fly only in rare instances, and then only slightly.

+Couey et al. 1984:

Hilo and Kona District, Hawaii Island, Hawaii, U.S.A.

From March 1979 to August 1981, 2,723 one-half ripe *C. papaya* fruits (1,350.5 kg) and 2,390 ripe *C. papaya* fruits (1,121.7 kg) (listed as papaya) were collected from picking bins at a Hilo area packing house. Fruits were held at ambient temperature (19–24°C) for 4 weeks in wood and screen trays over sand in fiberglass holding boxes. Pupae were removed from the sand and held for adult emergence and species identification. Recovery was 4,366 pupae from one-half ripe papayas and 61,592 pupae from ripe papayas of which 3.1% (135) and 7.1% (4,373) were *B. cucurbitae* (listed as *Dacus cucurbitae*), respectively (0.100 and 3.90 pupae/kg fruit, respectively). Over 90% of the recovered pupae at both ripeness stages were *B. dorsalis* (listed as *Dacus dorsalis*).

From May to July, 1979, 330 one-half ripe papayas (135.8 kg) and 33 ripe papaya (146.4 kg) were collected in fields in the Kona District and held as described above. Recovery was 6 pupae from one-half ripe papayas and 2,964 pupae from ripe papayas of which 0.0% (0) and 0.1% (1) were *B. cucurbitae*, respectively (0.0 and 0.0068 pupae/kg fruit, respectively). Over 99% of the recovered pupae at both ripeness stages were *B. dorsalis*.

Liquido et al. 1989:

Maui and Hawaii Islands, Hawaii, U.S.A.

Ripe *C. papaya* fruits (cv. ‘Kapoho Solo’) were collected from the tree and from the ground from ten locations on the Island of Maui (1949–1952) and from nine locations on Hawaii Island (1950–1981). Fruits were held over sand in fiberglass boxes. The sand was sieved to recover pupariating larvae and pupae which were then transferred to 0.25 liter jars containing sand and held for adult

emergence. Out of 303 fruits collected on the Island of Maui, no *B. cucurbitae* (listed as *Dacus cucurbitae*) were recovered, while 0.02 *B. cucurbitae* per fruit were recovered from 3,107 fruits collected on Hawaii Island.

Kealahou, Hawaii island, Hawaii, U.S.A.

Carica papaya fruits of four to five ripeness categories were randomly collected weekly from May to July 1979 and monthly from September 1979 to April 1980 from orchards in lower Kealahou and held similarly to the methods described above. Fruits were held separately by ripeness category (mature green, color break, one-fourth-ripe, half-ripe and fully ripe). From the weekly samples, no *B. cucurbitae* was recovered from 300 mature green fruits, 300 one-fourth-ripe fruits or from 300 half-ripe fruits, while 0.003 flies per fruit were recovered from 300 fully ripe fruits. From the monthly samples, no *B. cucurbitae* was recovered from 247 mature green fruits, 89 color break fruits, 267 one-fourth-ripe fruits, 254 half-ripe fruits or from 292 fully ripe fruits.

Puna, Hawaii island, Hawaii, U.S.A.

Carica papaya fruits of five ripeness categories (mature green, one-fourth-ripe, half-ripe, three-fourths-ripe and fully ripe) were collected biweekly from November 1985 to December 1986 in four papaya orchards in the District of Puna. Fruits were held over wheat bran media in plastic buckets. The bran medium was sieved to recover pupariating larvae and pupae which were transferred to 0.25 liter plastic cups containing sand and held for adult emergence. For mature green fruits, 5 of 1,669 were infested by *B. cucurbitae*, with averages of 0.23% of fruits infested and an average of 0.020 *B. cucurbitae* per fruit. For one-fourth-ripe fruits, 8 of 2,092 were infested by *B. cucurbitae*, with averages of 0.325% of fruits infested and an average of 0.011 *B. cucurbitae* per fruit. For half-ripe fruits, 23 of 1,536 were infested by *B. cucurbitae*, with averages of 1.35% of fruits infested and an average of 0.78 *B. cucurbitae* per fruit. For three-fourths-ripe fruits, 86 of 1,367 were infested by *B. cucurbitae*, with averages of 4.49% of fruits infested and an average of 0.67 *B. cucurbitae* per fruit. For fully ripe fruits, 248 of 1,352 were infested by *B. cucurbitae*, with averages of 12.96% of fruits infested and an average of 2.26 *B. cucurbitae* per fruit. The maximum rates of infestation were found in the Nanawale papaya orchard where percentages were 0.92, 0.79, 3.78, 14.23, and 35.21% in the five fruit ripeness categories, respectively.

Liquido 1990:

Puna, Hawaii island, Hawaii, U.S.A.

Carica papaya cv. 'Kapoho Solo' fruits of three maturity classes were collected from 1.5–2-year-old trees in two orchards in Puna from June 1987 to April 1989 to assess the effect of morphological defects in the blossom end of *C. papaya* fruits on infestation rates by *B. cucurbitae* (listed as *Dacus cucurbitae*). The condition of the blossom end of the fruit was noted for each collected fruit (normal, pinhole or navel [resembling the blossom end of navel oranges]). Collected fruits were held for the assessment of infestation by tephritid fruit flies as described above in Liquido et al. 1989. Among mature green to color-break fruits, only 1 normal fruit (out of 3,048 fruits; 0.033%) was infested by *B. cucurbitae*, while no fruits with aberrant blossom ends were infested (582 small pinhole fruits, 65 large pinhole fruits and 17 navel fruits). Among quarter- to half-ripe fruits, 12 normal fruits (out of 1,547 fruits; 0.78%) and 3 small pinhole fruits (out of 454 fruits; 0.66%) were infested while no infestation was found in large pinhole fruits (out of 45) or navel fruits (out of 7). Among three-quarters-ripe to fully ripe fruits, 26 normal fruits (out of 735 fruits; 3.5%), 2 small pinhole fruits (out of 187 fruits; 1.1%) and 1 large pinhole fruit (out of 35 fruits; 2.9%) were infested while no navel fruits (out of 7) were infested.

Liquido 1991a:

Kalapana, Hawaii island, Hawaii, U.S.A.

Carica papaya cv. 'Kapoho Solo' fruits of three maturity classes, as well as fully ripe fruit on trees versus on the ground, were collected from an orchard in Kalapana to assess the effect of fruit ripeness and location (fully ripe fruits on trees versus on the ground) on parasitization of *B. cucurbitae* (listed as *Dacus cucurbitae*) by braconid parasitoids. Fruits were held over wheat bran media in plastic buckets. The bran medium was sieved to recover pupariating larvae and pupae which were transferred to 0.25 liter plastic cups containing sand and held for adult emergence. The number of *B. cucurbitae* per fruit averaged (by month of collection) 0.002 (range: 0.0 – 0.02), 0.04 (range: 0.0–0.47), 0.39 (range: 0.0–3.06), and 19.82 (range: 8.62–36.59) in mature green to color break fruits, quarter- to half-ripe fruits, fully ripe tree fruits and fully ripe ground fruits, respectively.

Liquido 1991b:

Kalapana, Hawaii island, Hawaii, U.S.A.

Three-quarters-ripe to fully ripe, tree and ground *C. papaya* cv. 'Kapoho Solo' fruits were collected weekly between August 1988 and May 1990 from a papaya orchard in Kalapana. Fruits were held over wheat bran media in plastic buckets. The bran medium was sieved to recover pupariating larvae and pupae which were transferred to 0.25 liter plastic cups containing sand and held for adult emergence. The density (by month) per fruit of *B. cucurbitae* (listed as *Dacus cucurbitae*) in fruits on the ground and in trees ranged from 5.80 to 44.79 and from 0.0 to 1.44, respectively. Average infestation rates (by month) in fruits on the ground and in trees ranged between 36 and 83%, and between 0.0 and 9.0%, respectively.

Liquido 1991c:

Molooa, Island of Kauai, Hawaii, U.S.A.

Carica papaya cv. 'Waimanalo' fruits of six visual ripeness categories were collected weekly from January 1988 to September 1990 from a papaya orchard in Molooa, Island of Kauai. Fruits were held over wheat bran media in plastic buckets. The bran medium was sieved to recover pupariating larvae and pupae which were transferred to 0.25 liter plastic cups containing sand and held for adult emergence. *Bactrocera cucurbitae* infestation was observed only in 3 fully ripe fruits (out of 367 fruits; 0.82%). One (1) fruit in May 1990 had 2 *B. cucurbitae* larvae and 2 fruits in September 1990 each had 3 *B. cucurbitae* larvae. No *B. cucurbitae* infestation was found in mature green (585 fruits), color break (174), quarter-ripe (154), half-ripe (187) or three-quarters-ripe (410) fruits.

Liquido and Cunningham 1990:

Puna, Hawaii island, Hawaii, U.S.A.

Carica papaya cv. 'Kapoho' fruits of six visual ripeness categories (mature green, color-turning, one-fourth-ripe, half-ripe, three-fourths-ripe and fully ripe) were collected biweekly from September 1985 to July 1988 from five papaya orchards in the District of Puna to determine the relationship between colorimetric quantitative ripeness indices and rates of infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). Hunter LabScan Spectrocolorimeter readings for all fruits were taken for the blossom end and for the most yellow spot on the fruit. Fruits were held over wheat bran media in plastic buckets. The bran medium was sieved to recover pupariating larvae and pupae which were transferred to 0.25 liter plastic cups containing sand and held for adult emergence. For fruits where the blossom end *b* value (*Bb*) was ≤ 23.4 and the most yellow spot *b* value (*Yb*) was ≤ 27.4 , 8 of 6,877 fruits (0.12%) were infested by *B. cucurbitae*. When $Bb \leq 23.4$ and $Yb \geq 27.5$, 5 of 823 fruits (0.61%). When $Bb \geq 23.5$ and $Yb \leq 27.4$, 3 of 780 fruits (0.38%) were infested. When $Bb \geq 23.5$ and $Yb \geq 27.5$, 324 of 6,713 fruits (4.8%) were infested. It was concluded that *B. cucurbitae* can infest papaya fruits at all levels of maturity or ripeness as measured by *Bb* and *Yb* values of the fruits.

McBride and Tanada 1949:

Kailua, Island of Oahu, Hawaii, U.S.A.

C. B. Keck observed *Bactrocera cucurbitae* (listed as *Dacus cucurbitae*) ovipositing in a small, ripe *C. papaya* fruit in Kailua, on the Island of Oahu, on 28 August 1946. The fruit was placed over sand in a cage and 55 melon flies were recovered. The authors listed *C. papaya* as a fruit that is rarely injured.

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 2,906 *C. papaya* fruits were collected (95 collections overall) from four islands/island groups (Amami, Miyako, Okinawa, Yaeyama) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 9 fruits, giving an average percentage infestation rate (weighted by the number of collections in each of the islands/island groups) of 0.31%.

Mwatawala et al. 2009a:

Morogoro Region, Central Tanzania

Mature *C. papaya* fruits were randomly collected at regular intervals between October 2004 and October 2006 from areas within the Sokoine University of Agriculture campus in Morogoro

and from Nyandira, Mikese, Mkindo in the Morogoro region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupation of infesting tephritid fruit flies. Emerged adults were removed and identified. One (1) of 11 (9.09%) *C. papaya* samples (6.51 kg) was infested by *B. cucurbitae*.

Mwatawala et al. 2009b:

Morogoro Region, Central Tanzania

Carica papaya fruits were randomly collected weekly between October 2004 to October 2006 and between August to December, 2007 from areas within the Sokoine University of Agriculture campus in Morogoro and from Nyandira, Mikese, Mkindo in the Morogoro region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupation of infesting tephritid fruit flies. Emerged adults were removed and identified. Out of 43 collected fruits (13.462 kg), infestation by *B. cucurbitae* averaged 0.15 emerged adults per kg fruit.

Mwatawala et al. 2010:

Morogoro Region, Central Tanzania

Ninety-nine (99) mature *C. papaya* fruits (28.663 kg) were collected at irregular intervals between October 2004 and April 2008, from the Morogoro Region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupariation of infesting tephritid fruit flies. Emerged adults were removed and identified. *Bactrocera cucurbitae* flies were recovered from 1 of 38 collections (2.63%), with an overall infestation rate of 0.07 flies/kg fruit and 4.31 flies/kg infested fruit.

+*Nishida 1953:*

Island of Oahu, Hawaii, U.S.A.

Infested *C. papaya* fruits (listed as papaya) were collected at cultivated areas in Waimanalo on the Island of Oahu, Hawaii between 1950 and 1951. Nine hundred and one (901) *B. cucurbitae* larvae (listed as *Dacus cucurbitae*) were recovered from the fruits. Number of fruits and infestation rate data were not given.

Nishida 1955:

Island of Oahu, Hawaii, U.S.A.

Infested *C. papaya* fruits, with nearly full grown *B. cucurbitae* (listed as *Dacus cucurbitae*) larvae, were collected at cultivated areas in the Waimanalo area on the Island of Oahu, Hawaii between 1950 and 1951. Larvae were extracted from fruits and placed in small wax paper cups containing pumpkin pulp. The cups were placed on sand in jars in which a high humidity was maintained. Nine hundred and one (901) *B. cucurbitae* larvae were recovered from the fruits. Number of fruits and infestation rate data not given.

+*Nishida and Haramoto 1953:*

Island of Oahu, Hawaii, U.S.A.

Twenty-one (21) *C. papaya* fruits (listed as papaya) were collected from three sites (Waianae, Manoa Valley, Waimanalo) on the Island of Oahu, Hawaii where adult flies of both *B. cucurbitae* (listed as *Dacus cucurbitae*) and *B. dorsalis* (listed as *D. dorsalis*) were known to be present. Fruits were held in containers until adult emergence. On average, 42.0% of tephritids recovered were *B. cucurbitae* with an average recovery of 44.9 *B. cucurbitae* per fruit (range: 0–215).

Island of Oahu, Hawaii, U.S.A.

Tephritid fruit fly puparia were recovered from field-infested *C. papaya* fruits (listed as papaya), separated by species (*B. cucurbitae* [listed as *Dacus cucurbitae*] and *B. dorsalis* [listed as *Dacus dorsalis*]), and held for adult emergence. Out of 221 adult tephritids that emerged, 33 were *B. cucurbitae* and 188 were *B. dorsalis*.

Tsuruta et al. 1997:

Sri Lanka

Four (4) adult *B. cucurbitae* were recovered from an unspecified number of *C. papaya* fruits collected from the Kiralogama area of Sri Lanka. No infestation rate data were given.

Vargas et al. 1990:

Island of Kauai, Hawaii, U.S.A.

During March 1987 and February 1989, 13 (year one) and 8 (year two) samples of *Carica papaya* fruits were collected in the Moloaa area on the Island of Kauai. Fruits were placed on metal

trays in plastic holding boxes containing sand. Mature *B. cucurbitae* (listed as *Dacus cucurbitae*) larvae and pupae, recovered through weekly sifting of the sand, were held for adult emergence. Out of 600 fruits collected in year one, 3,226 tephritid fruit fly pupae were recovered, from which only *B. dorsalis* (listed as *Dacus dorsalis*) adults emerged. Out of 122 fruits collected in year two, 3,755 tephritid fruit fly pupae were recovered, from which 1,626 *B. dorsalis* and 1 *B. cucurbitae* adults emerged. *Bactrocera cucurbitae* year two infestation rate was 0.02 adults per kg fruit.

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Carica papaya* fruit(s), originating in Hawaii, at airports in Hawaii on 18 occasions (Hilo–2; Kailua-Kona–3; Honolulu–11; Kahului–2) between 1995 and 2005. Average recovery was 14.8 live larvae.

USDA 1924:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from *C. papaya* which originated from a port in Hawaii and was intercepted at a port in Pennsylvania between 1 January 1923 and 31 December 1923. Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1948a:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from papaya (*C. papaya*) which originated in Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1945 and 30 June 1946 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

Lab Infestation:

Arévalo-Galarza and Follett 2011:

Two (2) half- to three-quarters-ripe *C. papaya* fruits were placed inside a screen cage with 50 gravid female *B. cucurbitae* for 6 hours, after which the infested fruits were removed from the cage and held over sand for 2 weeks for pupariation and adult eclosion (three replications). An average of 264 *B. cucurbitae* pupae was recovered from the *C. papaya* fruits.

In a second study, 2 half- to three-quarters-ripe papaya fruits were placed inside a screen cage with 50 gravid female *B. cucurbitae* for 24 hours, after which the infested fruits were removed from the cage and held over sand for 2 weeks for pupariation and adult eclosion (three replications as a control for egg stage quarantine treatment tests and three replications as a control for 1st instar stage quarantine treatment tests). Averages of 218.8±62.8 and 106.7±24.7 pupae per fruit were recovered from the control fruits for the egg test and the 1st instar test, respectively.

Armstrong et al. 1989:

Color break to half-ripe *C. papaya* fruits (variety ‘Solo’) were artificially infested by three different developmental stages (egg, 1st instar, and 3rd instar) of *B. cucurbitae* (listed as *Dacus cucurbitae*). Approximately one hundred fifty (150) 1–18-h-old eggs were inserted under a plug taken from the papaya fruit (egg stage [12 replications]; fruits held 24 h after infestation to get 1st instar stage [9 replications]), while approximately one hundred (100) 3rd instars reared from eggs placed on larval diet were placed under the plug for the 3rd instar stage tests [18 replications]. Infested fruits were placed on trays with dry larval rearing diet and held for 2 weeks. Recovered pupae were held for adult emergence. *Bactrocera cucurbitae* recovery was 33,122 adults from 65.96 kg of *C. papaya* fruits (502.2 adults/kg fruit) [egg stage tests]; 33,491 adults from 63.15 kg of *C. papaya* fruits (530.3 adults/kg fruit) [1st instar tests]; and 25,981 adults from 101.64 kg of *C. papaya* fruits (255.6 adults/kg fruit) [3rd instar tests].

Armstrong et al. 1995:

Color break to half-ripe *C. papaya* fruits (variety ‘Kapoho Solo’) were artificially infested by three different developmental stages (egg, 1st instar and 3rd instar) of *B. cucurbitae*. Approximately one hundred fifty (150) 1–18-h-old eggs were inserted under a plug taken from the papaya fruit (egg stage [5 replications]; fruits held 24 h after infestation to get 1st instar stage [five replications]), while approximately one hundred (100) 3rd instars reared from eggs placed on larval diet were placed under the plug for the 3rd instar stage tests [five replications]. Infested fruits were placed on trays with dry

larval rearing diet and held for 2 weeks. Recovered pupae were held for adult emergence. *Bactrocera cucurbitae* recovery was 14,918 adults from 29.82 kg of *C. papaya* fruits (500.3 adults/kg fruit) [egg stage tests]; 14,325 adults from 27.04 kg of *C. papaya* fruits (529.8 adults/kg fruit) [1st instar tests]; and 20,691 adults from 24.64 kg of *C. papaya* fruits (839.7 adults/kg fruit) [3rd instar tests].

Back and Pemberton 1914:

Eleven (11) *B. cucurbitae* larvae were able to complete instars one–three on *C. papaya*, transferred from one piece of pulp to a fresh piece of pulp, in an average time of 4 days and 12.8 hours at an average temperature of 25.8°C.

+*Back and Pemberton 1917:*

Twelve (12) *B. cucurbitae* larvae were able to complete instars one–three on *C. papaya* (listed as papaya), transferred daily from one piece of pulp to a fresh piece of pulp, in an average time of 4 days and 10.9 hours at an average temperature of 25.8°C.

Carey et al. 1985:

Fifty (50) newly hatched 1st generation *B. cucurbitae* larvae (listed as *Dacus cucurbitae*) (four replications) were added to a small portion of *C. papaya* fruit and held at 25 (±2.0)°C and 60.0 (±6.0)% RH in a covered Petri plate, with additional host material added as needed. When some of the larvae approached maturity, the Petri plate was opened and placed in sand in a larger container to allow for pupation. The sand was then sifted daily to recover pupae which were held at the same conditions of temperature and relative humidity. On average, 85% of the larvae survived to adult emergence, with an average larval to adult development time of 18.7 days.

Chawla 1966:

In captivity, female *B. cucurbitae* adults (listed as *Dacus cucurbitae*) laid eggs on cut fruits of *C. papaya*. The eggs hatched and larval development proceeded normally through adult emergence.

+*Couey and Hayes 1986:*

Carica papaya fruits (listed as papaya) were harvested at early color stages to minimize natural infestation, then held for 2 to 3 days under fly-free conditions. Seventy-five (75) fruits (41.8 kg) were exposed to ca. 15,000 adult *B. cucurbitae* flies (listed as *Dacus cucurbitae*) (~1/2 gravid females) for 24 h. The control fruits were held for 2 weeks in a cabinet on fruit fly rearing diet with sand at the bottom, from which 18,308 pupae (438.0 pupae/kg fruit) were recovered.

+*Couey et al. 1984:*

An unspecified number of *C. papaya* fruits (listed as papaya), of unspecified maturity level, weighing 164.4 kg, was exposed to gravid *B. cucurbitae* females (listed as *Dacus cucurbitae*) for 24 hours. Fruits were held at ambient temperature (19–24°C) for 4 weeks in wood and screen trays over sand in fiberglass holding boxes. Pupae were removed from the sand and held for adult emergence. Recovery was 30,554 pupae for an infestation rate of 185.9 *B. cucurbitae* per kg fruit.

Dong et al. 2011:

Infestation was tested for mature green, 1–2-yellow-stripe, 2–3-yellow-stripe, 5-yellow-stripe, and mature yellow (fully ripe) *C. papaya* fruits var. ‘Tainung No. 2’, and mature green, quarter-, half-, and mature-yellow fruits of *C. papaya* var. ‘Sunrise’. In separate screen cages, three adult fly densities (5, 10, and 20 pairs) were introduced to individual fruits with results replicated 10 or 15 times. In variety ‘Tainung No. 2,’ there was 33.3% infestation in 5-yellow-stripe fruits infested by 20 pairs (8.9±14.0 [standard error] eggs per fruit); 33.3% infestation in mature-yellow fruits (37.8±70.5 eggs per fruit). No infestation was observed for other ripeness categories and fly introduction densities. In variety ‘Sunrise’, there was 6.7% infestation in quarter-yellow fruits infested by 20 pairs (5.4±20.9 eggs per fruit); 33.3% infestation in half-yellow fruits infested by 20 pairs (16.3±36.2 eggs per fruit); 20.0% (20.1±46.9), 40.0% (83.4±131.6), and 40.0% (112.9±242.0) infestation (eggs per fruit) in mature-yellow fruits for fruits infested by 5, 10, and 20 pairs respectively. No infestation was observed for other ripeness categories and fly introduction densities.

Follett et al. 2009:

Five (5) *C. papaya* cv. ‘Rainbow’ fruits (average of 327.9 g), each force-infested by 50 gravid female *B. cucurbitae* in an outdoor screen cage for 6 hours, yielded an average (±SEM) of 546.6 (±150.6) puparia, equivalent to 1710 (±520) pupae/kg fruit, with 61.2% (±7.7%) adult emergence from the puparia.

Follett et al. 2011:

One ripe *C. papaya* cv. 'Rainbow' fruit (average weight 297.5 g) was exposed to 50 gravid *B. cucurbitae* adults flies in an outdoor screen cage for 6 hours, then held for recovery of puparia and adult emergence (eight replicates). An average of 451.6 puparia (1,440 puparia/kg fruit) was recovered, with an average of 81.5% adult emergence.

Follett and Zee 2011:

One (1) ripe *C. papaya* cv. 'Rainbow' fruit (373.7 g) was exposed to 25 gravid female *B. cucurbitae* adults in an outdoor screen cage for 24 hours, then held for recovery of puparia and adult emergence. Five hundred sixty-eight (568) puparia (1,520 puparia/kg fruit) were recovered, and 402 (70.8%) adults emerged (1,076 adults/kg fruit).

Harris and Bautista 1996:

For a laboratory study of parasitization by *Fopius arisanus* (listed as *Biosteres arisanus*), clutches of 110 *B. cucurbitae* eggs (3–4 hours old) were inserted in each of ten holes (4–5 mm deep) perforated into the fruit surface of *C. papaya* fruits trimmed into sections (8 x 3 x 1 cm) (a total of 1,100 eggs per fruit section), with seven replications. Inoculated fruits were exposed to 50 male and 50 female 21-day-old *F. arisanus* adults for 24 hours. Samples of 100 eggs were then removed from each fruit section to check for incidence of parasitization. Fruit sections (with 1,000 eggs) were placed in plastic cups containing about 150 g wheat diet and held for 15 days after which pupae were recovered. Pupae were then held until adult emergence of *B. cucurbitae* and parasitoids. On average, 44.7% (and as high as 81%) of the *B. cucurbitae* eggs developed to emerge as adults.

McQuate et al. 2015:

Thirty-three (33) *C. papaya* fruits (17.07 kg) were individually held in 26.5 x 26.5 x 26.5 cm cubical screened cages for 24 hours with 50 gravid female *B. cucurbitae* flies. Following exposure to flies, fruits were transferred individually onto sand in 5 liter screen-topped plastic buckets. Two (2) weeks later, sand from the buckets was sieved and fruits cut open to recover all pupariating larvae and pupae, which were then held on sand in screened-topped cups until adult emergence. All 33 fruits (100%) were infested by *B. cucurbitae*, with an overall infestation rate of 409.8 pupae/kg fruit and 288.8 adults per kg fruit.

Ponce 1937:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was reared in the laboratory on *C. papaya* fruit. At a mean temperature of 29.15°C, the overall larval period lasted 5.0 days, based on "three cultures" (replications).

Rajamannar 1962:

Using *B. cucurbitae* (listed as *Dacus cucurbitae*) 1st instar larvae obtained from eggs oviposited on bottle gourd (*Lagenaria siceraria*; listed as *L. vulgaris*), 56 of 100 (56%) 1st instar larvae raised on *C. papaya* (listed as papaya) fruit pupated, with an average time to pupation of 6.6 days. In a separate test, 98 of 100 (98%) 1st instar larvae were found to feed on pieces of *C. papaya* fruit (an average of 19.6 out of 20 larvae, based on five replicated trials).

+*Seo et al. 1973:*

Carica papaya fruits (listed as papaya) were infested by *B. cucurbitae* (listed as *Dacus cucurbitae*) by exposing fruits to about 50,000 adults for 3 days in an outdoor cage. Twenty-five percent of the exposed fruits were placed in holding boxes and held at 16–31°C. Surviving pupae were collected and counted. A high number of pupae was recovered and was used to estimate the number of pupae that would have been expected to be present in fruits subjected to irradiation. No infestation rate given.

Tsatsia and Hollingsworth 1997:

Various numbers of *B. cucurbitae* eggs were added to either whole or sections of *C. papaya* fruits. Fruits were held over sterilized sawdust from which pupae were obtained. Pupae were obtained from each of the 6 *C. papaya* fruits that were infested, with no dead larvae observed. On average, about 331 pupae were recovered per kg fruit (range: 122–873).

Vargas and Carey 1990:

One hundred (100) *B. cucurbitae* (listed as *Dacus cucurbitae*) eggs, placed on moist blotting paper, were placed on 40 g pieces of fresh *C. papaya* fruits (12 replications). Fruit was replaced as needed. Mature larvae were placed in plastic cups holding vermiculite as a pupation medium. Pupae were recovered after 8 days and held in plastic cups until eclosion. Emerged adults were used in stud-

ies to document survival and demographic parameters for *B. cucurbitae*. Duration of the *B. cucurbitae* larval stage on *C. papaya* fruit (at 24±2°C, 50±10% RH and a photoperiod of 12:12 [L:D] h) averaged 3.8±0.3 days.

Vargas et al. 2000:

One hundred (100) *B. cucurbitae* (listed as *Dacus cucurbitae*) eggs, placed on moist blotting paper, were placed on 250 g pieces of fresh *C. papaya* fruits (12 replications). Mature larvae were placed in plastic cups holding vermiculite as a pupation medium. Two (2) days before expected adult emergence, pupae were recovered and held in plastic cups until eclosion. Emerged adults were used in studies to document survival and demographic parameters for *B. cucurbitae* at alternating temperatures. Duration of the *B. cucurbitae* larval stage on *C. papaya* fruit (at 60±10% RH and a photoperiod of 12:12 [L:D] h) averaged 9.1±0.44 (24°C max. day temperature: 13°C min. night temperature); 6.3±0.13 (24:24); 6.2±0.11 (29:18); and 4.9±0.15 (35:24) days.

Listing Only: +Agrawal and Mathur 1991 (listed as *Dacus cucurbitae*; listed as papaya); Botha et al. 2004 (listed as a secondary host); CABI 2016 (listed as a secondary host); California Department of Food and Agriculture 2001; Cantrell et al. 1999; De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Dhillon et al. 2005a; Government of Western Australia Department of Agriculture and Food 2015; +Harris 1989 (listed as *Dacus cucurbitae*; listed as papaya); +Hawaii Department of Agriculture 2009 (listed as papaya); +Heppner 1989 (listed as *Dacus cucurbitae*; listed as papaya); Holbrook 1967 (listed as “occasionally infested”); Hollingsworth et al. 1996; Hollingsworth and Allwood 2000; Isnadi 1991 (listed as *Dacus cucurbitae*); +Kakinohana et al. 1997 (listed as papaya); Kandybina 1987 (listed as *Dacus cucurbitae*); Kapoor 1970 (listed as *Dacus cucurbitae*); +Kapoor 1989 (listed as *Dacus cucurbitae*; listed as papaya); Kapoor 1991 (listed as *Dacus cucurbitae*); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*); +Keck 1951 (listed as *Dacus cucurbitae*; listed as papaya); +Lall 1975 (listed as *Dacus cucurbitae*; listed as papaya); +Liu 1993 (listed as *Dacus cucurbitae*; listed as papaya); +Margosian et al. 2009 (listed as papaya); +Mau et al. 2007 (listed as papaya); +NAPPO, PAS 2015 (listed as papaya); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); +Okinawa Prefectural Fruit Fly Eradication Project 1987 (listed as *Dacus cucurbitae*; listed as papaya); Orian and Moutia 1960 (listed as *Dacus cucurbitae*); Pacific Fruit Fly Web 2002; Phillips 1946; Plantwise Knowledge Bank 2015; +Queensland Government 2015 (listed as papaw); Rejesus et al. 1991 (listed as *Dacus cucurbitae*); Ryckewaert et al. 2010; +Severin et al. 1914 (listed as *Dacus cucurbitae*; listed as papaya); Singh et al. 2004; Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host); +USDA-ARS 1959 (listed as papaya); +Van Dine 1906 (listed as *Dacus cucurbitae*; listed as papaya); Vargas et al. 2004; Vargas and Prokopy 2006; Walker 2005; +Weems 1964 (listed as *Dacus cucurbitae*; listed as papaya; listed as an occasional host); +Weems 1967 (listed as *Dacus cucurbitae*; listed as papaya; listed as an occasional host); +Weems et al. 2001 (listed as papaya; listed as an occasional host); White and Elson-Harris 1992.

Synonyms: *Carica peltata* Hook. and Arn., *Carica posoposa* L., *Papaya carica* Gaertn.

Carica peltata Hook. and Arn., see *Carica papaya* L.

Carica posoposa L., see *Carica papaya* L.

Carissa acuminata A. DC., see *Carissa bispinosa* (L.) Desf. ex Brenan

Carissa arduina Lam., see *Carissa bispinosa* (L.) Desf. ex Brenan

Carissa bispinosa (L.) Desf. ex Brenan

Family: Apocynaceae

Grin Nomen Number: 9157

Common Names: Chocuan (Portuguese), dorniger Wachsbaum (German), hedgethorn (English).

Native: AFRICA – *East Tropical Africa*: Kenya, Tanzania, Uganda; *South Tropical Africa*: Malawi, Mozambique, Zimbabwe; *Southern Africa*: Botswana, Namibia, South Africa – Eastern Cape, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga, North West, Northern Cape, Western Cape; Swaziland.

Cultivated: also cultivated.

Listing Only: Holbrook 1967 (listed as *Carissa arduina*); Isnadi 1991 (listed as *Dacus cucurbitae*; listed as *Carisa arduina*); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *Carissa arduina*); USDA 1986 (listed as *Dacus cucurbitae*; listed as *Carissa arduina*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Carissa arduina*; insufficient data to justify regulation).

Synonyms: *Arduina bispinosa* L., *Carissa acuminata* A. DC., *Carissa arduina* Lam.

Caryophyllus jambos (L.) Stokes, see *Syzygium cumini* (L.) Skeels

Casimiroa edulis La Llave and Lex.

Family: Rutaceae

Grin Nomen Number: 9292

Common Names: casimiroa (English), Cochilsapote (German), matasano (Spanish), Mexican-apple (English), pomme mexicaine (French), sapote blanche (French), sapoti (Portuguese), weiße Sapote (German), white sapote (English), zapote blanco (Spanish), vit sapote (Swedish).

Native: NORTHERN AMERICA – *Northern Mexico*: Mexico – San Luis Potosi; *Southern Mexico*: Mexico – Federal District, Hidalgo, Jalisco, Mexico, Michoacan, Morelos, Oaxaca, Queretaro, Veracruz; SOUTHERN AMERICA – *Central America*: Costa Rica, El Salvador, Guatemala.

Cultivated: also cultivated.

Listing Only: Holbrook 1967 (listed as “non-host or host of undetermined status”); Isnadi 1991 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); White and Elson-Harris 1992 (authors state “requires confirmation”).

Cassiaceae Vest, see *Fabaceae* Lindl., nom. cons.

Cayratia trifolia (L.) Domin

Family: Vitaceae

Grin Nomen Number: 101054

Common Names: slender watervine (English), three-leaf cayratia (English).

Native: ASIA-TEMPERATE – *China*: China – Yunnan; ASIA-TROPICAL – *Indian Subcontinent*: Bangladesh, India, Nepal, Pakistan, Sri Lanka; *Indo-China*: Cambodia, Laos, Myanmar, Thailand, Vietnam; *Malesia*: Indonesia; Malaysia; Philippines; AUSTRALASIA – *Australia*: Australia – Northern Territory, Queensland, Western Australia.

Listing Only: Dhillon et al. 2005a (listed both as *Vitis trifolia* and galls grape vine); Holbrook 1967 (listed as *Vitis trifolia*); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as galls of *Vitis trifolia*); Kapoor 1993 (listed as *Dacus cucurbitae*; listed as *Vitis trifolia*); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*; listed as *Vitis trifolia*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as galls of *Vitis trifolia*); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *Vitis trifolia*); Rajamannar 1962 (listed as *Dacus cucurbitae*; listed as *Vitis trifolia*); Syed 1971 (listed as *Dacus cucurbitae*; listed as galls of *Vitis trifolia*); USDA 1986 (listed as *Dacus cucurbitae*; listed as *Vitis trifolia*); USDA-APHIS 2008 (listed as *Vitis trifolia*); USDA-APHIS 2000 (listed as *Vitis trifolia*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*; listed as galls of *Cayratia trifolia*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as galls [female] on *Vitis trifolia* [grapes]; insufficient data to justify regulation).

Synonyms: *Cissus trifolia* (L.) K. Schum., *Vitis trifolia* L.

Cedrostis Post and Kuntze, orth. var., see *Kedrostis* Medik.

Cephalandra indica (Wight and Arn.) Naudin, see *Coccinia grandis* (L.) Voigt.

Cerasiocarpum Hook. f., see *Kedrostis* Medik.

Ceratoniaceae Link, see *Fabaceae* Lindl., nom. cons.

Cereus undatus Haw., see *Hylocereus undatus* (Haw.) Britton and Rose

Cestrum nocturnum L.

Family: Solanaceae

Grin Nomen Number: 9997

Common Names: lady-of-the-night (English), night-jessamine (English), vit nattjasmin (Swedish).

Native: NORTHERN AMERICA – Mexico; SOUTHERN AMERICA – *Caribbean*: Cuba; *Central America*: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama.

Cultivated: Widely cultivated in tropics.

Listing Only: USDA 1986 (listed as *Dacus cucurbitae*).

Synonyms: *Cestrum suberosum* Jacq.

Cestrum spp.

Family: Solanaceae

Grin Nomen Number: 403889

Listing Only: Holbrook 1967 (listed as “non-host or host of undetermined status”); Isnadi 1991 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation).

Cestrum suberosum Jacq., see *Cestrum nocturnum* L.

Chayota edulis Jacq., see *Sechium edule* (Jacq.) Sw.

Chrysophyllum albidum G. Don

Family: Sapotaceae

Grin Nomen Number: 400210

Common Names: white star-apple (English).

Native: AFRICA – *Northeast Tropical Africa*: Sudan; *East Tropical Africa*: Kenya, Uganda; *West-Central Tropical Africa*: Cameroon, Gabon, Zaire; *West Tropical Africa*: Benin, Côte d’Ivoire, Ghana, Nigeria, Sierra Leone.

Interception Data:

PestID 2016:

Niger

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Chrysophyllum albidum* fruit(s), from a flight originating in Niger (one occasion), intercepted in Atlanta. Recovery was four live larvae.

Nigeria

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Chrysophyllum albidum* fruit(s), intercepted on flights originating in Nigeria (19 occasions). The fruit(s) were intercepted in Detroit (2); Atlanta (7); Houston (8); New York JFK (1) and Washington Dulles (1) between 2004 and 2015. Average recovery was 8.3 live larvae (range: 1–38). On one occasion in 2008, two live pupae were also recovered (Atlanta).

Chrysophyllum cainito L.

Family: Sapotaceae

Grin Nomen Number: 10405

Common Names: caimitier (French), caimito (Spanish), caimito blanco (Spanish), caimito morado (Spanish), star-apple (English), stjärnäpple (Swedish), Sternapfel (German).

Native: SOUTHERN AMERICA – *Caribbean*: Cayman Islands, Cuba, Dominican Republic, Haiti, Jamaica, Puerto Rico.

Naturalized: Widely naturalized in tropics.

Cultivated: Widely cultivated in tropics.

Listing Only: Holbrook 1967 (listed as “non-host or host of undetermined status”); Oakley 1950 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); White and Elson-Harris 1992 (authors state “requires confirmation”).

Chrysophyllum monoppyrenum Sw., see *Chrysophyllum oliviforme* L. subsp. *oliviforme*

Chrysophyllum oliviforme L.

Family: Sapotaceae

Grin Nomen Number: 70175

Common Names: caimitillo (Spanish), damson-plum (English), satinleaf (English), wild star-apple (English).

Native: NORTHERN AMERICA – *Southeastern U.S.A.*: United States – Florida; SOUTHERN AMERICA – *Caribbean*: Bahamas, Cuba, Dominican Republic, Haiti, Jamaica, Puerto Rico.

Cultivated: SOUTHERN AMERICA – *Caribbean*: West Indies.

Listing Only: Holbrook 1967; Oakley 1950 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); White and Elson-Harris 1992 (authors state “requires confirmation”).

Chrysophyllum sp.

Family: Sapotaceae

Grin Nomen Number: 310664

Interception Data:

PestID 2016:

Nigeria

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Chrysophyllum* sp. fruits from flights originating in Nigeria on six occasions. The fruits were intercepted in Detroit (3); Miami (1); New York JFK (1); and Washington Dulles (1) between 2002 and 2015. Average recovery was 4.3 live larvae (range: 1–11).

Cissus lanceolaria Roxb., see *Tetrastigma leucostaphylum* (Dennst.) Alston ex Mabb.

Cissus leucostaphyla Dennst., see *Tetrastigma leucostaphylum* (Dennst.) Alston ex Mabb.

Cissus trifolia (L.) K. Schum., see *Cayratia trifolia* (L.) Domin

Citrullus aedulis Pangalo, see *Citrullus lanatus* (Thunb.) Matsum. and Nakai subsp. *lanatus*

Citrullus amarus Schrad.

Family: Cucurbitaceae

Grin Nomen Number: 468434

Common Names: Citron-melon (English), fodder-melon (English), preserving melon (English), stock-melon (English), tsamma-melon (English), Futtermelone (German), cukatnyj arbuz (transliterated Russian), kormovoj arbuz (transliterated Russian).

Native: AFRICA – *Southern Africa*: Cape Province, Free State, KwaZulu-Natal, Northern Cape.

Naturalized: naturalized elsewhere.

Field Infestation:

+Gupta and Verma 1978:

Hisar (listed as Hissar), State of Haryana, India

Citrullus amarus (listed both as citron and as a cucurbit) was grown from seed planted 31 July 1975 in a randomized complete block design with ten other cucurbit crops in Hisar, Haryana State, India. Fallen and marketable sized fruits were collected/picked every 3 days and assessed for infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). Infestation results were summarized weekly. *Bactrocera cucurbitae* infestation was found in 6 of 7 weekly summaries (85.7%). Overall, 52 (161.1 kg) fruits were collected, of which 13 were infested, for an average of 7.4 fruits collected per week with an average infestation rate of 28.0%.

Citrullus colocynthis (L.) Schrad.

Family: Cucurbitaceae

Grin Nomen Number: 10674

Common Names: alhandal (Spanish), bitter-apple (English), bitter-cucumber (English), Bitter-Melone (German), colocíntida (Portuguese), colocynth (English), coloquinte (French), coloquíntida (Spanish), handhal (Arabic), kolokvint (Swedish), Koloquinte (German), tumba (India), vine-of-Sodom (English), wild gourd (English).

Native: AFRICA – *Northern Africa*: Algeria, Egypt, Libya, Morocco, Tunisia; *Northeast Tropical Africa*: Chad, Ethiopia, Somalia, Yemen – Socotra; *East Tropical Africa*: Kenya; *West Tropical Africa*: Mali; ASIA-TEMPERATE – *Arabian Peninsula*: Kuwait, Saudi Arabia, Yemen; *Western Asia*: Afghanistan, Cyprus, Egypt – Sinai, Iran, Iraq, Israel, Jordan, Lebanon, Syria, Turkey; ASIA-TROPICAL – *Indian Subcontinent*: India – Andhra Pradesh, Assam, Bihar, Delhi, Goa, Gujarat, Karnataka, Maharashtra, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, Pakistan, Sri Lanka; *Indo-China*: Myanmar; EUROPE – *Southeastern Europe*: Greece, Italy – Sicily; *Southwestern Europe*: Spain.

Naturalized: AUSTRALASIA – *Australia*: Australia.

Cultivated: Widely cultivated in s.w. Asia and n. Africa.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from samples of *C. colocynthis*. Number of fruit samples and infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Badii et al. 2015:

Northern Ghana

Citrullus colocynthis fruits were collected from Northern, Upper West and Upper East regions of Ghana. Fruits were brought to a laboratory in Nyankpala, Ghana, and held over a layer of sterilized sand. Pupae recovered from the sand were held on moistened filter paper in Petri plates until adult emergence. Adults were killed and identified after being fed for 3 days. Taxonomic keys were used for species identification, with final species confirmation provided by Dr. Maxwell Billah. Adult *B. cucurbitae* were recovered from *C. colocynthis* fruits. Also recovered were adult *Dacus ciliatus* and *D. vertebratus*.

Syed 1971:

Hyderabad and Karachi, Sindh Province; Harnai and Quetta, Province of Balochistan, Pakistan

During November 1964 through 1965, 8.0% of *Citrullus colocynthis* fruits were attacked at Hyderabad by *B. cucurbitae* (listed in publication as *Dacus cucurbitae*) and *Dacus ciliatus*, in a ratio of about 40%:60%, respectively; the infestation rate dropped to 4.0% in December. Between 1962 and 1966, 85% of fruits were infested in March and 60% infested in November by these two tephritid fruit fly species. *Bactrocera cucurbitae* was also reared from *C. colocynthis* in October (1964–1965) in Harnai and Quetta.

Vayssières and Carel 1999:

Réunion Island, France

Citrullus colocynthis fruits were collected over the course of a year from up to 70 localities on Réunion Island. Fruits with evidence of fruit fly infestation were held in individual containers, with recovered pupae held for adult emergence. *Bactrocera cucurbitae* recovery averaged 177 (standard deviation = 396) adults per kg infested fruit.

Listing Only: +Agrawal and Mathur 1991 (listed as *Dacus cucurbitae*; listed as colosynth); Botha et al. 2004 (listed as a secondary host); CABI 2016 (listed as a secondary host); California Department of Food and Agriculture 2001; Cantrell et al. 1999; De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Dhillon et al. 2005a; Government of Western Australia Department of Agriculture and Food 2015; Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* var. *colocynthis*); Kapoor 1991 (listed as *Dacus cucurbitae*); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* var. *colocynthis*); Khandelwal and Nath 1978 (listed as *Dacus cucurbitae*); Khandelwal and Nath 1979 (listed as *Dacus cucurbitae*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Plantwise Knowledge Bank 2015; Quilici and Jeuffrault 2001 (listed as only a little favorable as a host); Singh et al. 2004; USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host); +Weems et al. 2001 (listed as colosynth; listed as a wild host); White and Elson-Harris 1992.

Synonyms: *Colocynthis vulgaris* Schrad., *Cucumis colocynthis* L.

Citrullus fistulosus Stock, see *Benincasa fistulosa* (Stocks) H. Schaef. and S. S. Renner

Citrullus lanatus (Thunb.) Matsum. and Nakai

Family: Cucurbitaceae

Grin Nomen Number: 10675

Common Names: Afghan-melon (English), anguria (Italian), bastard-melon (English), egusi (Nigeria-Yoruba), sandía (Spanish), subag (transcribed Korean), suika (Japanese Rōmaji), vattenmelon (Swedish), Wassermelone (German), watermelon (English), xi gua (transcribed Chinese).

Native: AFRICA – *Southern Africa*: Botswana, Lesotho, Namibia, South Africa – Eastern Cape, Free State, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga, North West, Northern Cape.

Naturalized: Widely naturalized elsewhere.

Field Infestation:

Ali et al. 2014b:

Abugubeiha Province, South Kordofan State, Sudan

Citrullus lanatus fruits were collected during the 2005 through 2006 growing season in Abugubeiha Province, South Kordofan State, Sudan, and held for recovery of tephritid fruit flies. Out of 11.0 kg of *C. lanatus* fruits, 31 *B. cucurbitae* adults were recovered for an infestation rate of 2.8 *B. cucurbitae* per kg fruit.

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 12 samples of *C. lanatus*. Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

+*Back and Pemberton 1917:*

Hawaii, U.S.A.

Citrullus lanatus (listed as watermelon) is listed as a preferred host of *B. cucurbitae*. The authors report that melon fly larvae can infest watermelon vines and roots as well as fruits. Illustrations are presented to show damage to both vines and watermelon fruit caused by melon fly infestation.

+*Back and Pemberton 1918:*

Hawaii, U.S.A.

Citrullus lanatus (listed as watermelon) is listed as a preferred host for *B. cucurbitae*. The authors report that melon fly larvae can infest watermelon vines and roots as well as fruits. Illustrations are presented to show damage to roots, vines and watermelon fruit caused by melon fly infestation.

Badii et al. 2015:

Northern Ghana

Citrullus lanatus fruits were collected from Northern, Upper West and Upper East regions of Ghana. Fruits were brought to a laboratory in Nyankpala, Ghana, and held over a layer of sterilized sand. Pupae recovered from the sand were held on moistened filter paper in Petri plates until

adult emergence. Adults were killed and identified after being fed for 3 days. Taxonomic keys were used for species identification, with final species confirmation provided by Dr. Maxwell Billah. Adult *B. cucurbitae* were recovered from *C. lanatus* fruits. Also recovered were adult *Bactrocera dorsalis* (listed as *Bactrocera invadens* Drew, Tsuruta and White) and *Dacus bivittatus* (Bigot).

Clarke et al. 2001:

Thailand

One hundred sixteen (116) (54.1 kg) *C. lanatus* infested fruits were collected in Chiang Rai, Thailand from 1986 to 1994. Infestation rates of 0.48 *B. cucurbitae* per infested fruit and 1.0 *B. cucurbitae* per kg infested fruits were observed. *Bactrocera cucurbitae* were identified by either R.A.I. Drew or D. L. Hancock.

+*Gupta and Verma 1978:*

Hisar (listed as Hissar), State of Haryana, India

Citrullus lanatus (listed as watermelon) was grown from seed planted 28 February 1975, in a randomized complete block design with ten other cucurbit crops in Hisar, Haryana State, India. Fallen and marketable sized fruits were collected/picked every 3 days and assessed for infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). Infestation results were summarized weekly. *Bactrocera cucurbitae* infestation was found in 4 of 5 weekly summaries (80%). Overall, 39 (154.5 kg) fruits were collected, of which 10 were infested, for averages of 7.8 fruits collected per week with an average infestation rate of 24.2%.

Haldhar et al. 2015b:

Bikaner, State of Rajasthan, India

Twenty-seven (27) varieties/genotypes of *C. lanatus* were sown in the summer 2012 in a randomized complete block design with three replications at the experimental farm of the Central Institute for Arid Horticulture in Bikaner, India. Fruits randomly selected at three pickings over the course of the growing season were used to calculate percentage infestation and to count the number of *B. cucurbitae* larvae in infested fruits. Percentage fruit infestation averaged 43.75% (range: 12.6–66.9%) while *B. cucurbitae* larval density averaged 15.32 larvae/fruit (range: 9.97–19.10 larvae/fruit) across all 27 varieties/genotypes.

Fifteen (15) varieties/genotypes of *C. lanatus*, selected from those used in the 2012 trial, were sown, both in July 2013 and February 2014, in a randomized complete block design with three replications at the experimental farm of the Central Institute for Arid Horticulture in Bikaner, India. Fruits randomly selected at three pickings over the course of the growing seasons were used to calculate percentage infestation and to count the number of *B. cucurbitae* larvae in infested fruits. Percentage fruit infestation, averaged across both growing seasons, was 38.59% (range: 12.73–67.37%) while *B. cucurbitae* larval density averaged 14.56 larvae/fruit (range: 10.2–19.2 larvae/fruit) across all 15 varieties/genotypes.

+*Harris et al. 1986:*

Island of Kauai, Hawaii, U.S.A.

Two (2) collections of *C. lanatus* fruits (0.771 kg) (listed as watermelon) were made on the Island of Kauai, Hawaii, between July 1980 and September 1982, with fruits held over moist sand for assessment of infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). Two hundred thirty-five (235) *B. cucurbitae* flies were recovered (304.8 flies/kg fruit).

Hollingsworth et al. 2003:

Solomon Islands

From June 1994 to June 1998, *C. lanatus* fruits were collected from up to seven provinces of the Solomon Islands (Central, Choiseul, Guadalcanal, Isabel, Malaita, Temotu, Western). *Bactrocera cucurbitae* was recovered from 1 of 8 samples (12.5%). Forty-two (42) *B. cucurbitae* flies were recovered from 12 fruits (10.77 kg) for overall infestation rates of 3.5 flies per fruit and 3.9 flies/kg fruit.

Jacquard et al. 2013:

Réunion Island, France

Bactrocera cucurbitae-infested *C. lanatus* fruits were collected from “Location 8” on Réunion Island from January to April 2009 and held over sand. Puparia, recovered by sifting the sand, were held for adult emergence. Nineteen (19) adult *B. cucurbitae* were recovered.

Jakhar and Pareek 2005:

Jobner, State of Rajasthan, India

Seeds of nine cucurbit species were sown in a randomized block design with four replications at the Horticultural Farm of S.K.N. College of Agriculture in Jobner, India during the kharif season in 2000. The infestation rate of *C. lanatus* cv. 'Mateera' fruits, by *B. cucurbitae* averaged 19.85% (range: 14.43–29.16%) over the course of five collection dates, each 3 days apart, in September 2000.

Khandelwal and Nath 1979:

Jobner, State of Rajasthan, India

Five trials on the relative resistance or susceptibility of 94 cultivars of *C. lanatus* to infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) were tested under natural conditions in Jobner India from 1967 to 1968 over both the summer season and the rainy season. Twenty (20) plants of each cultivar were planted in single rows in three trials while cultivars were set out in a randomized block design, with three replications, in two trials. The fields were bordered by a trap crop of *Lagenaria siceraria* to maintain sufficient fruit fly population. The maximum damage rate by *B. cucurbitae* averaged 68.4% across all 94 cultivars. Two cultivars were found to be "resistant" (11–25% fruits damaged), 6 were "medium resistant" (26–50%), 65 were "susceptible" (51–75%), and 4 were "highly susceptible" (76–100%). None of the cultivars was found to be completely free from damage by the melon fly.

Leblanc et al. 2012:

Papua New Guinea (PNG), Solomon Islands

Citrullus lanatus fruits were collected between 1997 to 2000 in PNG and between 1994 to 1999 in the Solomon Islands and held in plastic containers over finely sieved sawdust that had been sterilized in an oven or frozen overnight to kill mites. The sawdust was sieved to recover tephritid fruit fly puparia. Puparia were kept in moist sawdust until adult emergence. Adults were fed for 5 days, then killed by freezing to allow colors and markings, necessary for correct species identification, to fully develop. *Bactrocera cucurbitae* was recovered in 4 of 21 (19.0%) samples in PNG and in 2 of 12 (16.7%) samples in the Solomon Islands.

Leblanc et al. 2013a:

Papua New Guinea (PNG), Solomon Islands

Citrullus lanatus fruits were collected between 1997 to 2000 in PNG (104 fruits; 54.55 kg) and between 1994 to 1999 in the Solomon Islands (18 fruits; 16.39 kg) and held in plastic containers over finely sieved sawdust that had been sterilized in an oven or frozen overnight to kill mites. The sawdust was sieved to recover tephritid fruit fly puparia. Puparia were kept in moist sawdust until adult emergence. Adults were fed for 5 days, then killed by freezing to allow colors and markings, necessary for correct species identification, to fully develop. *Bactrocera cucurbitae* was recovered in 4 of 21 (19.0%) samples in PNG, with an overall infestation rate of 5.72 flies/kg fruit and 39.34 flies/kg infested fruit. *Bactrocera cucurbitae* was recovered in 2 of 12 (16.7%) samples in the Solomon Islands with an overall infestation rate of 3.60 flies/kg fruit and 9.83 flies/kg infested fruit.

+Lee 1972:

Taiwan

Citrullus lanatus plants (listed as water melon) were grown in the field year-round from 2 June 1969 to 10 June 1970 and from March to August, 1971. Fruits, picked 5, 10, and 15 days after flowering, were placed over sand in holding boxes. The sand was screened weekly to recover *B. cucurbitae* pupae (listed as *Dacus cucurbitae*). Pupal recovery per fruit was averaged quarterly for 1969 to 1970 harvests. Pupal recovery per kg fruit was averaged monthly for 1971 harvests. *Bactrocera cucurbitae* pupal recovery averaged 6.8, 4.5, and 17.8 pupae/fruit (1969–1970) and 97.9, 15.6 and 11.9 pupae/kg fruit (1971) overall, for fruits picked 5, 10, and 15 days after flowering, respectively.

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 4,346 *C. lanatus* fruits were collected (35 collections overall) from four islands/island groups (Amami, Miyako, Okinawa, Yaeyama) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 144 fruits, giving an

average percentage infestation rate (weighted by the number of collections in each of the islands/island groups) of 10.3%.

Modjonnesso et al. 2012:

Lomé, Togo

Between June 2008 and February 2009, 27 *C. lanatus* fruits with evidence of infestation by tephritid fruit flies were collected in Lomé, Togo and held in a laboratory for assessment of infestation. One (1) adult female *B. cucurbitae* was recovered.

Mwatawala et al. 2009a:

Morogoro Region, Central Tanzania

Tender-skinned immature *C. lanatus* fruits were randomly collected at regular intervals between October 2004 and October 2006 from areas within the Sokoine University of Agriculture campus in Morogoro and from Nyandira, Mikese, Mkindo in the Morogoro region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupation of infesting tephritid fruit flies. Emerged adults were removed and identified. Three (3) of 5 (60.0%) *C. lanatus* samples (4.5 kg) were infested by *B. cucurbitae*.

Mwatawala et al. 2009b:

Morogoro Region, Central Tanzania

Citrullus lanatus fruits were randomly collected weekly between October 2004 through October 2006 and from August through December 2007, from areas within the Sokoine University of Agriculture campus in Morogoro and from Nyandira, Mikese, Mkindo in the Morogoro region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupation of infesting tephritid fruit flies. Emerged adults were removed and identified. Out of 134 collected fruits (9.599 kg), infestation by *B. cucurbitae* averaged 14.27 emerged adults per kg fruit.

Mwatawala et al. 2010:

Morogoro Region, Central Tanzania

Five hundred seventeen (517) immature *C. lanatus* fruits (29.174 kg) were collected at irregular intervals between October 2004 and April 2008, from the Morogoro Region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupariation of infesting tephritid fruit flies. Emerged adults were removed and identified. *Bactrocera cucurbitae* flies were recovered from 31 of 47 collections (65.96%), with an overall infestation rate of 23.31 flies/kg fruit and 37.25 flies/kg infested fruit.

Mwatawala et al. 2015:

Morogoro Region, Central Tanzania

Citrullus lanatus, *Cucurbita* sp. ("pumpkin"), and *Cucumis sativus* were directly sown both in mono-cropped plots and in plots where all three crops were "haphazardly mixed both within and between lines." Two plots of each type were planted in each of three seasons: March through June 2013, October through December 2013, and April through July 2014. Planting dates for each crop species were adjusted based on days to flowering in order to synchronize fruit setting. Fruits in all plots were subject to natural infestation by *B. cucurbitae* (listed as *Zeugodacus cucurbitae*). At each sampling date, fruits of each species were randomly harvested from each plot and held in rearing containers containing sterilized sand as a pupation medium. Pupae were removed and held in Petri dishes with moist filter paper within emergence containers until adult emergence. From the mono-cropped *C. lanatus* plots, 73.3% of fruits were infested by *B. cucurbitae* with an average infestation rate of 226.13 flies/kg fruit (out of 1.11 kg fruits). From the mix-cropped plots, 80.0% of *C. sativus* fruits were infested by *B. cucurbitae* with an average infestation rate of 209.3 flies/kg fruit (out of 0.99 kg fruits).

Nath and Bhushan 2006:

Varanasi, State of Uttar Pradesh, India

Citrullus lanatus (listed as *Citrullus sativus* and as water melon) was sown, with three replications, in Varanasi, India, the last week of March (summer season) in both 2001 and 2002. Percentage infestation by *B. cucurbitae* averaged 8.0% (range: 7.8–8.3%).

Ndiaye et al. 2012:

Niayes and Thiès plateau zones, Senegal

Citrullus lanatus fruits were collected from July through December 2008, and held over sieved coarse sand in cloth-covered pots. Recovered tephritid fruit fly pupae were transferred to Petri

dishes for adult emergence and species identification. *Bactrocera cucurbitae* was recovered from the 9.3 kg of *C. lanatus* fruits sampled, with an infestation rate of ≤ 100 individuals per kg fruit.

+Pareek and Kavadia 1994:

Jobner and Udaipur, state of Rajasthan, India

Citrullus lanatus fruits (listed as water melon, variety 'Sugar baby') were raised in a randomized block design with nine other cucurbit crops (each with three replicated plots) for assessment of preference of *B. cucurbitae* (listed as *Dacus cucurbitae*). The trials were conducted from February to June in 1979, and again in 1981, in Udaipur (semi-humid agroclimatic conditions) and in 1980 and 1981 in Jobner (semi-arid agroclimatic condition). Fruits were examined on ten plants per replicate twice a week, and the percentage of fruits infested by *B. cucurbitae* calculated. Percentage infestation averaged 25.5% (range: 24.3–26.8%) in Udaipur and 28.8% (range: 25.7–31.8%) in Jobner.

+Shivarkar and Dumbre 1985:

Dapoli, State of Maharashtra, India

In order to test the effect of planting date of *C. lanatus* (listed as watermelon) variety 'Sugar Baby' on infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*), seed was sown twice a month from 15 October 1979 to 1 March 1980 in a randomized block design with three replications. The percentage of infested fruits was recorded weekly. Infestation averaged 20.3% over all dates (range: 13.1–30.9%), with infestation rate tending to increase as the season progressed.

Dapoli, State of Maharashtra, India

In order to test the effect of *C. lanatus* (listed as watermelon) variety on infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*), 10 *C. lanatus* varieties were sown in a randomized block design (number of replications not stated). The percentage of infested fruits was recorded weekly. Infestation averaged 39.9% across all varieties (range: 24.4–50.6%).

Dapoli, State of Maharashtra, India

In order to test the relative effectiveness of nine different insecticides on reducing the infestation of *C. lanatus* (listed as watermelon) variety 'Sugar Baby' fruits by *B. cucurbitae* (listed as *Dacus cucurbitae*), a field trial was conducted using a randomized block planting design with four replications for the nine insecticidal treatments and an unsprayed control. The average control fruit infestation was 52.3%.

+Singh et al. 2000:

Kanpur, State of Uttar Pradesh, India

Citrullus lanatus fruits (listed as watermelon) were collected weekly at growers' fields at the bank of the river Ganga in Kanpur beginning in February 1997. Percentage infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) was determined (by observation) at each picking. The overall average *B. cucurbitae* infestation rate was 28.6%.

+Steiner et al. 1965:

Island of Rota, Mariana Islands

Citrullus lanatus fruits (listed as watermelon) were collected on the island of Rota as part of a *B. cucurbitae* (listed as *Dacus cucurbitae*) eradication program. Fruits that showed evidence of sting injury were collected in their immature stage before fly damage could cause them to rot. Monthly *C. lanatus* fruit infestation averaged 41.9 *B. cucurbitae* larvae/kg fruit (range: 7.05–75.8 larvae/kg fruit) over the months of January through July, 1960 to 1962, before the initiation of either bait sprays or sterile fly releases.

Syed 1971:

Faisalabad and Gujranwala, Province of Punjab; and Karachi, Sindh Province, Pakistan

During May 1962 to 1963, 2.0% of *C. lanatus* fruits (listed as *Citrullus vulgaris*) were attacked by *B. cucurbitae* (listed as *Dacus cucurbitae*) in Faisalabad and Gujranwala; infestation rate increased to 4.0% in June. In Karachi in April (1962–1966), *C. lanatus* infestation reached 28%, but was infested by both *B. cucurbitae* and *Dacus ciliatus*. Total number of fruits collected was not given.

Tan and Lee 1982:

Penang Island, Malaysia

Infested *C. lanatus* fruits were randomly collected on Penang Island. Fruits were held over moist sterilized sand in fine wire mesh-covered plastic containers until pupation. Pupae were transferred and held at 27–29°C (80±5% RH) until adult emergence. *Bactrocera cucurbitae* (listed as

Dacus cucurbitae) was recovered from infested *C. lanatus* fruits. Total number of fruits collected and infestation rate were not given.

Vargas et al. 1990:

Island of Kauai, Hawaii, U.S.A.

Between March 1987 and February 1989, 3 (year one) and 4 (year two) samples of *Citrullus lanatus* fruits were collected in the Moloaa area on the Island of Kauai. Fruits were placed on metal trays in plastic holding boxes containing sand. Mature *B. cucurbitae* (listed as *Dacus cucurbitae*) larvae and pupae, recovered through weekly sifting of the sand, were held for adult emergence. Out of 6 fruits collected in year one, 40 tephritid fruit fly pupae were recovered, from which 3 *B. dorsalis* (listed as *Dacus dorsalis*) and 6 *B. cucurbitae* adults emerged, for an infestation rate of 0.2 *B. cucurbitae* adults per kg fruit. Out of 8 fruits collected in year two, 351 tephritid fruit fly pupae were recovered, from which no *B. dorsalis* and 296 *B. cucurbitae* adults emerged, for an infestation rate 8.6 *B. cucurbitae* adults per kg fruit.

Vayssières et al. 2007:

Côte d'Ivoire, Guinea, Mali, and Senegal, West Africa

Tephritid fruit fly-infested *Citrullus lanatus* fruits were collected from untreated orchards in West Africa. Fruits were placed on mesh supports over sand. Tephritid fruit fly pupae, recovered through weekly sieving of the sand, were transferred to small hatching boxes lined with wet blotting paper and held for adult emergence. The average *B. cucurbitae* infestation level in *C. lanatus* fruits in West Africa fell in the range of 26–50 pupae/kg fruit. For comparison, the authors indicated that the infestation level of *C. lanatus* fruits also averaged 26–50 pupae/kg fruit on Réunion Island.

Vayssières and Carel 1999:

Réunion Island, France

Citrullus lanatus fruits, var. 'Sugar baby,' were collected over the course of a year from up to 70 localities on Réunion Island. Fruits with evidence of fruit fly infestation were held in individual containers, with recovered pupae held for adult emergence. *Bactrocera cucurbitae* recovery averaged 45.9 (standard deviation = 137.1) adults per kg infested fruit.

+*Wen 1985:*

Taiwan

Citrullus lanatus fruits (listed as watermelon) were collected in southern Taiwan July–August 1983, and November 1983 to June 1984. Infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) averaged 4.02% (bimonthly averages ranged from 1.08–7.24%).

+*Wong et al. 1989:*

Rota, Commonwealth of the Northern Mariana Islands

On the island of Rota, 38 *C. lanatus* fruits (listed as watermelon) (from 17 collections) were collected in 1985, 110 fruits (from 30 collections) were collected in 1986, and 143 fruits (from 23 collections) were collected in 1987. Fruits were held over moist sand in plastic containers with screened lids for recovery of *B. cucurbitae* pupae and adult emergence. *Bactrocera cucurbitae* recovery averaged 16.9 pupae/kg fruit (1985), 35.6 pupae/kg fruit (1986), and 62.7 pupae/kg fruit (1987).

Interception Data:

Defra 2008:

Ghana

Bactrocera cucurbitae was recovered in South East United Kingdom from 2 boxes of *C. lanatus* originating in Ghana. No infestation rate data were given.

USDA 1932b:

Bactrocera cucurbitae was recovered from watermelon (*C. lanatus*; listed as *C. vulgaris*) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in stores) between 1 July 1931 and 30 June 1932 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1933:

Bactrocera cucurbitae was recovered from watermelon (*C. lanatus*; listed as *C. vulgaris*) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in stores) between 1 July 1932 and 30 June 1933 (number of individuals recovered and life stages not

reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

Lab Infestation:

Khandelwal and Nath 1978:

A *C. lanatus* variety found to be fairly resistant to infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) (J 18-1), four susceptible varieties (New Hampshire Midget [U.S.A.], Bykovski-199 [U.S.S.R.], Red Nectar and J 20-1 [India]), and the crosses between the resistant and susceptible varieties were all sown in pots and grown inside insect proof cages. *Bactrocera cucurbitae* flies were added to the cages, at a rate of 1 fly per fruit, at fruit-bearing stage. The percentage of infested fruits in each group was recorded. Percentage infestation ranged from 14 to 19% (the resistant variety, J 18–1), 63.7 to 87.5% (the four susceptible varieties) and 13.8 to 24.6% (the F₁ crosses).

A *C. lanatus* variety found to be fairly resistant to infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) (J 56-1), four susceptible varieties (New Hampshire Midget [U.S.A.], Bykovski-199 [U.S.S.R.], Red Nectar and J 20-1 [India]), and the crosses between the resistant and susceptible varieties were all sown in pots and grown inside insect proof cages. *Bactrocera cucurbitae* flies were added to the cages, at a rate of 1 fly per fruit, at fruit-bearing stage. The percentage of infested fruits in each group was recorded. Percentage infestation ranged from 15.8 to 23% (the resistant variety, J 56–1), 63.7 to 87.5% (the four susceptible varieties) and 19.2 to 31.1% (the F₁ crosses).

Khandelwal and Nath 1979:

Eight (8) cultivars of *C. lanatus* (J-18-1, J-20, J-21, J-56-1, J-64, J-83-1, and Bykovski-199 and Smena) were planted from seeds in pots (three replications) and grown inside of an insect proof field cage. At the time of fruiting, reared *B. cucurbitae* adults (listed as *Dacus cucurbitae*) were released inside the cage at the rate of 1 fly per fruit, after emergence of female flowers. The rate of infestation by *B. cucurbitae* averaged 60.6% (average by cultivar: 21.6, 70.0, 69.0, 25.0, 70.6, 72.2, 64.4, and 92.3%, respectively).

Listing Only: +Agrawal and Mathur 1991 (listed as *Dacus cucurbitae*; listed as water melon); +Australian Quarantine Service, Commonwealth Department of Primary Industry 1987 (listed as *Dacus cucurbitae*; listed as watermelon); +Bateman 1989 (listed as *Dacus cucurbitae*; listed as watermelon); +Blackman 1909 (listed as melon fly and as a *Dacus* sp.; listed as watermelon); Botha et al. 2004 (listed as a secondary host); CABI 2016 (listed as a secondary host); California Department of Food and Agriculture 2001; Cantelo and Pholboon 1965 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* Schrad.); Cantrell et al. 1999; Chawla 1966 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* Schrad.); +Chen 1960 (listed as *Dacus cucurbitae*; listed as water melon); +Christenson and Foote 1960 (listed as *Dacus cucurbitae*; listed as watermelon); De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Dhillon et al. 2005a; +EcoPort 2008 (listed as watermelon); +Froggatt 1909 (listed as *Dacus cucurbitae*; listed as watermelon); Government of Western Australia Department of Agriculture and Food 2015; +Greene 1929 (listed as watermelon); Harris et al. 2010; +Hawaii Department of Agriculture 2009 (listed as watermelon); +Heppner 1989 (listed as *Dacus cucurbitae*; listed as watermelon); Hollingsworth et al. 1996; Hollingsworth and Allwood 2000; +Isnadi 1991 (listed as *Dacus cucurbitae*; listed as watermelon); +Kalshoven 1981 (listed as *Dacus cucurbitae*; listed as semangka); Kandybina 1987 (listed as *Dacus cucurbitae*); +Leblanc 2000 (listed as watermelon); Leblanc et al. 2013b; +Lee et al. 1992 (listed as *Dacus cucurbitae*; listed as watermelon); Liquido 1991b (listed as *Dacus cucurbitae*); +Liu 1993 (listed as *Dacus cucurbitae*; listed as watermelon); Mamet and Williams 1993 (listed as *Dacus cucurbitae*); +Margosian et al. 2009 (listed as watermelon); +Mau et al. 2007 (listed as watermelon); +NAPPO, PAS 2015 (listed as watermelon); +Nishida and Bess 1957 (listed as *Dacus cucurbitae*; listed as watermelon); +Okinawa Prefectural Fruit Fly Eradication Project 1987 (listed as *Dacus cucurbitae*; listed as watermelon); Pacific Fruit Fly Web 2002; Plantwise Knowledge Bank 2015; Puttarudriah and Usman 1954 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris*); Quilici and Jeuffrault 2001 (listed as very favorable as a host); Qureshi et al. 1974 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* Schrad); +Rajamannar 1962 (listed as *Dacus cucurbitae*; listed as water melon); +Ramadan and Messing 2003 (listed as watermelon); Rejesus et al. 1991 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* Schrad.); Ryckewaert et al. 2010; +Severin et al. 1914 (listed as *Dacus cucurbitae*; listed as watermelon); Singh et al. 2004; Sookar and Khayratee 2000; +Tenakanai 1997 (listed as water melon); Tsatsia and Hollingsworth 1997; USDA 1986 (listed as *Dacus cucurbi-*

tae); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host); +USDA-ARS 1959 (listed as watermelon; listed as a preferred host); +Van Dine 1906 (listed as *Dacus cucurbitae*; listed as watermelon); Vargas et al. 2004; Vargas and Prokopy 2006; Vijaysegaran 1991 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* L.); +Walker 2005 (listed as watermelon); +Weems 1964 (listed as *Dacus cucurbitae*; listed as watermelon; listed as a preferred host); +Weems 1967 (listed as *Dacus cucurbitae*; listed as watermelon; listed as a preferred host); +Weems et al. 2001 (listed as watermelon; listed as a preferred host); White and Elson-Harris 1992; +Willard 1920 (listed as watermelon); Yunus and Hua 1980 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* L.); +Yong 1992 (listed as *Dacus cucurbitae*; listed as water melon).

Citrullus lanatus (Thunb.) Matsum. and Nakai subsp. *lanatus*

Family: Cucurbitaceae

Grin Nomen Number: 314923

Common Names: albudeca (Spanish), dessert watermelon (English), melancia (Portuguese), melon d'eau (French), pastèque (French), sandía (Spanish), Wassermelone (German), watermelon (English).

Cultivated: Only cultivated.

Field Infestation:

Bains and Sidhu 1984:

Punjab, India

Field observations of infestation of *C. lanatus* (listed as *Citrullus vulgaris*) fruits by *B. cucurbitae* (listed as *Dacus cucurbitae*) were made at 10-day intervals in Punjab, India, between June and November. Infested fruits were found in 7 of 9 observations (77.8%) with an average infestation rate of 25.7 (± 7.3 [standard error])%.

Clausen et al. 1965:

Island of Mindanao, Philippines

From *C. lanatus* (listed as *Citrullus vulgaris*) collections in August 1950 on the island of Mindanao in the Philippines, 62 *B. cucurbitae* puparia (listed as *Dacus cucurbitae*) were recovered.

Thailand

From *C. lanatus* (listed as *Citrullus vulgaris*) collections in February 1951 in Thailand, 162 puparia were recovered, a mix of two predominant species: *Bactrocera cucurbitae* (listed as *Dacus cucurbitae* Coq.) and *Bactrocera tau* (listed as *Dacus nubilus* Hendel) (*B. cucurbitae* was the most abundant species).

North India

Bactrocera cucurbitae (listed as *Dacus cucurbitae* Coq.) was present in small numbers in watermelon in North India.

Harris and Lee 1989:

Island of Molokai, Hawaii, U.S.A.

Between August 1978 and January 1980, 2 *C. lanatus* fruits (listed as *Citrullus vulgaris* Schrad.) were collected at Hoolehua, Island of Molokai, Hawaii, and held over sand in fruit holding boxes. One hundred forty-nine (149) *B. cucurbitae* pupae (listed as *Dacus cucurbitae*) were recovered from which 132 adults emerged. Overall infestation rate was 7.5 *B. cucurbitae* per kg fruit.

Nishida 1955:

Island of Oahu, Hawaii, U.S.A.

Infested *C. lanatus* subsp. *lanatus* fruits (listed as *Citrullus vulgaris* Schrad.), with nearly full grown *B. cucurbitae* (listed as *Dacus cucurbitae*) larvae, were collected at cultivated areas in two locations on the Island of Oahu, Hawaii during 1950–1951: Waianae and Waimanalo. Larvae were extracted from the fruits and placed in small wax paper cups containing pumpkin pulp. The cups were placed on sand in jars in which a high humidity was maintained. One hundred sixty-seven (167) and 2,396 *B. cucurbitae* larvae were recovered from the fruits at the two sites, respectively. Number of fruits and infestation rate data were not given.

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Citrullus lanatus* var. *lanatus* fruits, originating in Hawaii, at an airport in Hawaii (Honolulu) on two occasions in 1992. Average recovery was 2.5 live larvae.

Listing Only: Back and Pemberton 1914 (listed as *Citrullus vulgaris*; can oviposit in the seedling); Dhillon et al. 2005a (listed as *Citrullus vulgaris*); Holbrook 1967 (listed as *Citrullus vulgaris* Schrad.; listed as “heavily or generally infested”); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* Schrad.); Kapoor 1991 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* Schrad.); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* Schrad.; listed as a frequently injured plant); Meksongsee et al. 1991 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* Schrad.); Moiz et al. 1967 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* Schrad.); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris*); Nishida 1963 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* Schrad.); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris*); Orian and Moutia 1960 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* Schrad.); Phillips 1946 (listed as *Citrullus vulgaris*); Ponce 1937 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris*); Pradhan 1977 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* Chard); Ramsamy 1989 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* Schrad.); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Citrullus vulgaris* – being the same as *C. lanatus*; listed as a preferred host).

Synonyms: *Citrullus aedulis* Pangalo, *Citrullus vulgaris* Schrad., *Colocynthis citrullus* (L.) Kuntze, *Cucurbita citrullus* L.

Citrullus lanatus (Thunb.) Matsum. and Nakai var. *citroides* (L. H. Bailey) Mansf., see *Citrullus amarus* Schrad.

Citrullus spp.

Family: Cucurbitaceae

Grin Nomen Number: 300135

Listing Only: Back and Pemberton 1917 (listed as *Citrullus* [Java]; listed as “occasionally infested”); Back and Pemberton 1918 (listed as *Citrullus* [Java]; listed as “occasionally infested”); California Department of Food and Agriculture 2001; European and Mediterranean Plant Protection Organization 2015 (listed as a minor host); Holbrook 1967 (listed as “occasionally infested”); Isnadi 1991 (listed as *Dacus cucurbitae*); Kapoor 1970 (listed as *Dacus cucurbitae*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation).

Citrullus vulgaris Schrad., see *Citrullus lanatus* (Thunb.) Matsum. and Nakai

Citrullus vulgaris Schrad. var. *fistulosus* (Stocks) J. L. Stewart, see *Benincasa fistulosa* (Stocks) H. Schaef. and S. S. Renner

Citrus amara Link, see *Citrus aurantium* L.

Citrus aurantium L.

Family: Rutaceae

Grin Nomen Number: 10684

Common Names: arancio (Italian), arancio amaro (Italian), bigarade (English), bigaradier (French), bitter orange (English), Bitterorangen (German), daidai (Japanese Rōmaji), gwanggyulnamu (transcribed Korean), kaisei-tō (Japanese Rōmaji), khatta (India), khushkhash (Israel), laranja-azedo (Portuguese), melangolo (Italian), naranja agria (Spanish), naranja amarga (Spanish), naranja mateca (Spanish), oranger amer (French), Pomeranze (German), Seville orange (English), sour orange (English), suan cheng (transcribed Chinese).

Origin: Probable multiple hybrid origin China and elsewhere.

Cultivated: Widely cultivated in tropics and subtropics.

Lab Infestation:

Rajamannar 1962:

Using *B. cucurbitae* (listed as *Dacus cucurbitae*) 1st instar larvae obtained from eggs oviposited on bottle gourd (*Lagenaria siceraria*; listed as *L. vulgaris*), 49 of 100 (49%) 1st instar larvae raised on *C. aurantium* (listed as orange) pupated, with an average time to pupation of 8.7 days. In a separate test, 94 of 100 (94%) 1st instar larvae were found to feed on pieces of *C. aurantium* fruit (an average of 18.8 out of 20 larvae, based on five replicated trials).

Listing Only: Holbrook 1967 (listed as “non-host or host of undetermined status”); Oakley 1950 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); White and Elson-Harris 1992 (authors state “requires confirmation”).

Synonyms: *Citrus amara* Link, *Citrus bigarradia* Loisel., *Citrus vulgaris* Risso

Citrus aurantium L. var. *decumana*, see *Citrus maxima* (Burm.) Merr.

Citrus aurantium L. var. *grandis* L., see *Citrus maxima* (Burm.) Merr.

Citrus aurantium L. var. *sinensis* L., see *Citrus sinensis* (L.) Osbeck

Citrus bigarradia Loisel., see *Citrus aurantium* L.

Citrus chilensis Molina, see *Citrus* spp.

Citrus decumana (L.) L., see *Citrus maxima* (Burm.) Merr.

Citrus depressa Hayata var. *vangasay* (Bojer) H. Perrier, see *Citrus reticulata* Blanco

Citrus duttae Tanaka, see *Citrus* spp.

Citrus grandis Osbeck, see *Citrus maxima* (Burm.) Merr.

Citrus hystrix DC.

Family: Rutaceae

Grin Nomen Number: 10714

Common Names: combava (French), Kaffir lime (English), Kafir-Limette (German), langdorniger Orangenbaum (German), Makrut-Limette (German), Mauritius papeda (English), papeda (Swedish).

Native: ASIA-TEMPERATE – *China*: China – Guangxi, Yunnan; ASIA-TROPICAL – *Indian Subcontinent*: Sri Lanka; *Indo-China*: Myanmar, Thailand; *Malesia*: Indonesia, Malaysia, New Guinea, Philippines.

Naturalized: Widely naturalized.

Cultivated: ASIA-TEMPERATE – *China*: China.

Native: Native range obscure.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

In 1992, *B. cucurbitae* was recovered from 2 samples of *C. hystrix*. Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Listing Only: CABI 2016 (listed as a wild host); Cantrell et al. 1999; De Meyer et al. 2014; Plant-wise Knowledge Bank 2015.

Synonyms: *Citrus torosa* Blanco

Citrus inflatorugosa hort. ex Tanaka, nom. nud., see *Citrus* spp.

Citrus iriomotensis hort. ex Tanaka, nom. nud., see *Citrus* spp.

Citrus limon (L.) Burm. f.

Family: Rutaceae

Grin Nomen Number: 10732

Common Names: citronnier (French), lemon (English), limão (Portuguese), limão-eureka (Portuguese-Brazil), limão-gênova (Portuguese-Brazil), limão-siciliano (Portuguese-Brazil), limão-verdadeiro (Portuguese-Brazil), limoeiro (Portuguese-Brazil), limoeiro-azedo (Portuguese), limón (Spanish), limone (Italian), limonero (Spanish), limonier (French), li meng (transcribed Chinese), limum (transliterated Arabic), ning meng (transcribed Chinese), Zitrone (German).

Cultivated: Widely cultivated in tropics and subtropics.

Origin: Likely China.

Listing Only: Cantrell et al. 1999; Holbrook 1967 (listed as “non-host or host of undetermined status”); +Margosian et al. 2009 (listed as lemon); Oakley 1950 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); White and Elson-Harris 1992 (authors state “requires confirmation”).

Synonyms: *Citrus limonum* Risso, *Citrus medica* L. var. *limon* L.

Citrus limonum Risso, see *Citrus limon* (L.) Burm. f.

Citrus luteoturgida hort. ex Tanaka, nom. nud., see *Citrus* spp.

Citrus macracantha Hassk., see *Citrus sinensis* (L.) Osbeck

Citrus maxima (Burm.) Merr.

Family: Rutaceae

Grin Nomen Number: 10744

Common Names: Adamsapfel (German), buntan (Japanese Rōmaji), jamboa (Portuguese), limau (Indonesian), Pampelmuse (German), pamplemousse (French), pamplemoussier (French), pomelo (English), Pomelo (German), pompelmo (Italian), pompelmus (Swedish), Pumelo (German), pummelo (English), shaddock (English), shadek (French), toronja (Spanish), you (transcribed Chinese), zabon (Japanese Rōmaji), zhu luan (transcribed Chinese).

Native: ASIA-TROPICAL – *Malesia*: Indonesia, Malaysia.

Cultivated: Widely cultivated in tropics and subtropics.

Field Infestation:

Tan and Lee 1982:

Penang Island, Malaysia

Infested *C. maxima* fruits (listed as both pomelo and *Citrus grandis*) were randomly collected on Penang Island. Fruits were held over moist sterilized sand in fine wire mesh-covered plastic containers until pupation. Pupae were transferred and held at 27–29°C (80±5% RH) until adult emergence. *Bactrocera cucurbitae* (listed as *Dacus cucurbitae*) was recovered from infested *C. maxima* fruits. Total number of fruits collected and infestation rate were not given.

Listing Only: Botha et al. 2004 (listed as *Citrus grandis*; listed as a secondary host); CABI 2016; Cantrell et al. 1999; Dhillon et al. 2005a (listed as *Citrus grandis*); Government of Western Australia Department of Agriculture and Food 2015; Holbrook 1967 (listed as *Citrus grandis*; listed as “non-host or host of undetermined status”); Hollingsworth et al. 1996; Plantwise Knowledge Bank 2015; Singh et al. 2004 (listed as *Citrus grandis*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Citrus grandis*; insufficient data to justify regulation); White and Elson-Harris 1992.

Synonyms: *Aurantium maximum* Burm., *Citrus aurantium* L. var. *decumana*, *Citrus aurantium* L. var. *grandis* L., *Citrus decumana* (L.) L., *Citrus grandis* Osbeck

Citrus medica L. var. *limon* L., see *Citrus limon* (L.) Burm. f.

Citrus neoaurantium Tanaka, see *Citrus* spp.

Citrus nobilis Andrews, see *Citrus reticulata* Blanco

Citrus oligopulpa hort. ex Tanaka, nom. nud., see *Citrus* spp.

Citrus nobilis Lour.

Family: Rutaceae

Grin Nomen Number: 10759

Common Names: King of Siam (English), king orange (English), tangor (English), mandarinier king (French), roi de Siam (French), kunenbo (Japanese Rōmaji).

Cultivated: ASIA-TEMPERATE – *China*: China; *Eastern Asia*: Japan; ASIA-TROPICAL – *Indo-China*: Vietnam; NORTHERN AMERICA – United States.

Listing Only: California Department of Food and Agriculture 2001; Cantrell et al. 1999; Holbrook 1967 (listed as “occasionally infested”); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host).

Citrus paradisi Macfad.

Family: Rutaceae

Grin Nomen Number: 10772

Common Names: grapefruit (English), Grapefruit (German), Paradisapfel (German), pomelo (French), pomelo (Portuguese), pomelo (Spanish), toronja (Spanish), yuan you (transcribed Chinese).

Cultivated: Widely cultivated in tropics and subtropics.

Listing Only: Cantrell et al. 1999; Holbrook 1967 (listed as “non-host or host of undetermined status”); +Margosian et al. 2009 (listed as grapefruit); Oakley 1950 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); White and Elson-Harris 1992 (listed as *Citrus* × *paradisi*; authors state “requires confirmation”).

Citrus reticulata Blanco

Family: Rutaceae

Grin Nomen Number: 10778

Common Names: bergamota (Portuguese-Brazil), culate mandarin (English), gan ju (transcribed Chinese), mandarin (English), mandarin orange (English), mandarina (Italian), mandarina (Portuguese), mandarina (Spanish), mandarine orange (English), Mandarinen (German), Mandarinenbaum (German), mandarinier (French), ponkan (Japanese Rōmaji), santara (India), småcitrus (Swedish), Swatow orange (English), tangerina (Portuguese-Brazil), tangerine (English), Tangerine (German).

Native: ASIA-TROPICAL – *Indo-China*: Vietnam.

Cultivated: Widely cultivated in tropics and subtropics.

Origin: probable origin Asia.

Field Infestation:

McBride and Tanada 1949:

Honolulu, Hawaii, U.S.A.

Ten (10) *C. reticulata* fruits were collected on 22 April 1947, in Punahou, Honolulu, by M. Chong. Recovered from these fruits were 259 *B. dorsalis* Hendel (listed as *Dacus dorsalis*), and 1 *B. cucurbitae* (listed as *Dacus cucurbitae*). The authors listed *C. reticulata* as a doubtful host.

Vayssières et al. 2007:

Benin, West Africa

Tephritid fruit fly-infested *Citrus reticulata* fruits were collected from untreated orchards in West Africa. Fruits were placed on mesh supports over sand. Tephritid fruit fly pupae, recovered through weekly sieving of the sand, were transferred to small hatching boxes lined with wet blotting paper and held for adult emergence. The average *B. cucurbitae* infestation level in *C. reticulata* fruits in West Africa fell in the range of 1-25 pupae/kg fruit.

Lab Infestation:

Chawla 1966:

In captivity, female *B. cucurbitae* adults (listed as *Dacus cucurbitae*) laid eggs on cut fruits of mandarin (*C. reticulata*). The eggs hatched and the development of the larvae proceeded normally through adult emergence.

McQuate et al. 2015:

Ninety-six (96) *C. reticulata* var. Clementine fruits were individually held in 26.5 x 26.5 x 26.5 cm cubical screened cages for 24 hours with 50 gravid female *B. cucurbitae* flies. Half of the fruits were presented intact (2.78 kg) while the other half of the fruits (2.92 kg) were punctured 50 times using a 1.0 mm diameter probe, with probes penetrating to a depth of 1.0 cm. Following fruit fly exposure, fruits were transferred individually onto sand in 5-liter screen-topped plastic buckets. Two (2) weeks later, sand from the buckets was sieved and fruits cut open to recover all pupariating larvae and pupae, which were then held on sand in screened-topped cups until adult emergence. *Bactrocera cucurbitae* was recovered from 15 of 48 intact fruits (31.2%), with an overall infestation rate of 340.8 pupae/kg fruit and 284.7 adults per kg fruit. *Bactrocera cucurbitae* was recovered from 28 of 48 punctured fruits (58.3%), with an overall infestation rate of 240.1 pupae/kg fruit and 168.2 adults per kg fruit.

Listing Only: California Department of Food and Agriculture 2001; Cantrell et al. 1999; De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Dhillon et al. 2005a; Holbrook 1967 (listed as “non-host or host of undetermined status”); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as a doubtful host); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host); White and Elson-Harris 1992 (authors state “requires confirmation”).

Synonyms: *Citrus depressa* Hayata var. *vangasay* (Bojer) H. Perrier, *Citrus nobilis* Andrews, *Citrus vangasay* Bojer

Citrus sarbati Tanaka, see *Citrus* spp.

Citrus sinensis (L.) Osbeck

Family: Rutaceae

Grin Nomen Number: 10782

Common Names: Apfelsine (German), Apfelsinenbaum (German), arancio dolce (Italian), blood orange (English), danggulnamu (transcribed Korean), laranja-amarga (Portuguese-Brazil), laranja-azedo (Portuguese-Brazil), laranja-bigarade (Portuguese-Brazil), laranja-da-terra (Portuguese-Brazil), laranja-de-sevilha (Portuguese-Brazil), laranja-doce (Portuguese), laranjeira (Portuguese), laranjeira-doce (Portuguese), naranja (Spanish), naranjo duce (Spanish), navel (French), navel orange (English), orange (English), Orange (German), orange douce (French), Orangenbaum (German), oranger (French), oranger doux (French), sanguine (French), Sinaasappel (Dutch), sweet orange (English), tian cheng (transcribed Chinese), Valencia orange (English).

Cultivated: Widely cultivated in tropics and subtropics.

Origin: Probable origin Asia.

Field Infestation:

Ali et al. 2014b:

Abugubeiha Province, South Kordofan State, Sudan

Citrus sinensis fruits were collected during the 2005 through 2006 growing season in Abugubeiha Province, South Kordofan State, Sudan, and held for recovery of infesting tephritid fruit flies. Out of 6.0 kg of *C. sinensis* fruits, 19 *B. cucurbitae* adults were recovered for an infestation rate of 3.2 *B. cucurbitae* per kg fruit. *Bactrocera dorsalis* (listed as *B. invadens*) and *Ceratitis cosyra* (Walker) were also recovered.

+*Back and Pemberton 1917:*

Hawaii, U.S.A.

Citrus sinensis (listed as orange) is listed as “occasionally infested” by *B. cucurbitae*. The authors report that E. M. Ehrhorn reared a single female melon fly from a sweet orange from Kaimuki, on the Island of Oahu, Hawaii. The authors, though, further noted that this is one of several fruits that

has “never been known to serve regularly” as a melon fly host and that this record of infestation “must be considered as exceptional.”

+Back and Pemberton 1918:

Hawaii, U.S.A.

Citrus sinensis (listed as orange) is listed as “occasionally infested” by *B. cucurbitae*.

The authors report that adults have been reared from orange, but that this is one of several fruits that does not serve regularly as a melon fly host and that it is only attacked in rare instances, and then only slightly.

+Ehrhorn 1910:

Island of Oahu, Hawaii, U.S.A.

In 1910, a few *C. sinensis* fruits (listed as oranges) provided by a farmer in Kaimuki were placed in a breeding jar. One (1) adult *B. cucurbitae* fly (listed as melon fly) was reared from the sample.

+Inayatullah et al. 1993:

Faisalabad, Pakistan

Based on observation, the average infestation rate of *C. sinensis* fruits (listed as orange) by *B. cucurbitae* (listed as *Dacus cucurbitae*) in the vicinity of the University of Agriculture in Faisalabad was about 10%.

Vayssières et al. 2007:

Benin and Burkina Faso, West Africa

Tephritid fruit fly-infested *Citrus sinensis* fruits were collected from untreated orchards in West Africa. Fruits were placed on mesh supports over sand. Tephritid fruit fly pupae, recovered through weekly sieving of the sand, were transferred to small hatching boxes lined with wet blotting paper and held for adult emergence. In 2006 in Benin, *B. cucurbitae* adults were recovered from *C. sinensis* fruits from several mixed orchards in Borgou, but also (though more rarely) from orchards located in the departments of Zou and Le Plateau. The authors indicated that the average *B. cucurbitae* infestation level in *C. sinensis* fruits in West Africa fell in the range of 1–25 pupae/kg fruit.

Lab Infestation:

McQuate et al. 2015:

One hundred and sixty-eight (168) *C. sinensis* fruits were individually held in 26.5 x 26.5 x 26.5 cm cubical screened cages for 24 hours with 50 gravid female *B. cucurbitae* flies. Half of the fruits were presented intact (26.28 kg) while the other half of the fruits (25.85 kg) were punctured 50 times using a 1.0 mm diameter probe, with probes penetrating to a depth of 1.0 cm. Following exposure to flies, fruits were transferred individually onto sand in 5-liter screen-topped plastic buckets. Two (2) weeks later, sand from the buckets was sieved and fruits cut open to recover all pupariating larvae and pupae, which were then held on sand in screened-topped cups until adult emergence. No pupae or adult *B. cucurbitae* flies were recovered from the intact fruits (0.0%). *Bactrocera cucurbitae* was recovered from 44 of 84 punctured fruits (52.4%), with an overall infestation rate of 84.5 pupae/kg fruit and 24.8 adults per kg fruit.

Listing Only: Botha et al. 2004 (listed as a secondary host); CABI 2016; California Department of Food and Agriculture 2001; Cantrell et al. 1999; Chawla 1966 (listed as *Dacus cucurbitae*); De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Dhillon et al. 2005a; Government of Western Australia Department of Agriculture and Food 2015; +Heppner 1989 (listed as *Dacus cucurbitae*; listed as orange); Holbrook 1967 (listed as “non-host or host of undetermined status”); Hollingsworth et al. 1996; Kapoor 1970 (listed as *Dacus cucurbitae*); +Lall 1975 (listed as *Dacus cucurbitae*; listed as orange); +Margosian et al. 2009 (listed as oranges); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as a rarely injured plant); +NAPPO, PAS 2015 (listed as orange); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); Plantwise Knowledge Bank 2015; +Severin et al. 1914 (listed as *Dacus cucurbitae*; listed as orange); Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host); +USDA-ARS 1959 (listed as orange); +Weems 1964 (listed as *Dacus cucurbitae*; listed as orange; listed as an occasional host); +Weems 1967 (listed as *Dacus cucur-*

bitae; listed as orange; listed as an occasional host); +Weems et al. 2001 (listed as orange; listed as an occasional host); White and Elson-Harris 1992.

Synonyms: *Citrus aurantium* L. var. *sinensis* L., *Citrus macracantha* Hassk.

Citrus speciosa hort. ex Tanaka, nom. nud., see *Citrus* spp.

Citrus sphaerocarpa Tanaka, nom. nud., see *Citrus* spp.

Citrus spp.

Family: Rutaceae

Grin Nomen Number: 312282

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Citrus* sp. fruit(s), originating in Hawaii, at an airport in Hawaii (Kahului) on one occasion in 2002. Recovery was 22 live larvae.

Listing Only: +Agrawal and Mathur 1991 (listed as *Dacus cucurbitae*; listed as citrus); +Batra 1953 (listed as *Dacus cucurbitae*; listed as citrus); Cantrell et al. 1999; EcoPort 2008; +Gopalan et al. 1977 (listed as *Dacus cucurbitae*; listed as citrus); Hawaii Department of Agriculture 2009; Isnadi 1991 (listed as *Dacus cucurbitae*); Kapoor 1970 (listed as *Dacus cucurbitae*); +Kapoor 1989 (listed as *Dacus cucurbitae*; listed as citrus); Kapoor 1991 (listed as *Dacus cucurbitae*); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*); +Lall 1964 (listed as *Dacus cucurbitae*); +Lall 1975 (listed as *Dacus cucurbitae*; listed as citrus); McBride and Tanada 1949 (listed as *Dacus cucurbitae*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); Rajamannar 1962 (listed as *Dacus cucurbitae*); +Ramadan and Messing 2003 (listed as citrus); Syed 1971 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); Vargas et al. 2004.

Synonyms: *Citrus chilensis* Molina, *Citrus duttae* Tanaka, *Citrus inflatorugosa* hort. ex Tanaka, nom. nud., *Citrus iriomotensis* hort. ex Tanaka, nom. nud., *Citrus luteoturgida* hort. ex Tanaka, nom. nud., *Citrus neaurantium* Tanaka, *Citrus oligopulpa* hort. ex Tanaka, nom. nud., *Citrus sarbati* Tanaka, *Citrus speciosa* hort. ex Tanaka, nom. nud., *Citrus sphaerocarpa* Tanaka, nom. nud., *Citrus tenuissima* hort. ex Tanaka, nom. nud., *Citrus yanbaruensis* hort. ex Tanaka, nom. nud.

Citrus tenuissima hort. ex Tanaka, nom. nud., see *Citrus* spp.

Citrus torosa Blanco, see *Citrus hystrix* DC.

Citrus vangsay Bojer, see *Citrus reticulata* Blanco

Citrus vulgaris Risso, see *Citrus aurantium* L.

Citrus yanbaruensis hort. ex Tanaka, nom. nud., see *Citrus* spp.

Cladosicyos edulis Hook. f., see *Melothria sphaerocarpa* (Cogn.) H. Schaef. and S.S. Renner

Clausena lansium (Lour.) Skeels

Family: Rutaceae

Grin Nomen Number: 10811

Common Names: Chinese clausena (English), huang pi (transcribed Chinese), wampee (American Indian-Algonquin), wampi (English), wampi (Swedish).

Native: ASIA-TEMPERATE – *China*: China – Fujian, Guangdong, Guangxi, Guizhou, Hainan, Sichuan, Yunnan; ASIA-TROPICAL – *Indo-China*: Vietnam.

Cultivated: Widely cultivated in tropics and subtropics.

Listing Only: Holbrook 1967 (listed as “non-host or host of undetermined status”); Isnadi 1991 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *Clauseni lansium*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); White and Elson-Harris 1992 (authors state “requires confirmation”).

Synonyms: *Clausena punctata* (Sonn.) Rehder and E. H. Wilson, *Clausena wampi* (Blanco) Oliv., *Cookia punctata* Sonn., *Cookia wampi* Blanco, *Quinaria lansium* Lour.

Clausena punctata (Sonn.) Rehder and E. H. Wilson, see *Clausena lansium* (Lour.) Skeels

Clausena wampi (Blanco) Oliv., see *Clausena lansium* (Lour.) Skeels

Coccinia cordifolia auct. see *Coccinia grandis* (L.) Voigt

Coccinia cordifolia (L.) Cogn., see *Cucumis maderaspatanus* L.

Coccinia indica Wight and Arn., see *Coccinia grandis* (L.) Voigt

Coccinia grandis (L.) Voigt.

Family: Cucurbitaceae

Grin Nomen Number: 10974

Common Names: ivy gourd (English), kanduri (Urdu-Pakistan), kundru, kundree (India), kundur (Urdu-Pakistan), little gourd (English), pepasan (Maylay), pepino cimarrón (Spanish), scharlakansgurka (Swedish), Tindola (German), tindora (India), tindori (India).

Native: AFRICA – *Northeast Tropical Africa*: Chad, Eritrea, Ethiopia, Somalia, Sudan; *East Tropical Africa*: Kenya, Tanzania, Uganda; *West-Central Tropical Africa*: Cameroon, Central African Republic, Zaire; *West Tropical Africa*: Mali, Nigeria, Senegal; ASIA-TEMPERATE – *Arabian Peninsula*: Yemen; *China*: China – Guangdong, Guangxi, Yunnan; ASIA-TROPICAL – *Indian Subcontinent*: India – Andhra Pradesh, Bihar, Gujarat, Kerala, Orissa, Rajasthan, Tamil, Nadu, Tripura, Urrar Pradesh, West Bengal; Pakistan, Sri Lanka; *Indo-China*: Cambodia, Laos, Myanmar, Thailand, Vietnam; *Malesia*: Indonesia, Malaysia, Papua New Guinea; AUSTRALASIA – *Australia*: Australia – Northern Territory.

Naturalized: PACIFIC – *Southwestern Pacific*: Fiji.

Cultivated: Widely cultivated.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 314 samples of both fruits and flowers of *C. grandis*. Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Bhatia and Mahto 1968:

New Delhi, India

During July to October 1967, 123 stem galls on wild *C. grandis* plants (listed as *Coccinea indica* W. and A. and also referred to as kundru), caused by the gall fly, *Bimba toombii* Grover, were collected at the Indian Agriculture Research Institute Farm in New Delhi, India. Galls were infested by two species of fruit flies: *Dacus ciliatus* and *Bactrocera cucurbitae* (listed as *Dacus cucurbitae*). Thirty-four percent (34%) of the galls were infested with 1 to 3 maggots in a single gall. Out of 142 fruit flies that emerged, 25% were *B. cucurbitae*. During the time that these observations were made, *C. grandis* fruits were present in great abundance and were heavily infested by both fruit fly species.

Clausen et al. 1965:

South India

From *C. grandis* collections (listed as *Coccinea indica*) from May 1950 to January 1951 in South India, 54,254 puparia were recovered, a mix of two predominant species: *Bactrocera cucurbitae* (listed as *Dacus cucurbitae* Coq) and *Dacus ciliatus* Loew (ratio not stated).

Chinajariyawong et al. 2000:

Thailand

Bactrocera cucurbitae was reared from 41 samples of *C. grandis* collected in Thailand. No infestation rate data were given.

Clarke et al. 2001:

Thailand

Eight thousand eight hundred forty-four (8,844) (108.6 kg) infested *C. grandis* fruits were collected in Thailand from 1986 to 1994. Five regions of Thailand (Chiang Rai, Chiang Mai, Bangkok, Surat Thani, Songkhla) recorded infestation rates of 0.73, 1.6, 1.3, 3.3, and 2.2 *B. cucurbitae* per infested fruit and 69.0, 106.1, 125.2, 228.4 and 164.8 *B. cucurbitae* per kg infested fruits, respectively. *Bactrocera cucurbitae* were identified by either R.A.I. Drew or D. L. Hancock.

Harris et al. 2010:

Kahuku, Island of Oahu, Hawaii, U.S.A.

In a study assessing the effect of parasitoid releases in suppressing *B. cucurbitae* populations, *C. grandis* fruits were collected weekly in 2003, 2004, and 2005 from a wild habitat adjacent to a commercial papaya orchard in Kahuku, Hawaii (control site). Fruits were held to monitor fruit infestation and parasitism rates. Overall melon fly recovery in Kahuku from *C. grandis* fruits averaged 9.34 *B. cucurbitae* pupae/kg fruit, of which 5.77 per kg fruit emerged as adults. Total numbers of fruit collected and total fruit weight were not reported.

Hollingsworth et al. 1996:

Honiara, Guadalcanal, Solomon Islands

From April to September 1996, *C. grandis* fruits were collected every 2 weeks at seven sites in the Honiara area of the island of Guadalcanal in the Solomon Islands. *Bactrocera cucurbitae* was recovered from 28 of 53 collections (52.8%). Five hundred sixty-nine (569) *B. cucurbitae* were recovered from the 547 fruits (5.932 kg) collected with overall infestation rates of 1.04 *B. cucurbitae* per fruit and 95.9 *B. cucurbitae* per kg fruit.

Hollingsworth et al. 2003:

Solomon Islands

From June 1994 to June 1998, *C. grandis* fruits were collected from up to seven provinces of the Solomon Islands (Central, Choiseul, Guadalcanal, Isabel, Malaita, Temotu, Western). *Bactrocera cucurbitae* was recovered from 2 of 11 samples (18.2%). Forty-four (44) *B. cucurbitae* flies were recovered from 275 fruits (3.99 kg) for overall infestation rates of 0.16 flies per fruit and 11.0 flies/kg fruit.

Jackson et al. 2003:

Kailua-Kona, Hawaii, Hawaii Island, U.S.A.

Coccinia grandis fruits (mature red fruit if available, but at least with some red present) were collected in 1992 (five sites), 1993 (five sites) and 1994 (eight sites) near Kailua-Kona, Hawaii and held over sand in plastic cups for recovery of tephritid fruit flies. In 1992, 2,813 *B. cucurbitae* puparia (from which 1,906 adults emerged) were recovered from 748 fruits. Recovery was 83 puparia/kg fruit and 425 puparia/kg fruit in the November and December samplings, respectively. In 1993, *B. cucurbitae* puparia were recovered from 613 out of 1,592 collected fruits (38.5%), with 612.4 *B. cucurbitae* puparia recovered per kg fruit and 564.4 adults recovered per kg fruit. In 1994, *B. cucurbitae* puparia were recovered from 1,859 out of 3,851 collected fruits (48.3%), with 7.4 adults recovered per fruit and 14.7 adults recovered per infested fruit.

Jacquard et al. 2013:

Réunion Island, France

Bactrocera cucurbitae-infested *C. grandis* fruits were collected from eight locations on Réunion Island in 2009 and held over sand. Puparia, recovered by sifting the sand, were held for adult emergence. Two hundred and eight (208) adult *B. cucurbitae* were recovered.

Kittayapong et al. 2000:

Thailand

Coccinia grandis fruits (listed as *Coccinia cordifolia*) were collected throughout Thailand within the time period October 1995 through December 1998. Collections were placed over sawdust in a ventilated plastic container and brought back to the laboratory at Mahidol University in Bangkok. Both *B. cucurbitae* and *B. tau* sp. A were recovered from *C. grandis* fruits. Total number of fruits collected and infestation rate data were not given.

Leblanc et al. 2012:

Solomon Islands

Coccinia grandis fruits (547 fruits; 7.53 kg) were collected during 1994 to 1999 in the Solomon Islands and held in plastic containers over finely sieved sawdust that had been sterilized in an oven or frozen overnight to kill mites. The sawdust was sieved to recover tephritid fruit fly puparia. Puparia were kept in moist sawdust until adult emergence. Adults were fed for 5 days, then killed by freezing to allow colors and markings, necessary for correct species identification, to fully develop. *Bactrocera cucurbitae* was recovered in 9 of 22 (40.9%) samples.

Leblanc et al. 2013a:

Solomon Islands

Coccinia grandis fruits were collected during 1994 to 1999 in the Solomon Islands and held in plastic containers over finely sieved sawdust that had been sterilized in an oven or frozen overnight to kill mites. The sawdust was sieved to recover tephritid fruit fly puparia. Puparia were kept in moist sawdust until adult emergence. Adults were fed for 5 days, then killed by freezing to allow colors and markings, necessary for correct species identification, to fully develop. *Bactrocera cucurbitae* was recovered in 9 of 22 (40.9%) samples, with an overall infestation rate of 42.76 flies/kg fruit and 101.58 flies/kg infested fruit.

Liquido et al. 1994:

Island of Hawaii, Hawaii, U.S.A.

From July 1990 to October 1992, 313 (3.21 kg) ripe tree or ground *C. grandis* fruits were collected (through collections made once or twice a month) from several sites on the island of Hawaii, Hawaii. Fruits were weighed, counted, split into groups of 5 or 10, and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* larvae and pupae were recovered from infested *C. grandis* fruits with an overall infestation rate of 1.48 larvae and pupae per fruit (144.55 larvae and pupae/kg fruit).

Tsatsia and Hollingsworth 1997:

Honiara, Guadalcanal Island, Solomon Islands

A laboratory *B. cucurbitae* colony was established with about 100 adults obtained from wild *Coccinia grandis* fruits (listed as *Coccinea grandis*) collected in Honiara. The colony size was increased via whole fruit egging with both ripe and green fruits (if punctured first) of *C. grandis*. No infestation rate data were given.

Tsuruta et al. 1997:

Sri Lanka

Five (5) adult *B. cucurbitae* were recovered from an unspecified number of *C. grandis* fruits collected from the Meddegama area of Sri Lanka. No infestation rate data were given.

Uchida et al. 1990:

Hawaii, U.S.A.

Ripe *C. grandis* fruits were collected from four sites on the Island of Oahu (Ewa, Kamilo Nui, Makiki, and Waimanalo) from December 1988 to April 1989 and from two sites on the Island of Hawaii (Kailua and Kalaoa) on 21–22 April 1989. Fruits were held in wooden frames with screen bottoms lined with newspaper, placed in fiberglass boxes with a layer of fine vermiculite on the bottom. Vermiculite was screened weekly with recovered larvae and pupae transferred to paper packages for adult emergence. Adult *B. cucurbitae* recoveries were 254.6 flies/kg fruit (Ewa; 84 fruits; 1.0959 kg), 73.0 flies/kg fruit (Kamilo Nui; 7 fruits; 0.0685 kg), 0.0 flies/kg fruit (Makiki; 3 fruits; 0.0775 kg), 54.5 flies/kg fruit (Waimanalo; 124 fruits; 2.1463 kg), 0.0 flies/kg fruit (Kailua; 36 fruits; 0.3799 kg), and 0.0 flies/kg fruit (Kalaoa; 7 fruits; 0.1156 kg).

Vargas et al. 2000:

Waimanalo, Island of Oahu, Hawaii, U.S.A.

Infested *C. grandis* fruits collected from Waimanalo were used to establish a laboratory colony of *B. cucurbitae*.

Vargas et al. 2004:

Kailua-Kona, Hawaii Island, Hawaii, U.S.A.

Approximately 100 three-fourths-ripe to fully ripe *Coccinia grandis* fruits were randomly collected monthly from each of ten patches of *C. grandis* from April 1996 to March 1997 in Kailua-Kona.

Fruits were held in batches of 100 on a wood-framed metal screen inside a fiberglass holding box with screened ventilation holes on the sides and with sand on the bottom. Sand was sifted weekly to recover pupae which were held in screen-topped plastic containers until adult emergence. Additionally, 250 fruits were collected in April 1997 from each of four sites and were held individually in screened-top plastic cups. *Bactrocera cucurbitae* infestation rates in *C. grandis* were also recorded in cage studies where 100 field-collected naturally infested *C. grandis* fruits (90–100% ripe) were introduced to cages to which 0 (control), 1, 2, or 3 grams of *B. cucurbitae* pupae parasitized by *Psytalia fletcheri* (Silvestri) were subsequently added. Finally, infestation data were also recorded from wild *C. grandis* fruits from field sites where parasitoids were released and where no releases were made (control). From the initial field surveys, 32.4% of the fruits were infested by *B. cucurbitae*, with a mean (\pm standard error) emergence of 2.05 ± 0.13 *B. cucurbitae* per fruit. Numbers of flies recovered ranged from 50 to 270 per kg fruit. In the cage studies, an average of 131.8 ± 19.4 *B. cucurbitae* adults was recovered per 100 fruits in the control treatment. In the field release trials, estimated *B. cucurbitae* adult emergence averaged 54.0 (range: 26–89) *B. cucurbitae* adults per kg fruit.

Vayssières and Carel 1999:

Réunion Island, France

Wild *Coccinia grandis* fruits were collected over the course of a year from up to 70 localities on Réunion Island. Fruits with evidence of fruit fly infestation were held in individual containers, with recovered pupae held for adult emergence. *Bactrocera cucurbitae* recovery averaged 1,006 (standard deviation = 1,061) adults per kg infested fruit.

Interception Data:

Defra 2008:

India

Bactrocera cucurbitae was recovered in North West United Kingdom from 4 boxes of *Coccinia grandis* originating in India. No infestation rate data were given.

Listing Only: Agrawal and Mathur 1991 (listed as *Dacus cucurbitae*; listed both as *Coccinia indica* and as kundru); Botha et al. 2004 (listed as a wild host); CABI 2016 (listed as a secondary host); California Department of Food and Agriculture 2001; Chawla 1966 (listed as *Dacus cucurbitae*; listed as *Coccinia indica* W. and A.); Copeland et al. 2009; De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Dhillon et al. 2005a (listed as *Coccinia grandis*, *Coccinia indica* and as *Cephalandra indica*); EcoPort 2008 (listed as both *Coccinia cordifolia* and as *C. grandis*); Hawaii Department of Agriculture 2009; Holbrook 1967 (listed as *Coccinia cordifolia*); Hollingsworth and Allwood 2000; Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Coccinia indica*); Kapoor 1991 (listed as *Dacus cucurbitae*); Kapoor 2005–2006 (listed as infesting *C. grandis* fruits as well as stem galls on *C. grandis* induced by gall midges, *Lasioptera toombii* [Grover] [Diptera: Cecidomyiidae] (listed as *Lasioptera toombii*); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*; listed both as *Coccinia indica* and as *Cephalandra indica*); Kumar et al. 2008 (listed as *Coccinia indica* Wight and Arn.); Leblanc 2000; Leblanc et al. 2013b; McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as *Coccinia indica* Wight and Arn.); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed both as *Coccinia indica* and as *Cephalandra indica*); Nishida 1963 (listed as *Dacus cucurbitae*; listed as both kundru and *Coccinia indica* W. and A.); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *Coccinia cordifolia*); Pacific Fruit Fly Web 2002; Plantwise Knowledge Bank 2015; Purcell and Messing 1996; Puttarudriah and Usman 1954 (listed as *Dacus cucurbitae*; listed as *Cephalandra indica*); Quilici and Jeuffrault 2001 (listed as very favorable as a host); Ramadan and Messing 2003; Ryckewaert et al. 2010; Syed 1971 (listed as *Dacus cucurbitae*; listed both as *Coccinia indica* and as *Cephalandra indica*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Coccinia cordifolia*; insufficient data to justify regulation); USDA-APHIS 2000; USDA-APHIS 2008; +Walker 2005 (listed as ivy gourd); White and Elson-Harris 1992 (listed as infesting galls made by *Lasioptera toombii* (Grover) [Diptera: Cecidomyiidae] on *C. grandis*).

Synonyms: *Coccinia cordifolia* auct., *Coccinia indica* Wight and Arn.

Coccinia indica Wight and Arn., see *Coccinia grandis* (L.) Voigt

Coccinia spp.

Family: Cucurbitaceae

Grin Nomen Number: 300138

Listing Only: Ayyar 1935 (listed as *Chaetodacus cucurbitae*, Coq.; “reared from stem galls on *Coccinia* in Coimbatore”); California Department of Food and Agriculture 2001; Cantrell et al. 1999; De Meyer et al. 2014; Nath et al. 1976; USDA-APHIS 2000; USDA-APHIS 2008.

Coccinia trilobata (Cogn.) C. Jeffrey

Family: Cucurbitaceae

Grin Nomen Number: 476139

Native: AFRICA – *East Tropical Africa*: Kenya, Tanzania.

Listing Only: Copeland et al. 2009; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*).

Synonyms: *Peponia parviflora* var. *trilobata* Cogn.

Coffea arabica L.

Family: Rubiaceae

Grin Nomen Number: 300141

Common Names: Arabian coffee (English), Arabica coffee (English), Arabikakaffee (German), arabischer Kaffeebaum (German), arabischer Kaffeestrauch (German), arabiskt kaffee (Swedish), Bergkaffee (German), café (Portuguese-Brazil), caféiro (Portuguese), caféier d’Arabie (French), cafeiro (Portuguese-Brazil), cafeto arábico (Spanish), cafeto de Arabia (Spanish), coffee (English), coffeetree (English), Kaffeestrauch (German), koffieboom (Afrikaans).

Native: AFRICA – *Northeast Tropical Africa*: Ethiopia, Sudan; *East Tropical Africa*: Kenya.

Naturalized: AFRICA – Africa; sometimes naturalized in the tropics.

Cultivated: AFRICA – *Western Indian Ocean*: Réunion; ASIA-TROPICAL – *Malesia*: Indonesia – Java; widely cultivated in tropics.

Field Infestation:

Harris et al. 2003:

Kalaupapa Peninsula, Island of Molokai, Hawaii, U.S.A.

During 1991 to 1992, 1,062 *C. arabica* fruits (3.01 kg) were collected from the Kalaupapa peninsula and placed on sand in fruit holding boxes. The sand was screened weekly for recovery of tephritid fruit fly puparia. Recovered puparia were placed in glass jars and held until adult emergence. One (1) adult *B. cucurbitae* was recovered, for an infestation rate of 0.00094 melon flies per fruit (0.33 melon flies/kg fruit).

Synonyms: *Coffea arabica* L. var. *arabica*, *Coffea arabica* L. var. *columnaris* Ottol. ex. P. J. S. Cramer, *Coffea arabica* L. var. *erecta* P. J. S. Cramer, *Coffea arabica* L. var. *goiaba* Taschdjian, *Coffea arabica* L. var. *laurina* Laness., *Coffea arabica* L. var. *maragogipe* A. Fern. ex A. Froehner, *Coffea arabica* L. var. *mirta* P. J. S. Cramer, *Coffea arabica* L. var. *mokka* P. J. S. Cramer, *Coffea arabica* L. var. *polysperma* Burck, *Coffea arabica* L. var. *purpurascens* P. J. S. Cramer

Coffea arabica L. var. *arabica*, see *Coffea arabica* L.

Coffea arabica L. var. *columnaris* Ottol. ex. P. J. S. Cramer, see *Coffea arabica* L.

Coffea arabica L. var. *erecta* P. J. S. Cramer, see *Coffea arabica* L.

Coffea arabica L. var. *goiaba* Taschdjian, see *Coffea arabica* L.

Coffea arabica L. var. *laurina* Laness., see *Coffea arabica* L.

Coffea arabica L. var. *maragogipe* A. Fern. ex A. Froehner, see *Coffea arabica* L.

Coffea arabica L. var. *mirta* P. J. S. Cramer, see *Coffea arabica* L.

Coffea arabica L. var. *mokka* P. J. S. Cramer, see *Coffea arabica* L.

Coffea arabica L. var. *polysperma* Burck, see *Coffea arabica* L.

Coffea arabica L. var. *purpurascens* P. J. S. Cramer, see *Coffea arabica* L.

Colocynthis citrullus (L.) Kuntze, see *Citrullus lanatus* (Thunb.) Matsum. and Nakai subsp. *lanatus*

Colocynthis vulgaris Schrad., see *Citrullus colocynthis* (L.) Schrad.

Comeurya cumingiana Baill., see *Dracontomelon dao* (Blanco) Merr. and Rolfe

Coniandra Schrad., see *Kedrostis* Medik.

Cookia punctata Sonn., see *Clausena lansium* (Lour.) Skeels

Cookia wampi Blanco, see *Clausena lansium* (Lour.) Skeels

Crateva marmelos L., see *Aegle marmelos* (L.) Corrêa

Crescentia spp.

Family: Bignoniaceae

Grin Genus Number: There is no listing in GRIN for this genus; taxonomy taken from The Plant List.

Listing Only: California Department of Food and Agriculture 2001; Cantrell et al. 1999; USDA-APHIS 2000; USDA-APHIS 2008.

Crotalaria incana L.

Family: Fabaceae

Grin Nomen Number: 12329

Common Names: silver rattlepod (English), woolly rattlepod (English).

Native: AFRICA – *Northeast Tropical Africa:* Ethiopia; *East Tropical Africa:* Kenya, Tanzania, Uganda; *West-Central Tropical Africa:* Burundi, Cameroon, Rwanda, Zaire; *West Tropical Africa:* Nigeria; *South Tropical Africa:* Malawi, Mozambique, Zambia, Zimbabwe; *Western Indian Ocean:* Madagascar; ASIA-TEMPERATE – *Arabian Peninsula:* Yemen; NORTHERN AMERICA – Mexico; SOUTHERN AMERICA – *Caribbean:* Anguilla, Antigua and Barbuda, Bahamas, Barbados, Cayman Islands, Cuba, Dominica, Dominican Republic, Grenada, Guadeloupe, Haiti, Jamaica, Martinique, Netherlands Antilles, Puerto Rico, St. Vincent and Grenadines – St. Vincent, Virgin Islands (British), Virgin Islands (U.S.); *Central America:* Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama; *Northern South America:* Guyana; *Brazil:* Brazil – Bahia, Para; *Western South America:* Bolivia, Colombia, Ecuador, Peru; *Southern South America:* Argentina, Paraguay, Uruguay.

Naturalized: Naturalized elsewhere in tropics.

Listing Only: Botha et al. 2004 (listed as *Crotalaria incana* L. and as a wild host).

Crotalaria sp.

Family: Fabaceae

Grin Nomen Number: 300155

Interception Data:

PestID 2016:

El Salvador

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Crotalaria* sp. stem, originating in El Salvador, at an airport in California (Los Angeles) on one occasion in 1992. Recovery was two live larvae.

Cucumeropsis edulis (Hook. f.) Cogn., see *Melothria sphaerocarpa* (Cogn.) H. Schaef. and S.S. Renner

Cucumeropsis mannii Naudin, see *Melothria sphaerocarpa* (Cogn.) H. Schaef. and S.S. Renner

Cucumis acutangulus L., see *Luffa acutangula* (L.) Roxb.

Cucumis anguria L.

Family: Cucurbitaceae

Grin Nomen Number: 12546

Common Names: anguriagurka (Swedish), cornichão-das-antilhas (Portuguese-Brazil), maxixe (Portuguese-Brazil), maxixe-bravo (Portuguese-Brazil), maxixe-do-mato (Portuguese-Brazil), pepinito (Spanish), pepino (Spanish), pepino-castanha (Portuguese-Brazil), pepino cimarrón (Spanish), pepino-espinhoso (Portuguese-Brazil), sandía de ratón (Spanish-Guatemala).

Native: AFRICA – *East Tropical Africa:* Tanzania; *West-Central Tropical Africa:* Zaire; *South Tropical Africa:* Angola, Malawi, Mozambique, Zambia, Zimbabwe; *Southern Africa:* Botswana, Namibia, South Africa – KwaZulu-Natal, Limpopo, Mpumalanga; Swaziland.

Naturalized: AFRICA – *Western Indian Ocean:* Madagascar; AUSTRALASIA – *Australia:* Australia – Queensland; NORTHERN AMERICA – *Southeastern U.S.A.:* United States – Florida; *Northern Mexico:* Mexico – Nuevo Leon, San Luis Potosi, Sinaloa, Sonora, Tamaulipas; *Southern Mexico:* Mexico – Chiapas, Colima, Guerrero, Jalisco, Michoacan, Nayarit, Oaxaca, Queretaro, Quintana Roo, Veracruz, Yucatan; SOUTHERN AMERICA – *Caribbean:* Anguilla, Antigua and Barbuda, Barbados, Cayman Islands, Cuba, Dominican Republic, Grenada, Guadeloupe, Haiti, Jamaica, Martinique, Netherlands Antilles, Puerto Rico, St. Lucia, St. Vincent and Grenadines, Virgin Islands (British), Virgin Islands (U.S.); *Central America:* Costa Rica, Guatemala, Honduras, Nicaragua, Panama; *Northern South America:* French Guiana, Suriname, Venezuela, *Brazil:* Brazil – Amazonas, Maranhao, Mato Grosso do Sul, Minas Gerais, Rondonia; *Western South America:* Ecuador, Peru.

Cultivated: AFRICA – *Macaronesia:* Cape Verde; *West-Central Tropical Africa:* Zaire; *West Tropical Africa:* Senegal, Sierra Leone; *Southern Africa:* South Africa; *Western Indian Ocean:* Madagascar, Réunion; SOUTHERN AMERICA – *Caribbean:* West Indies.

Field Infestation:

Vayssières and Carel 1999:

Réunion Island, France

Wild *Cucumis anguria* fruits were collected over the course of a year from up to 70 localities on Réunion Island. Fruits with evidence of fruit fly infestation were held in individual containers, with recovered pupae held for adult emergence. *Bactrocera cucurbitae* recovery averaged 1,482.7 (standard deviation = 1,565) adults per kg infested fruit.

Listing Only: CABI 2016 (listed as a secondary host); California Department of Food and Agriculture 2001 (listed as *Cucumis angaria*); De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Dhillon et al. 2005a; Plantwise Knowledge Bank 2015; Quilici and Jeuffrault 2001 (listed as very favorable as a host); Ryckewaert et al. 2010; USDA 1986 (listed as *Dacus cucurbitae*; listed as *Cucumis angaria*); USDA-APHIS 2000 (listed as *Cucumis angaria*); USDA-APHIS 2008 (listed as *Cucumis angaria*).

Cucumis collosus (Rottler) Cogn., see *Cucumis melo* L. subsp. *melo*

Cucumis colocynthis L., see *Citrullus colocynthis* (L.) Schrad.

Cucumis dipsaceus Ehrenb. ex Spach

Family: Cucurbitaceae

Grin Nomen Number: 12552

Common Names: hedgehog cucumber (English), hedgehog gourd (English), Igel-Gurke (German), pepino diablito (Spanish), teasel gourd (English).

Native: AFRICA – *Northern Africa*: Egypt; *Northeast Tropical Africa*: Eritrea; Ethiopia, Somalia, Sudan, Yemen – Socotra; *East Tropical Africa*: Kenya, Tanzania, Uganda; ASIA-TEMPERATE – *Ara-bian Peninsula*: Saudi Arabia.

Naturalized: NORTHERN AMERICA – *South-Central U.S.A.*: United States – Texas; *Northern Mexico*: Mexico – Baja Sur, San Luis Potosi, Sinaloa, Tamaulipas; *Southern Mexico*: Mexico – Jalisco, Veracruz; PACIFIC – *North-Central Pacific*: United States – Hawaii; SOUTHERN AMERICA – *Central America*: Panama; *Caribbean*: Cuba; *Northern South America*: Venezuela; *Western South America*: Ecuador, Peru.

Cultivated: also cultivated.

Field Infestation:

Liquido et al. 1994:

Hawaii Island, Hawaii, U.S.A.

From July 1990 to October 1992, 134 (4.694 kg) ripe “on plant” or ground *C. dipsaceus* fruits were collected (through collections made once or twice a month) from several sites on the island of Hawaii, Hawaii. Fruits were weighed, counted, split into groups of 5 or 10, and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* larvae and pupae were recovered from infested *C. dipsaceus* fruits with an overall infestation rate of 0.29 larvae and pupae per fruit (8.31 larvae and pupae/kg fruit).

Mwatawala et al. 2009b:

Morogoro Region, Central Tanzania

Cucumis dipsaceus fruits were randomly collected weekly between October 2004 through October 2006 and from August through December 2007, from areas within the Sokoine University of Agriculture campus in Morogoro and from Nyandira, Mikese, Mkindo in the Morogoro region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupation of infesting tephritid fruit flies. Emerged adults were removed and identified. Out of 408 collected fruits (4.669 kg), infestation by *B. cucurbitae* averaged 18.63 emerged adults per kg fruit.

Mwatawala et al. 2010:

Morogoro Region, Central Tanzania

Five hundred seventeen (517) immature *C. dipsaceus* fruits (6.539 kg) were collected at irregular intervals between October 2004 and April 2008, from the Morogoro Region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupariation of infesting tephritid fruit flies. Emerged adults were removed and identified. *Bactrocera cucurbitae* flies were recovered from 7 of 47 collections (14.89%), with an overall infestation rate of 13.30 flies/kg fruit and 127.75 flies/kg infested fruit.

Uchida et al. 1990:

Hawaii, U.S.A.

Cucumis dipsaceus fruits were collected from two sites on the Island of Kauai (Kekaha, Mana) from 1 February to 31 November 1988, two sites on the Island of Oahu (Campbell Industrial Park, Makaha Valley) and two sites on the Island of Hawaii (Kailua, Milolii) from 1 March to 25 May 1989. Fruits were held in wooden frames with screen bottoms lined with newspaper, placed in fiberglass boxes with a layer of fine vermiculite on the bottom. Vermiculite was screened weekly with recovered larvae and pupae transferred to paper packages for adult emergence. Adult *B. cucurbitae* recoveries were 2.5 flies/kg fruit (Kekaha; 277 fruits; 8.9751 kg), 15.4 flies/kg fruit (Mana; 228 fruits; 12.2043 kg), 3.0 flies/kg fruit (Campbell Industrial Park; 70 fruits; 1.9891 kg), 14.4 flies/kg fruit (Makaha Valley; 11 fruits; 0.4157 kg), 0.0 flies/kg fruit (Kailua; 28 fruits; 1.1703 kg), and 0.0 flies/kg fruit (Milolii; 20 fruits; 0.6303 kg).

Vargas 1993:

Island of Niihau, Hawaii, U.S.A.

Fifty (50) *C. dipsaceus* fruits were collected near Kauwawea on the island of Niihau in 1991. Fruits were placed on metal trays in plastic holding boxes containing sand. Mature *B. cucurbitae* larvae and pupae, recovered through weekly sifting of the sand, were held for adult emergence. Forty-eight (48) *B. cucurbitae* were recovered, for an average of 0.96 *B. cucurbitae* per fruit.

Listing Only: +Akhtaruzzaman et al. 1999 (listed as teasel gourd); Copeland et al. 2009; De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Dhillon et al. 2005a; Holbrook 1967

(listed as “heavily or generally infested”); Nishida 1953 (listed as *Dacus cucurbitae*); Vargas et al. 1989 (listed as *Dacus cucurbitae*).

Cucumis ficifolius A. Rich.

Family: Cucurbitaceae

Grin Nomen Number: 12554

Native: AFRICA – *Northeast Tropical Africa*: Eritrea, Ethiopia; *East Tropical Africa*: Kenya, Tanzania, Uganda; *West-Central Tropical Africa*: Rwanda, Zaire.

Listing Only: Copeland et al. 2009; De Meyer et al. 2014 (listed as *Cucumis figareii*); De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*; listed as both *Cucumis ficifolius* A. Rich and as *C. figareii* Naud.).

Synonyms: *Cucumis figareii* Delile ex Naudin

Cucumis figareii Delile ex Naudin, see *Cucumis ficifolius* A. Rich.

Cucumis flexuosus L., see *Cucumis melo* L. subsp. *melo* var. *flexuosus* (L.) Naudin

Cucumis maderaspatanus L.

Family: Cucurbitaceae

Grin Nomen Number: 12563

Common Names: Sträv mukreva (Swedish); chibber (Pakistan).

Native: AFRICA – *Northeast Tropical Africa*: Chad, Ethiopia, Sudan; *East Tropical Africa*: Kenya, Tanzania, Uganda; *West-Central Tropical Africa*: Cameroon, Central African Republic, Congo, Zaire; *West Tropical Africa*: Benin, Burkina Faso, Côte d'Ivoire, Gambia, Guinea, Mali, Niger, Nigeria, Senegal, Sierra Leone, Togo; *South Tropical Africa*: Angola, Malawi, Mozambique, Zambia, Zimbabwe; *Southern Africa*: South Africa – KwaZulu-Natal, Transvaal; *Western Indian Ocean*: Madagascar, Mauritius; ASIA-TEMPERATE – *China*: China – Guangdong, Guangxi, Yunnan; *Eastern Asia*: Taiwan; ASIA-TROPICAL – *Indian Subcontinent*: Bhutan, India, Nepal, Pakistan, Sri Lanka; *Indo-China*: Cambodia, Laos, Myanmar, Thailand, Vietnam; *Malesia*: Indonesia, Malaysia, Papua New Guinea, Philippines; AUSTRALASIA – *Australia*: Australia – Western Australia.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from samples of *C. maderaspatanus* (listed as *Mukia maderaspatana*). Number of fruit samples and infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D. L. Hancock.

Ranganath and Veenakumari 1996b:

Andaman and Nicobar Islands, India

From December 1990 to May 1993, *C. maderaspatanus* fruits (listed as *Mukia maderaspatana* [L.] Roem) were collected from the Andaman and Nicobar Islands, India. Fruits were held in the laboratory until adult emergence. *Bactrocera cucurbitae* was recovered from infested *C. maderaspatanus* fruits.

Listing Only: CABI 2016 (listed as a wild host); De Meyer et al. 2014 (listed as *Mukia maderaspatana*); Isnadi 1991 (listed as *Dacus cucurbitae*; listed as *Coccinia cordifolia*); Moiz et al. 1967 (listed as *Dacus cucurbitae*); Plantwise Knowledge Bank 2015; Qureshi et al. 1974 (listed as *Dacus cucurbitae*; listed as *Cucumis maderaspatana* L.); Syed 1971 (listed as *Dacus cucurbitae*; listed as galls on *Coccinia cordifolia*).

Synonyms: *Bryonia cordifolia* L., *Bryonia scabrella* L., *Coccinia cordifolia* (L.) Cogn., *Melothria maderaspatana* (L.) Cogn., *Mukia maderaspatana* (L.) M. Roem., *Mukia scabrella* (L.) Arn.

Cucumis melo L.

Family: Cucurbitaceae

Grin Nomen Number: 404410

Common Names: melon (English), Melone (German).

Native: AFRICA – *Northeast Tropical Africa*: Chad, Eritrea, Ethiopia, Somalia, Sudan; *East Tropical Africa*: Tanzania, Uganda; *West Tropical Africa*: Benin, Côte d'Ivoire, Ghana, Niger, Senegal; *South Tropical Africa*: Malawi, Mozambique, Zimbabwe; *Southern Africa*: South Africa; *Western Indian Ocean*: Seychelles; ASIA-TEMPERATE – *Arabian Peninsula*: Saudi Arabia, Yemen; *Western Asia*: Iran; *China*: China; *Eastern Asia*: Japan, Korea; ASIA-TROPICAL – *Indian Subcontinent*: India, Nepal, Pakistan, Sri Lanka; *North Indian Ocean*: Maldives; *Indo-China*: Myanmar, Thailand; *Malesia*: Indonesia, Papua New Guinea, Philippines; AUSTRALASIA – *Australia*: Australia; PACIFIC – *Northwestern Pacific*: Guam; *Southwestern Pacific*: Samoa, Solomon Islands, Tonga.

Naturalized: Widely naturalized in the tropics.

Cultivated: cultivated worldwide.

Native: Native range obscure.

Field Infestation:

Ali et al. 2014b:

Abugubeiha Province, South Kordofan State, Sudan

Cucumis melo fruits were collected during the 2005 through 2006 growing season in Abugubeiha Province, South Kordofan State, Sudan, and held for recovery of infesting tephritid fruit flies. Out of 7.0 kg of *C. melo* fruits, 23 *B. cucurbitae* adults were recovered for an infestation rate of 3.3 *B. cucurbitae* per kg fruit.

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 12 samples of *C. melo*. Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Bains and Sidhu 1984:

Punjab, India

Bactrocera cucurbitae adults (listed as *Dacus cucurbitae*) for use in laboratory studies were reared from field-infested musk melon (*C. melo*) fruits held on sand in glass jars. Pupae were recovered by sifting sand after 7 days, transferring them to glass vials holding moist sand, and holding them until adult emergence.

Field observations of infestation of musk melon (*C. melo*) fruits by *B. cucurbitae* were made at 10-day intervals in Punjab, India, between April and July. Infested fruits were found in 9 of 9 observations (100%) with an average infestation rate of 9.78 (± 2.43 [standard error])%.

Chinajariyawong et al. 2000:

Thailand

Bactrocera cucurbitae was reared from 1 sample of *C. melo* collected in Thailand. No infestation rate data were given.

Clarke et al. 2001:

Thailand

Eighty (80) (31.5 kg) infested *C. melo* fruits were collected in Thailand from 1986-1994. Two regions of Thailand (Chiang Rai and Bangkok) recorded infestation rates of 2.1 and 14.1 *B. cucurbitae* per infested fruit and 5.6 and 34.8 *B. cucurbitae* per kg infested fruits, respectively. *Bactrocera cucurbitae* were identified by either R.A.I. Drew or D. L. Hancock.

+*Froggatt 1909:*

Jaffna, Sri Lanka (referred to as Ceylon)

Author reported finding many damaged *C. melo* fruits (listed as melons) containing fruit fly maggots in the northern part of Ceylon, at Jaffna. He later recovered *B. cucurbitae* (listed as *Dacus cucurbitae*) from the pupae. No infestation rate data were given.

Central or North-Western India

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from maggot-infested melons from gardens in Central or North-Western India. No infestation rate data were given.

+*Inayatullah et al. 1993:*

Faisalabad, Pakistan

Based on observation, the average rate of infestation of *C. melo* fruits (listed as melon) by *B. cucurbitae* (listed as *Dacus cucurbitae*) in the vicinity of the University of Agriculture in Faisalabad was about 55%.

Khan et al. 1992:

Faisalabad, Pakistan

During summer 1985 and spring 1986, *C. melo* var. 'Ravi,' was sown in a randomized complete block design to test for the relative effectiveness of toxicants and bait sprays for the control of *B. cucurbitae* (listed as *Dacus cucurbitae*). Sprays were initiated just after fruit set, and repeated in 10-day intervals for a total of four sprays. Before each spray, healthy and fly-infested fruits were counted in the control and all spray plots. Infestation of *Cucumis melo* by *B. cucurbitae* averaged 14.1% and 18.2% in untreated control plots in 1985 and 1986, respectively.

In 1986, squashmelon (*Cucurbita pepo* L. subsp. *ovifera* (L.) D. S. Decker var. *ovifera* (L.) Harz) was intersown in melon as a trap crop, with another plot of melon grown nearby as a control. The percentage fruit infestation was recorded every 10 days following initial fruit set. *Cucumis melo* infestation averaged 10.2% in the plot with interplanted squashmelon and 19.2% in the plot where only melon was grown.

In 1986, melon was sown in 15 plots to test for the relative effectiveness of toxicants for the control of *B. cucurbitae*. Percentage fruit infestation was recorded after fruit set, and repeated just before each spray. Before each spray, healthy and fly-infested fruits were counted in the control and all spray plots. Infestation of *Cucumis melo* by *B. cucurbitae* averaged 18.7% in untreated control plots.

+*Khan et al. 1993:*

Faisalabad, Pakistan

One hundred (100) *C. melo* fruits (assignment of "C. melo" for common name "melon" used in this paper determined from Khan et al. 1992) were randomly observed in the field monthly from 1985 to 1986 and percentage infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) calculated. High *C. melo* infestation (76–100%) was observed in May, while 51–75% infestation was observed in April and June to August.

Cucumis melo samples were placed in a cage (1 fruit at a time) with adult *B. cucurbitae* flies for 24 hours, then, 1 week later, were dissected to count the number of 2nd and 3rd instar larvae. Over 5 replications, an average of twenty-five (25) 2nd instar and one hundred twenty-four (124) 3rd instar larvae was recovered.

Leblanc et al. 2012:

Papua New Guinea (PNG)

Cucumis melo fruits were collected during 1997 to 2000 in PNG and held in plastic containers over finely sieved sawdust that had been sterilized in an oven or frozen overnight to kill mites. The sawdust was sieved to recover tephritid fruit fly puparia. Puparia were kept in moist sawdust until adult emergence. Adults were fed for 5 days, then killed by freezing to allow colors and markings, necessary for correct species identification, to fully develop. *Bactrocera cucurbitae* was recovered in 7 of 9 (77.8%) samples in PNG.

Leblanc et al. 2013a:

Papua New Guinea (PNG)

Cucumis melo fruits (94 fruits; 23.16 kg) were collected during 1997 to 2000 in PNG and held in plastic containers over finely sieved sawdust that had been sterilized in an oven or frozen overnight to kill mites. The sawdust was sieved to recover tephritid fruit fly puparia. Puparia were kept in moist sawdust until adult emergence. Adults were fed for 5 days, then killed by freezing to allow colors and markings, necessary for correct species identification, to fully develop. *Bactrocera cucurbitae* was recovered in 7 of 8 (87.5%) samples in PNG, with an overall infestation rate of 17.79 flies/kg fruit and 32.42 flies/kg infested fruit.

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 68 *C. melo* fruits were collected (3 collections overall) from two islands/island groups (Okinawa, Yaeyama) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or

sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 2 fruits, giving an average percentage infestation rate (weighted by the number of collections in each of the islands/island groups) of 17.2%.

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 235 *C. melo* fruits (listed as *C. melo* cv. *Albus*) were collected (8 collections overall) from one island/island group (Amami) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 42 fruits, giving an average percentage infestation rate (weighted by the number of collections in the island/island group) of 8.1%.

Mwatawala et al. 2009b:

Morogoro Region, Central Tanzania

Cucumis melo fruits were randomly collected weekly between October 2004 through October 2006 and from August through December, 2007, from areas within the Sokoine University of Agriculture campus in Morogoro and from Nyandira, Mikese, Mkindo in the Morogoro region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupation of infesting tephritid fruit flies. Emerged adults were removed and identified. Out of 75 collected fruits (2.082 kg), infestation by *B. cucurbitae* averaged 169.07 emerged adults per kg fruit.

Mwatawala et al. 2010:

Morogoro Region, Central Tanzania

Seventy-two (72) immature *C. melo* fruits (2.037 kg) were collected at irregular intervals between October 2004 and April 2008, from the Morogoro Region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupariation of infesting tephritid fruit flies. Emerged adults were removed and identified. *Bactrocera cucurbitae* flies were recovered from 7 of 14 collections (50%), with an overall infestation rate of 173.29 flies/kg fruit and 297.39 flies/kg infested fruit.

Nath and Bhushan 2006:

Varanasi, State of Uttar Pradesh, India

Cucumis melo was sown, with three replications, in Varanasi, India, the last week of March (summer season) in both 2001 and 2002. Percentage infestation by *B. cucurbitae* averaged 23.8% (range: 21.8–25.7%).

+*Nishida and Haramoto 1953:*

Island of Oahu, Hawaii, U.S.A.

Three (3) *C. melo* fruits (listed as melon) were collected from three sites (Waianae, Manoa Valley, Waimanalo) on the Island of Oahu, Hawaii where adult flies of both *B. cucurbitae* (listed as *Dacus cucurbitae*) and *B. dorsalis* (listed as *D. dorsalis*) were known to be present. Fruits were held in containers until adult emergence. On average, 98.3% of flies recovered were *B. cucurbitae* with an average recovery of 104 *B. cucurbitae* per fruit (range: 61–215).

Qureshi et al. 1974:

Hyderabad, Sindh Province, Pakistan

In order to document the relative abundance of *B. cucurbitae* (listed as *Dacus cucurbitae*) and *Dacus ciliatus*, random samples of *Cucumis melo* fruits were collected from various vegetable growing areas near Hyderabad, Pakistan from 1970 to 1972. Fruits were held separately in wooden boxes with wire-gauze screen at the bottom, and placed over another box containing sterilized sand. The sand was sieved daily and recovered pupae were held in Petri plates until adult emergence. One hundred twenty-four (124) *B. cucurbitae* adults were recovered from 7.0 kg of *C. melo* fruits overall. *Bactrocera cucurbitae* adults were recovered from 4 of 6 collections (66.7%), with a collection average of 15.3 adults recovered per kg fruit.

Shelly and Edu 2010:

Island of Oahu, Hawaii, U.S.A.

A *B. cucurbitae* laboratory colony was started using 600–800 adults reared from honeydew melons (*C. melo*) collected from a farm in Kapolei, on the Island of Oahu. No infestation rate data were given.

Stonehouse et al. 2002:

Dera Ismail Khan in Khyber Pakhtunkhwa Province and Rahim Yar Khan in the Province of Punjab, Pakistan

In 1999, *C. melo* fruits were collected from Rahim Yar Khan (two farms) and Dera Ismail Khan (two farms) in Pakistan. Fruits, collected from 5 melon clumps from each farm from each farm visit (up to five visits maximum), were placed in individual containers and held over sand in relatively cool and shaded rooms until pupation. Pupae recovered by sieving the sand were transferred to cotton-covered glass vials and held until adult emergence. Percentage infestation of *C. melo* fruits by *B. cucurbitae* in unprotected plots averaged 50% in DI Khan and 23% in RY Khan.

Syed 1971:

Faisalabad and Gujranwala, Province of Punjab; Harnai and Quetta, Province of Balochistan; Hyderabad, Sindh Province; Multan, Province of Punjab, Pakistan

In May, 1962–1963, a few *C. melo* were attacked by *B. cucurbitae* (listed as *Dacus cucurbitae*) at Faisalabad and Gujranwala. Attacks on *C. melo* began in July (1964–1965) in Harnai and Quetta; in Hyderabad (1964–1965), 2.0% of fruits were attacked in June, with a few also infested in July (40%:60% *B. cucurbitae*:*Dacus ciliatus*); in Multan (1963–1964), attacks started in April with 50% of *C. melo* fruits infested in May by the combination of *B. cucurbitae* and *Dacus ciliatus*. Total number of fruits collected and infestation rate data were not given.

Vayssières and Carel 1999:

Réunion Island, France

Four varieties of *Cucumis melo* fruits were collected over the course of a year from up to 70 localities on Réunion Island. Fruits with evidence of fruit fly infestation were held in individual containers, with recovered pupae held for adult emergence. *Bactrocera cucurbitae* recovery averaged 762.5 (standard deviation [SD] = 1,486) adults per kg infested fruit (var. 'Jet'); 138.4 (SD = 290.1) adults per kg infested fruit (var. 'PI 414723'); 0.0 (SD = 0.0) adults per kg infested fruit (var. 'Ponchito'); and 55.6 (SD = 131.1) adults per kg infested fruit (var. 'Saga').

Vayssières et al. 2007:

Burkina Faso, Côte d'Ivoire, Guinea and Senegal, West Africa

Tephritid fruit fly-infested *Cucumis melo* fruits were collected from untreated orchards in West Africa. Fruits were placed on mesh supports over sand. Tephritid fruit fly pupae, recovered through weekly sieving of the sand, were transferred to small hatching boxes lined with wet blotting paper and held for adult emergence. The average *B. cucurbitae* infestation level in *C. melo* fruits in West Africa fell in the range of 26–50 pupae/kg fruit. For comparison, the authors indicated that the infestation level of *C. melo* fruits averaged 51–75 pupae/kg fruit on Réunion Island.

Wong et al. 1986:

Waimanalo, Island of Oahu, Hawaii, U.S.A.

Wild *B. cucurbitae* adults (listed as *Dacus cucurbitae*) were obtained from mature larvae and pupae recovered from naturally infested *C. melo* fruits collected from 1982–1985 in Waimanalo, on the Island of Oahu, Hawaii.

Wong et al. 1991:

Waimanalo, Island of Oahu, Hawaii, U.S.A.

Wild *B. cucurbitae* adults (listed as *Dacus cucurbitae*) were obtained from mature larvae and pupae recovered from naturally infested *C. melo* fruits collected from 1984–1985 in Waimanalo, on the Island of Oahu, Hawaii, U.S.A.

Interception Data:

USDA 1952a:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*?) was recovered from melon (*C. melo*) which originated from a port in India and was intercepted at a port in Massachusetts (1 interception in non-entry host) between 1 July 1949 and 30 June 1950 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

Lab Infestation:*Bains and Sidhu 1984:*

Newly emerged *B. cucurbitae* larvae (listed as *Dacus cucurbitae*) were placed on cut pieces of *C. melo* and held in Petri plates having moist blotting paper on the bottom. Larval survival to pupation was 74.2%.

Sarwar et al. 2013:

Healthy, undamaged, mature and ripe *C. melo* fruits were collected from a local marketplace in Faisalabad, Pakistan. One hundred twenty-five (125) g of fruits were placed in the bottom of a sieve that was suspended from a guava (*Psidium guajava*) tree in a guava orchard that was not bearing fruits (with three replications). Fruits were left exposed to wild *B. cucurbitae* flies for 48 hours. Fruits from each replication were placed over sand in muslin cloth-topped plastic containers and held for 2 to 3 weeks. *Bactrocera cucurbitae* puparia, recovered by sieving the sand, were placed in moist sand in a Petri plate and held for adult emergence. An average of 3.83 *B. cucurbitae* pupae (30.6 pupae/kg fruit) was recovered from which an average of 2.42 adult flies (19.4 adult flies/kg fruit) emerged.

Listing Only: +Ayyar 1935 (listed as *Chaetodacus cucurbitae*; listed as melons); Botha et al. 2004 (listed as a primary host); CABI 2016 (listed as a primary host); California Department of Food and Agriculture 2001 (listed as both *Cucumis melo* and as *Cucumis pubescens*); Cantrell et al. 1999 (listed as both *Cucumis melo* and *C. pubescens*); Chawla 1966 (listed as *Dacus cucurbitae*); +Chen 1960 (listed as *Dacus cucurbitae*; listed as melon); De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Dhillon et al. 2005a (listed as both *Cucumis melo* and as *Cucumis pubescens*); Doharey 1983; European and Mediterranean Plant Protection Organization 2015 (listed as a major host); Etienne 1967 (listed as *Dacus cucurbitae*); Etienne 1972 (listed as *Dacus cucurbitae*; adults obtained very frequently); Government of Western Australia Department of Agriculture and Food 2015; +Hardy and Adachi 1956 (listed as *Dacus cucurbitae*; listed as melon); +Heppner 1989 (listed as *Dacus cucurbitae*; listed as melon); Inayatullah et al. 1991 (listed as *Dacus cucurbitae*); Iwata et al. 1990 (listed as *Dacus cucurbitae*; listed as *Cucumis melo* var. *reticulatus* 'Earl's Favorite'); +Kalshoven 1981 (listed as *Dacus cucurbitae*; listed as melon); Kapoor 1970 (listed as *Dacus cucurbitae*; listed both as *Cucumis melo* and as *Cucumis melo* var. *pubescens*); +Kapoor 1989 (listed as *Dacus cucurbitae*; listed as melons); Kapoor 1991 (listed as *Dacus cucurbitae*; listed as both *Cucumis melo* and as *C. pubescens* Wall.); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*; listed both as *Cucumis melo* and as *C. pubescens*); Khan et al. 1989 (listed as *Dacus cucurbitae*); +Lall 1964 (listed as *Dacus cucurbitae*; listed as melons); +Lall 1975 (listed as *Dacus cucurbitae*; listed as melons); +Lall and Singh 1959 (listed as *Dacus cucurbitae*; listed as melons); +Lall and Singh 1969 (listed as *Dacus cucurbitae*; listed as melons); Leblanc et al. 2013b; +Margosian et al. 2009 (listed as other melons); +Mau et al. 2007 (listed as melons); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as a plant that is frequently injured); Moiz et al. 1967 (listed as *Dacus cucurbitae*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as both *Cucumis melo* and as *C. pubescens*); +Nath et al. 1976; Oakley 1950 (listed as *Dacus cucurbitae*); Orian and Moutia 1960 (listed as *Dacus cucurbitae*); Pacific Fruit Fly Web 2002 (cantaloupe, honeydew melon, and rockmelon all listed as hosts and all associated with the scientific name *C. melo*); Phillips 1946; Plantwise Knowledge Bank 2015; Ponce 1937 (listed as *Dacus cucurbitae*); Pradhan 1977 (listed as *Dacus cucurbitae*); +Pruthi and Batra 1938 (listed as *Chaetodacus cucurbitae* [Coq.]; listed as melon); +Queensland Government 2015 (listed as melon); Quilici and Jeuffrault 2001 (listed as very favorable as a host); Ramsamy 1989 (listed as *Dacus cucurbitae*); Rejesus et al. 1991 (listed as *Dacus cucurbitae*); Ryckewaert et al. 2010; Singh et al. 2004 (listed both as *Cucumis melo* and as *C. pubescens*); +Terry 1906 (listed as *Dacus cucurbitae*; listed as melon); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000 (listed as *Cucumis pubescens*); USDA-APHIS 2008 (listed as *Cucumis pubescens*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as both *Cucumis melo* and as *C. pubescens*; *C. melo* listed as a preferred host); +Van Dine 1906 (listed as *Dacus cucurbitae*; listed as melons); Vijaysegaran 1991 (listed as *Dacus cucurbitae*); +Vijaysegaran and Osman 1991 (listed as melon); White and Elson-Harris 1992; Yunus and Hua 1980 (listed as *Dacus cucurbitae*).

Synonyms: *Cucumis dudaim* L. var. *aegyptiacus* Sickenb., *Cucumis melo* L. var. *acidulus* Naudin, *Cucumis melo* L. var. *aegyptiacus* (Sickenb.) Hassib, *Cucumis melo* L. var. *ameri* Gabaev, *Cucumis melo* L. var. *duripulposus* Filov, nom. Inval., *Cucumis melo* L. var. *hibernus* Filov, nom. Inval., *Cucumis melo*

L. var. *makuwa* Makino, *Cucumis melo* L. var. *microspermus* Nakai, *Cucumis melo* L. var. *pubescens* (Willd.) Kurz, *Cucumis microspermus* Nakai, *Cucumis moschatus* Gray, *Cucumis pubescens* Willd.

Cucumis melo L. subsp. *agrestis* (Naudin) Pangalo var. *conomon* (Thunb.) Makino

Family: Cucurbitaceae

Grin Nomen Number: 404418

Common Names: cai gua (transcribed Chinese), Gemüse-Melone (German), kakri (India), long melon (India), Oriental pickling melon (English), pickling melon (English), shirō-uri (Japanese Rōmaji), snake cucumber (English), sweet melon (English), tar (India), tsuke-uri (Japanese Rōmaji).

Cultivated: only cultivated.

Field Infestation:

+Bains and Sidhu 1984:

Punjab, India

Field observations of infestation of *Cucumis melo* subsp. *agrestis* var. *conomon* fruits (listed as long melon) by *B. cucurbitae* (listed as *Dacus cucurbitae*) were made at 10-day intervals in Punjab, India, between April and July. Infested fruits were found in 5 of 8 observations (62.5%) with an average infestation rate of 2.25 (± 0.92 [standard error])%.

Clausen et al. 1965:

South China

Cucumis melo subsp. *agrestis* var. *conomon* fruits (listed both as *Cucumis melo* var. *conomon* and as oriental pickling melon) were found to be predominantly infested by *B. cucurbitae* (listed as *Dacus cucurbitae*). They were also infested by “a fair number of” *Bactrocera tau* (listed as *Dacus nubilus*) and “an occasional” *Bactrocera latifrons* (listed as *Dacus latifrons*).

North India

From *Cucumis melo* subsp. *agrestis* var. *conomon* collections (listed as both *Cucumis melo* var. *utilissimus* and muskmelon) from April to June 1950 in Northern India, 35,396 puparia were recovered, a mix of two predominant species: *B. cucurbitae* (listed as *Dacus cucurbitae* Coq) and *Dacus ciliatus* Loew (*B. cucurbitae* was the dominant species).

+Inayatullah et al. 1993:

Faisalabad, Pakistan

Based on observation, the average rate of infestation of *Cucumis melo* subsp. *agrestis* var. *conomon* fruits (listed as tar) by *B. cucurbitae* (listed as *Dacus cucurbitae*) in the vicinity of the University of Agriculture in Faisalabad was about 92%.

+Jakhar and Pareek 2005:

Jobner, State of Rajasthan, India

Seeds of nine cucurbit species were sown in a randomized block design with four replications at the Horticultural Farm of S.K.N. College of Agriculture in Jobner, India during the kharif season in 2000. The infestation rate of *Cucumis melo* subsp. *agrestis* var. *conomon* fruits (listed as long melon) by *B. cucurbitae* averaged 35.46% (range: 16.90–51.38%) over the course of ten collection dates, each 3 days apart, between August and September, 2000.

Kavadia et al. 1977:

Udaipur, state of Rajasthan, India

Cucumis melo subsp. *agrestis* var. *conomon* (listed as both *Cucumis utilissimus* Duthie and Fuller and as long melon) was sown at the farm of Rajasthan College of Agriculture in February 1976 for a test of the efficacy and residues of insecticides applied for the control of *B. cucurbitae* (listed as *Dacus cucurbitae*). Four treatments and a control were tested, with three replicates of each. Insecticides were applied about 2 months after sowing, when plants were in full bloom and bore small fruits (3.5 cm). The percentage of fruits infested by *B. cucurbitae* in the control and treatment plots was calculated at 3, 7, and 10 days after insecticide application. Percentage infestation of control fruits averaged 61.54%, 63.52%, and 70.87% at 3, 7, and 10 days, respectively, after the date of insecticide application.

+Lee 1972:

Taiwan

Cucumis melo subsp. *agrestis* var. *conomon* plants (listed as oriental pickling melon) were grown in the field year-round from 2 June 1969 to 10 June 1970, and from March-August 1971.

Fruits, picked 5, 10, and 15 days after flowering, were placed over sand in holding boxes. The sand was screened weekly to recover *B. cucurbitae* pupae (listed as *Dacus cucurbitae*). Pupal recovery per fruit was averaged quarterly for 1969 to 1970 harvests. Pupal recovery per kg fruit was averaged monthly for 1971 harvests. *Bactrocera cucurbitae* pupal recovery averaged 14.9, 3.9, and 0.08 pupae/fruit (1969–1970) and 764.5, 147.2, and 37.2 pupae/kg fruit (1971) overall, for fruits picked 5, 10, and 15 days after flowering, respectively.

Nath and Bhushan 2006:

Varanasi, State of Uttar Pradesh, India

Cucumis melo subsp. *agrestis* var. *conomon* (listed as *Cucumis melo* var. *utilissimus*) was sown, with three replications, in Varanasi, India, the last week of March (summer season) and again the last week of June (rainy season) in both 2001 and 2002. Percentage infestation by *B. cucurbitae* averaged 28.1% (range: 25.3–30.9%) in the summer season and 42.4% (range: 42.4–42.4%) in the rainy season.

+*Pareek and Kavadia 1994:*

Jobner and Udaipur, state of Rajasthan, India

Cucumis melo subsp. *agrestis* var. *conomon* fruits (listed as long melon, variety 'Luc-know') were raised in a randomized block design with nine other cucurbit crops (each with three replicated plots) for assessment of preference of *B. cucurbitae* (listed as *Dacus cucurbitae*). The trials were conducted from February to June in 1979, and again in 1981, in Udaipur (semi-humid agroclimatic conditions) and in 1980 and 1981 in Jobner (semi-arid agroclimatic condition). Fruits were harvested twice a week, examined for fruit fly damage, and then percentage of fruits infested by *B. cucurbitae* calculated. Percentage infestation averaged 68.7% (range: 67.4–69.9%) in Udaipur and 75.2% (range: 74.5–76.0%) in Jobner.

+*Singh et al. 2000:*

Kanpur, State of Uttar Pradesh, India

Cucumis melo subsp. *agrestis* var. *conomon* fruits (listed as long melon) were collected weekly at growers' fields at the bank of the river Ganga in Kanpur beginning in February 1997. Percentage infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) was determined (by observation) at each picking. The overall average *B. cucurbitae* infestation rate was 21.2%.

Syed 1971:

Faisalabad and Gujranwala, Province of Punjab; Harnai and Quetta, Province of Balochistan; Hyderabad, Sindh Province; Multan, Province of Punjab; Peshawar Valley, Khyber Pakhtunkhwa Province, Pakistan

During May, 1962–1963, 13% of *Cucumis melo* subsp. *agrestis* var. *conomon* fruits (listed as *Cucumis melo* var. *utilissimus*) in Faisalabad and Gujranwala were attacked by *B. cucurbitae* (listed as *Dacus cucurbitae*), with infestation increasing to 78% in June; in Harna and Quetta (1964–1965), attacks began in July; in Hyderabad (1964–1965), a minor infestation began at the end of February, which increased slightly in March and April and up to 6–10% in May (infesting species included both *B. cucurbitae* and *Dacus ciliatus* [40%:60%]); in Multan (1963–1964), attack began in April, with infestation reaching 50% in May (a combined infestation by *B. cucurbitae* and *D. ciliatus*); in the Peshawar Valley (1962–1963), there was a 52% infestation rate in May. Total numbers of fruits collected were not given.

Lab Infestation:

Agarwal and Yazdani 1991:

One hundred (100) eggs, collected from adult *B. cucurbitae* flies (listed as *Dacus cucurbitae*) which emerged from field-infested *Luffa aegyptiaca* Mill. fruits (listed as *Luffa cylindrica*), were inserted in a triangular cut in a *Cucumis melo* subsp. *agrestis* var. *conomon* fruit (listed as *Cucumis utilissimus*) (four replications) and held at 29.85±8.33°C and 61.72±22.05% RH. An average of 69% survived from larval stage to adult emergence.

Listing Only: +Agrawal and Mathur 1991 (listed as *Dacus cucurbitae*; listed as long melon); California Department of Food and Agriculture 2001 (listed as both *Cucumis melo* var. *conomon* and as *Cucumis utilissimus*); Cantrell et al. 1999 (listed as *Cucumis melo* var. *conomon*); Chaturvedi 1947 (listed as *Dacus cucurbitae*; listed as *Cucumis utilissimus*); +Chen 1960 (listed as *Dacus cucurbitae*; listed as oriental pickling melon); Dhillon et al. 2005a (listed as both *Cucumis melo* var. *conomon* and as

Cucumis utilissimus); Holbrook 1967 (listed as *Cucumis melo* var. *conomon*; listed as “heavily or generally infested”); Kapoor 1970 (listed as *Dacus cucurbitae*; listed both as *Cucumis melo* var. *utilissimus* and as *C. melo* var. *conomon*); Kapoor 1991 (listed as *Dacus cucurbitae*; listed as *Cucumis utilissimus* Duthie and Fuller); +Kapoor 2005–2006 (listed as long melon); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*; listed as *Cucumis utilissimus*); Kazi 1976 (listed as *Dacus cucurbitae*; listed as *Cucumis melo* var. *utilissimus* Roxb.); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as *Cucumis melo* var. *Conomon* [Thunb.] Makino; authors list this as a plant that is frequently injured); Moiz et al. 1967 (listed as *Dacus cucurbitae*; listed as *Cucumis melo* L. var. *utilissimus* Roxb.); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as both *Cucumis melo* var. *conomon* [Oriental pickling melon] and *Cucumis utilissimus* [long melon]); Nishida 1963 (listed as *Dacus cucurbitae*; listed both as kakri and as *Cucumis utilissimus* Roxb.); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *C. melo conomon*); Qureshi et al. 1974 (listed as *Dacus cucurbitae*; listed as *Cucumis melo* var. *utilissimus* Duthie and Fuller); Singh et al. 2004 (listed as *Cucumis melo* var. *utilissimus*); Syed 1971 (listed as *Dacus cucurbitae*; listed as *Cucumis melo* var. *conomon*, *C. melo* var. *utilissimus*, and as *C. utilissimus*); USDA 1986 (listed as *Dacus cucurbitae*; listed as both *Cucumis melo* var. *conomon* and *Cucumis utilissimus*); USDA-APHIS 2000 (listed as both *Cucumis melo* var. *conomon* and *C. utilissimus*); USDA-APHIS 2008 (listed as both *Cucumis melo* var. *conomon* and *C. utilissimus*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as both *Cucumis melo* var. *conomon* and *C. utilissimus*; listed as a preferred host).

Synonyms: *Cucumis melo* L. subsp. *conomon* (Thunb.) Greb., nom. inval., *Cucumis melo* L. var. *utilissimus* (Roxb.) Duthie and J. B. Fuller, *Cucumis utilissimus* Roxb.

Cucumis melo L. subsp. *agrestis* (Naudin) Pangalo var. *momordica* (Roxb.) Duthie and J. B. Fuller

Family: Cucurbitaceae

Grin Nomen Number: 314609

Common Names: phoot (English), phut (India), Schnapp-Melone (German), snap melon (English).

Cultivated: Only cultivated.

Field Infestation:

+Gupta and Verma 1978:

Hisar (listed as Hissar), State of Haryana, India

Cucumis melo subsp. *agrestis* var. *momordica* (listed as snap melon) was grown from seed planted 31 July 1975, in a randomized complete block design with ten other cucurbit crops in Hisar, Haryana State, India. Fallen and marketable sized fruits were collected/picked every 3 days and assessed for infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). Infestation results were summarized weekly. *Bactrocera cucurbitae* infestation was found in 7 of 8 weekly summaries (87.5%). Overall, 107 (69.9 kg) fruits were collected, of which 57 were infested, for averages of 13.4 fruits collected per week with an average infestation rate of 54.0%.

Listing Only: +Agrawal and Mathur 1991 (listed as *Dacus cucurbitae*; listed as snap melon); Dhillon et al. 2005a (listed as *Cucumis melo* var. *momordica*); Doharey 1983 (listed as *Cucumis melo* var. *momordica*); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Cucumis melo* var. *momordica*); Kapoor 1991 (listed as *Dacus cucurbitae*; listed as *Cucumis melo* var. *momordica*); +Kapoor 2005–2006 (listed as snap melon); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*; listed as *Cucumis melo* var. *momordica*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as *Cucumis melo* var. *momordica* [snap melon]); Singh et al. 2004 (listed as *Cucumis melo* var. *momordica*).

Synonyms: *Cucumis momordica* Roxb.

Cucumis melo L. subsp. *conomon* (Thunb.) Greb., nom. inval., see *Cucumis melo* L. subsp. *agrestis* (Naudin) Pangalo var. *conomon* (Thunb.) Makino

Cucumis melo L. subsp. *melo*

Family: Cucurbitaceae

Grin Nomen Number: 12564

Common Names: chamoe (transcribed Korean), dynya (Russian), melon (English), melon (Swedish), melone (Italian), Melone (German), meron (Japanese Rōmaji), tian gua (transcribed Chinese).

Naturalized: Widely naturalized.

Cultivated: Widely cultivated.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from *C. melo* L. subsp. *melo* (listed as *Cucumis trigonus*). Number of fruit samples and infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Syed 1971:

Hyderabad and Karachi, Sindh Province, Pakistan

In Hyderabad (1964–1965), a few *C. melo* subsp. *melo* fruits (listed as *Cucumis trigonus*) were infested in October by a mix of *B. cucurbitae* (listed as *Dacus cucurbitae*) and *Dacus ciliatus* (40%:60%). In Karachi (1962–1966), there was a 4% infestation of fruits in October (combined infestation by *B. cucurbitae* and *D. ciliatus*). Total number of fruits collected were not given.

Lab Infestation:

Chelliah and Sambandam 1974b:

Cucumis callosus (a wild relative of *C. melo*, now considered to be a synonym of *C. melo* subsp. *melo*) and an F₁ hybrid (*C. callosus* × *C. melo* var. 'Delta Gold') were tested for *B. cucurbitae* (listed as *Dacus cucurbitae*) larval period (i.e., time from egg hatch to pupation) and percentage larval survival. In the larval period testing, each fruit was exposed to 10 newly emerged larvae, replicated 20 times for each variety. Larvae were transferred to fresh fruit when necessary. The larval period averaged 4.51 days for *C. callosus* and 4.41 days for the F₁ hybrid. In larval survival testing, each fruit was exposed to 20 newly emerged larvae, replicated 20 times for each variety, and pupae were recovered from the cage. The average percentage larval survival was 79.0% for *C. callosus* and 93.5% for the F₁ hybrid (the survival rate was significantly less for *C. callosus* than for *C. melo* varieties tested concurrently; see entry for this reference under *C. melo*).

Chelliah and Sambandam 1974c:

Cucumis callosus (a wild relative of *C. melo*, now considered to be a synonym of *C. melo* subsp. *melo*) was tested for resistance to infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). Fruits were harvested 5 to 7 days after fruits were set and exposed to two sexually mature male/gravid female pairs of *B. cucurbitae*. Fruits were then examined for *B. cucurbitae* infestation 7 days after fruit exposure. *Cucumis callosus* was rated 'highly resistant' ("infestation up to 20%, with high antibiosis").

Sambandam and Chelliah 1969:

In fruit-fly resistance experiments, 2 tender fruits of *C. melo* subsp. *melo* (listed as *C. callosus*; listed as a wild plant) were placed in cages and exposed to 2 male and 2 female *B. cucurbitae* (listed as *Dacus cucurbitae*) for 10 days, after which fruits were examined and rated for infestation. *Cucumis melo* subsp. *melo* fruits exhibited a high degree of resistance to infestation by *B. cucurbitae*, with only 10% of fruits becoming infested, while infestation in *C. melo* subsp. *melo* var. *cantalupo* cultivars ranged from 90 to 100% infested.

Sambandam and Chelliah 1976:

In fruit-fly resistance experiments, 2 tender fruits resulting from a cross of *C. melo* subsp. *melo* var. *cantalupo* cultivar 'Delta Gold' (listed as muskmelon) and *C. melo* subsp. *melo* (listed as *Cucumis callosus*) (with the latter used as the seed parent) were placed in cages and exposed to 2 male- and 2 female-*B. cucurbitae* (listed as *Dacus cucurbitae*) for 10 days, after which fruits were examined and rated for infestation. The F₁ fruits were all susceptible to infestation by *B. cucurbitae*, as had been the 'Delta Gold' parent, but the *C. melo* subsp. *melo* parent had been resistant to infestation.

Listing Only: CABI 2016 (listed as a wild host); California Department of Food and Agriculture 2001 (listed as *Cucumis trigonis*); Cantrell et al. 1999 (listed as *Cucumis trigonus*); Chelliah and Sambandam 1971 (listed as *Dacus cucurbitae*; *Cucumis colossus* [GRIN lists as a synonym of *Cucumis melo* subsp. *melo*] is listed as a wild relative of muskmelon highly resistant to *B. cucurbitae*); Chelliah and Sambandam 1974a (listed as *Dacus cucurbitae*; F₁ generation of the cross between the wild, resistant "*Cucumis colossus*" and cultivated *C. melo* variety 'Delta Gold' were all highly susceptible to infestation by *B. cucurbitae*; authors suggested that a breeding program could be used to transfer the resistance to cultivated *C. melo* varieties); De Meyer et al. 2014 (listed as *Cucumis trigonus*); Dhillon et al. 2005a (listed

as *Cucumis trigonus*); Holbrook 1967 (listed as *Cucumis trigonus*); Kandybina 1987 (listed as *Dacus cucurbitae*; listed as both *Melos spp.* and as *dynya*); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Cucumis melo* var. *trigonus* Roxb.); Kapoor 1991 (listed as *Dacus cucurbitae*; listed as *Cucumis trigonus* Roxb.); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*; listed as *Cucumis trigonus*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as *Cucumis trigonus*); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *Cucumis trigonus*); Plantwise Knowledge Bank 2015; Singh et al. 2004 (listed as *Cucumis trigonus*); USDA 1986 (listed as *Dacus cucurbitae*; listed as *Cucumis trigonus*); USDA-APHIS 2000 (listed as *Cucumis trigonus*); USDA-APHIS 2008 (listed as *Cucumis trigonus*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*; listed as *Cucumis trigonus*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Cucumis trigonus*; insufficient data to justify regulation); Weems et al. 2001 (listed as *Cucumis trigonus*; listed as a wild host); White and Elson-Harris 1992 (listed as *Cucumis trigonus* Roxb.; listed as a wild host).

Synonyms: *Bryonia collosa* Rottler, *Cucumis collosus* (Rottler) Cogn., *Cucumis trigonus* Roxb.

Cucumis melo L. subsp. *melo* var. *cantalupo* Ser.

Family: Cucurbitaceae

Grin Nomen Number: 464596

Common Names: cantaloupe (English), Kantalupe (German), melão (Portuguese), melon (French), muskmelon (English), netted melon (English), nutmeg melon (English), Persian melon (English), rock melon (English-Australia), Zuckermelone (German).

Cultivated: Only cultivated.

Field Infestation:

+Back and Pemberton 1917:

Hawaii, U.S.A.

Cucumis melo subsp. *melo* var. *cantalupo* (listed as cantaloupe) is listed as a preferred host of *B. cucurbitae*. The authors note that cantaloupes are the most susceptible to infestation (among cucurbitaceous fruits), because the vines as well as the fruits are badly attacked at all stages of growth. An illustration is provided of a vine that had been attacked in eight places, the larvae developing in the stalk, petioles and young fruit.

+Back and Pemberton 1918:

Hawaii, U.S.A.

Cucumis melo subsp. *melo* var. *cantalupo* (listed as cantaloupe) is listed as a preferred host of *B. cucurbitae*. The authors note that cantaloupes are the most susceptible to infestation (among cucurbitaceous fruits), because the vines as well as the fruits are badly attacked at all stages of growth. An illustration is provided of a vine that had been attacked in eight places, the larvae developing in the stalk, petioles and young fruit.

Cheema 1964:

Faisalabad (listed as Lyallpur), Province of Punjab, Pakistan

Sixteen (16) varieties of *C. melo* (also referred to as musk melon) were sown in a randomized block design (three replicates per variety) in vegetable fields at the former Punjab Agriculture College, Faisalabad, Pakistan. Counts of damaged and healthy fruits were taken daily at the time of picking. Resistance to infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) was evaluated as percentage infestation. Based on an average of 100 fruits collected per variety, the average infestation across all varieties was 39.7% (range: 8.0–82.0% infestation). The highest (82.0%) and lowest (8.0%) infestation rates were in the varieties ‘374’ and ‘Improved,’ respectively.

Clausen et al. 1965:

Island of Mindanao, Philippines

From *Cucumis spp.* collections (referred to as muskmelon) from December 1949 to February 1950 and August 1950, on the island of Mindanao in the Philippines, 4,360 *B. cucurbitae* puparia (listed as *Dacus cucurbitae*) were recovered.

+Drew 1982:

Papua New Guinea

Specimens of *B. cucurbitae* (listed as *Dacus cucurbitae*) were reared from *Cucumis melo* subsp. *melo* var. *cantalupo* (listed as rockmelon) and are held in the collection of the Wau Ecology Institute in Papua New Guinea.

+Gupta and Verma 1978:

Hisar (listed as Hissar), State of Haryana, India

Cucumis melo subsp. *melo* var. *cantalupo* (listed as musk melon, var. 'Hara Madhu') was grown from seed planted 28 February 1975, in a randomized complete block design with ten other cucurbit crops in Hisar, Haryana State, India. Fallen and marketable sized fruits were collected/picked every 3 days and assessed for infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). Infestation results were summarized weekly. *Bactrocera cucurbitae* infestation was found in 6 of 6 weekly summaries (100%). Overall, 46 (31.7 kg) fruits were collected, of which 15 were infested, for averages of 7.7 fruits collected per week with an average infestation rate of 33.7%.

Haldhar et al. 2013:

Bikaner, State of Rajasthan, India

Field studies were conducted in 2011 and 2012 at the experimental farm of the Central Institute for Arid Agriculture in Bikaner to identify traits of *C. melo* subsp. *melo* var. *cantalupo* varieties (listed as both *C. melo* and as muskmelon) associated with resistance to infestation by *B. cucurbitae*. In an initial screening, seed was sown in a randomized complete block design with three replicates in February 2011, for 24 different *C. melo* subsp. *melo* var. *cantalupo* varieties. Four (4) pickings were conducted throughout the season. From each picking 10 fruits were randomly collected per replication, 3 replications per variety, from each of the 24 varieties. Percentage infestation was calculated from 30 fruits per variety at each picking. A subset of 10 of these fruits (per variety) was then randomly selected and the numbers of *B. cucurbitae* larvae were counted in each of these fruits. Infestation by *B. cucurbitae* averaged 47.3% (range: 12.6–79.5%) across all 24 varieties. Larval density averaged 17.9 larvae/fruit (range: 11.1–23.76).

For final screening, seed from a subset of 11 of the varieties initially tested was sown in a randomized complete block design with three replicates in July 2011, and again in February 2012. Four pickings were conducted throughout the season. From each picking 10 fruits were randomly collected per replication, 3 replications per variety, from each of the 11 varieties. Percentage infestation was calculated from 30 fruits per variety at each picking. A subset of 10 of these fruits (per variety) was then randomly selected and the numbers of *B. cucurbitae* larvae was counted in each of these fruits. Infestation by *B. cucurbitae* averaged 44.5% (range: 13.0–82.8%) averaged across all 11 varieties for each season and then averaged across seasons. Larval density averaged 17.6 larvae/fruit (range: 11.1–24.3).

Khan and Khattak 2000:

D. I. Khan, Khyber-Pakhtunkhwa Province, Pakistan

Seeds of the bukhara variety of *C. melo* subsp. *melo* var. *cantalupo* muskmelon (listed as *Cucumis melo* L., but common name used [muskmelon] indicated that the plant species used was *Cucumis melo* L. subsp. *melo* var. *cantalupo*) were sown in 1994 in a randomized complete block design (three replicates per treatment) at the farm of Agricultural Faculty at Gomal University in D. I. Khan, Pakistan, to test for the effectiveness of chemical control methods to reduce infestation by *B. cucurbitae*. Twenty (20) fruits were randomly collected per treatment at harvesting stage and dissected to determine the infested ones on the basis of presence of fruit fly maggots in the pulp. Average rate of melon fly infestation in control fruits ranged from 61.7 to 67.0%.

+Lee 1972:

Taiwan

Both green and yellow variety *C. melo* subsp. *melo* var. *cantalupo* plants (listed as muskmelon) were grown in the field year-round from 2 June 1969 to 10 June 1970, and from March–August, 1971. Fruits, picked 5, 10, and 15 days after flowering, were placed over sand in holding boxes. The sand was screened weekly to recover *B. cucurbitae* pupae (listed as *Dacus cucurbitae*). Pupal recovery per fruit was averaged quarterly for 1969 to 1970 harvests. Pupal recovery per kg fruit was averaged monthly for 1971 harvests. *Bactrocera cucurbitae* pupal recovery averaged 3.1, 7.2, and 6.2 [green variety] and 6.9, 8.6, and 8.6 [yellow variety] pupae/fruit (1969–1970) and 611.2, 314.0, and 47.7 [green variety] and 955.8, 423.0, and 703.9 [yellow variety] pupae/kg fruit (1971) overall, for fruits picked 5, 10, and 15 days after flowering, respectively.

+Pareek and Kavadia 1994:

Jobner and Udaipur, state of Rajasthan, India

Cucumis melo, subsp. *melo*, var. *cantalupo* fruits (listed as musk melon, variety 'Durgapura madhu') were raised in a randomized block design with nine other cucurbit crops (each with three replicated plots) for assessment of preference of *B. cucurbitae* (listed as *Dacus cucurbitae*). The trials were conducted from February to June in 1979, and again in 1981, in Udaipur (semi-humid agroclimatic conditions) and in 1980 and 1981 in Jobner (semi-arid agroclimatic condition). Fruits were examined on 10 plants per replicate twice a week, and then percentage of fruits infested by *B. cucurbitae* calculated. Percentage infestation averaged 84.0% (range: 83.4–84.7%) in Udaipur and 83.2% (range: 83.1–83.3%) in Jobner.

+Pareek and Kavadia 1995:

Jobner and Udaipur, state of Rajasthan, India

Seventeen (17) varieties of *Cucumis melo*, subsp. *melo*, var. *cantalupo* fruits (listed as musk melon) were raised (each with three replicated plots) for assessment of preference of *B. cucurbitae* (listed as *Dacus cucurbitae*). The trials were conducted from February to June in 1979, and again in 1981, in Udaipur (semi-humid agroclimatic conditions) and in 1980 and 1981 in Jobner (semi-arid agroclimatic condition). Fruits were examined on 10 plants per replicate twice a week, and then percentage of fruits infested by *B. cucurbitae* calculated. Percentage infestation averaged 65.9% (range: 52.4–83.4%) in 1979 and 66.2% (range: 53.0–84.7%) in 1981 in Udaipur and 66.7% (range: 53.9–83.1%) in 1980 and 66.1% (range: 48.9–83.3%) in 1981 in Jobner.

+Singh et al. 2000:

Kanpur, State of Uttar Pradesh, India

Cucumis melo subsp. *melo* var. *cantalupo* fruits (listed as musk melon) were collected weekly at growers' fields at the bank of the river Ganga in Kanpur beginning in February 1997. Percentage infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) was determined (by observation) at each picking. The overall average *B. cucurbitae* infestation rate was 24.0%.

+Steiner et al. 1965:

Island of Rota, Mariana Islands

Cucumis melo subsp. *melo* var. *cantalupo* fruits (listed as cantaloupe) were collected on the island of Rota as part of a *B. cucurbitae* (listed as *Dacus cucurbitae*) eradication program. Fruits that showed evidence of sting injury were collected in their immature stage before fly damage could cause them to rot. Monthly *C. melo* subsp. *melo* var. *cantalupo* fruit infestation averaged 60.2 *B. cucurbitae* larvae/kg fruit (range: 10.6 to 124.3 larvae/kg fruit) over the months of January to July, 1960 to 1962, before the initiation of either bait sprays or sterile fly releases.

Stonehouse et al. 2007:

Varanasi, State of Uttar Pradesh, India

In a study comparing the effectiveness of protein bait spray applications for control of tephritid fruit fly infestation in *C. melo* subsp. *melo* var. *cantalupo* fruits (listed as both *C. melo* and as musk melon) at the farm level versus the village level (defined to be 1.0 km²) in Varanasi, India, between 3 and 12 harvests of *C. melo* subsp. *melo* var. *cantalupo* fruits were made in each of 2 years at farms with varying extent of bait spray application. Percentage infestation was determined based either on visual examination of fruit to detect oviposition or by rearing out adult flies in the laboratory. On two farms in Varanasi where no bait spray was applied, an average of 73.3% of the fruits was infested. Infestation was primarily by *B. cucurbitae*, but accompanied in some cases by a minority of other tephritid fruit fly species.

Vijaysegaran 1985:

Serdang, State of Selangor, Malaysia

Two varieties of *Cucumis melo* subsp. *melo* var. *cantalupo* (listed as both musk melon and as *Cucumis melo*) ('New Century' and 'Red Queen') were grown in hydroponic systems in open conditions under a polyethylene roof. The surrounding area consisted of fruit orchards and vegetable plots where *B. cucurbitae* (listed as *Dacus cucurbitae*) was known to be present. *Bactrocera cucurbitae* larvae infesting both stems and fruits successfully completed development to adult flies.

+Wen 1985:

Taiwan

Cucumis melo subsp. *melo* var. *cantalupo* fruits (listed as muskmelon) were collected in southern Taiwan from July through December 1983. Infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) averaged 7.55% (bimonthly averages ranged from 6.53–8.85%).

+Wong *et al.* 1989:

Rota, Commonwealth of the Northern Mariana Islands

On the island of Rota, 37 *C. melo* subsp. *melo* var. *cantalupo* fruits (listed as cantaloupe) (from 5 collections) were collected in 1985, 79 fruits (from 22 collections) were collected in 1986, and 73 fruits (from 16 collections) were collected in 1987. Fruits were held over moist sand in plastic containers with screened lids for recovery of *B. cucurbitae* pupae and adult emergence. *Bactrocera cucurbitae* recovery averaged 38.8 pupae/kg fruit (1985), 37.8 pupae/kg fruit (1986), and 66.6 pupae/kg fruit (1987).

Lab Infestation:

+Back and Pemberton 1917:

Three hundred seventy-six (376) *B. cucurbitae* larvae were able to complete instars one–three on *Cucumis melo* subsp. *melo* var. *cantalupo* fruits (listed as cantaloupe), transferred daily from one piece of pulp to a fresh piece of pulp, in an average time of 7.8 days at an average temperature of 26.0°C.

Chelliah 1970:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was successfully reared from egg to adult emergence in the laboratory on fruits of *C. melo* subsp. *melo* var. *cantalupo* variety ‘Delta Gold’ (listed both as *Cucumis melo* and as muskmelon). Larval survival, based on 200 individuals reared in 20 replications, averaged 95.54%, with an average larval duration of 3.63 days.

Chelliah and Sambandam 1974b:

‘Smith Perfect’ and ‘Delta Gold’ varieties of *C. melo* (listed as both *C. melo* and as muskmelon) were tested for *B. cucurbitae* (listed as *Dacus cucurbitae*) larval period (time from egg hatch to pupation) and percentage larval survival. In the larval period testing, each fruit was exposed to 10 newly emerged larvae, replicated 20 times for each variety. Larvae were transferred to fresh fruit when necessary. The larval period averaged 3.64 days for ‘Smith Perfect’ and 3.46 days for ‘Delta Gold.’ In larval survival testing, each fruit was exposed to 20 newly hatched *B. cucurbitae* larvae, replicated 20 times for each variety, and pupae were recovered from the cage. The average percentage larval survival was 94.5% for both ‘Smith Perfect’ and for ‘Delta Gold.’

Chelliah and Sambandam 1974c:

Cucumis melo subsp. *melo* var. *cantalupo* fruits (listed both as *Cucumis melo* and as muskmelon) were used as a larval host for a laboratory colony of *B. cucurbitae* (listed as *Dacus cucurbitae*). Also, 69 muskmelon accessions were tested for resistance to infestation by *B. cucurbitae*. Fruits from each variety were harvested 5 to 7 days after fruit set and exposed to 2 sexually mature male/gravid female pairs of *B. cucurbitae*. Fruits were then examined for *B. cucurbitae* infestation 7 days after fruit exposure. Seven (7) accessions were rated “susceptible” (“high infestation with moderate antibiosis”), while the other 62 accessions were rated “highly susceptible” (“infestation very high and larval development very rapid with no antibiosis”).

Sambandam and Chelliah 1969:

In fruit-fly resistance experiments, 2 tender fruits of *C. melo* subsp. *melo* var. *cantalupo* cultivars (listed as *C. melo*, but also referred to as muskmelon) were placed in cages and exposed to 2 male and 2 female *B. cucurbitae* (listed as *Dacus cucurbitae*) for 10 days, after which fruits were examined and rated for infestation. Infestation of *Cucumis melo* subsp. *melo* var. *cantalupo* cultivar fruits ranged from 90 to 100%.

Listing Only: +Agrawal and Mathur 1991 (listed as *Dacus cucurbitae*; listed as musk melon); +Akhtaruzzaman *et al.* 1999 (listed as musk melon); +Australian Quarantine Service, Commonwealth Department of Primary Industry 1987 (listed as *Dacus cucurbitae*; listed as cantaloupe); Back and Pemberton 1914 (listed as both *Cucumis melo* and as cantaloupe; can lay eggs in seedlings); +Blackman 1909 (listed as melon fly and as a *Dacus* sp.; listed as musk melon); California Department of Food and Agriculture 2001 (listed as *Cucumis melo* var. *cantalupensis*); Chelliah and Sambandam 1974a (listed as *Dacus cucurbitae*; listed as both *Cucumis melo* and as muskmelon); Chelliah and Sambandam 1971 (listed as *Dacus cucurbitae*; listed as both *Cucumis melo* and as muskmelon); ‘Delta Gold’ and ‘Smith Perfect’ are listed as two *C. melo* varieties highly susceptible to *B. cucurbitae*); +Christenson and Foote

1960 (listed as *Dacus cucurbitae*; listed as cantaloupe); +Froggatt 1909 (listed as *Dacus cucurbitae*; listed as cantaloupe); +Greene 1929 (listed as cantaloupe [rock melon]); Hardy and Adachi 1956 (listed as *Dacus cucurbitae* Coquillett; listed as *C. melo* var. *cantalupensis*); Harris et al. 2010 (listed both as *C. melo* and as cantaloupe); +Hawaii Department of Agriculture 2009 (listed as cantaloupe); +Heppner 1989 (listed as *Dacus cucurbitae*; listed as cantaloupe); Holbrook 1967 (listed as *Cucumis melo* L. var. *cantalupensis*; listed as “heavily or generally infested”); Hollingsworth and Allwood 2000 (listed both as *C. melo* and as cantaloupe); +Hollingsworth et al. 1996 (listed as cantaloupe); +Kapoor 2005–2006 (listed as musk melon); +Lall and Singh 1969 (listed as *Dacus cucurbitae*; listed as musk melon); +Lee et al. 1992 (listed as *Dacus cucurbitae*; listed both as cantaloupe and as muskmelon); +Liu 1993 (listed as *Dacus cucurbitae*; listed as cantaloupe); +NAPPO, PAS 2015 (listed as cantaloupe); +Nishida 1953 (listed as *Dacus cucurbitae*; listed as cantaloupe); Nishida 1963 (listed as *Dacus cucurbitae*; listed as both cantaloupe and *Cucumis melo* L.); +Nishida and Bess 1957 (listed as *Dacus cucurbitae*; listed as cantaloupe); +Okinawa Prefectural Fruit Fly Eradication Project 1987 (listed as *Dacus cucurbitae*; listed as muskmelon); +Phillips 1946 (listed as cantaloupe); +Rajamannar 1962 (listed as *Dacus cucurbitae*; listed as musk melon); +Ramadan and Messing 2003 (listed as cantaloupe); +Severin et al. 1914 (listed as *Dacus cucurbitae*; listed as muskmelon); +Symonds et al. 2009 (listed as rockmelon); USDA-APHIS 2000 (listed as both *Cucumis melo*, *C. melo* var. *cantalupensis*, and as cantaloupe); USDA-APHIS 2008 (listed as both *Cucumis melo*, *C. melo* var. *cantalupensis*, and as cantaloupe); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Cucumis melo* var. *cantalupensis*; listed as a preferred host); +USDA-ARS 1959 (listed as cantaloupe; listed as a preferred host); Vargas et al. 2004 (listed as both *Cucumis melo* and as cantaloupe); Vargas and Prokopy 2006 (listed as both *Cucumis melo* and as cantaloupe); +Walker 2005 (listed as both “cantaloupe” and as “rockmelon”); +Weems 1964 (listed as *Dacus cucurbitae*; listed as cantaloupe; listed as a preferred host); +Weems 1967 (listed as *Dacus cucurbitae*; listed as cantaloupe; listed as a preferred host); +Weems et al. 2001 (listed as cantaloupe; listed as a preferred host); +Yong 1992 (listed as *Dacus cucurbitae*; listed as rock melon).

Synonyms: *Cucumis melo* L. var. *cantalupensis* Naudin, *Cucumis melo* L. var. *reticulatus* Naudin

Cucumis melo L. subsp. *melo* var. *flexuosus* (L.) Naudin

Family: Cucurbitaceae

Grin Nomen Number: 12569

Common Names: armenische Melone (German), Armenian cucumber (English), serpent melon (English), snake melon (English).

Cultivated: Only cultivated.

Field Infestation:

Khan et al. 1993:

Faisalabad, Pakistan

In a test of ovipositional preference of *B. cucurbitae* adult females in the field (listed as *Dacus cucurbitae*), small, medium and large *Cucumis melo* subsp. *melo* var. *flexuosus* fruits (listed as *Cucumis flexuosus*) and *Luffa siceraria* fruits (listed as spongegourd) were grown in separate fields of about 1 ha each, and were inspected for infestation, based on the presence of oviposition punctures, 20 samples for each host. *Cucumis melo* subsp. *melo* var. *flexuosus* fruit infestation averaged 32.5%, 36.8% and 27.6% in small, medium and large fruits, respectively.

One hundred (100) *Cucumis melo* subsp. *melo* var. *flexuosus* fruits (when available) were randomly observed in the field monthly between 1985 through 1986 and percentage infestation by *B. cucurbitae* calculated. High *C. flexuosus* infestation (76–100%) was observed from May through June, with 26–50% infestation observed in April.

Listing Only: +Khan et al. 1989 (listed as *Dacus cucurbitae*; listed as tar).

Synonyms: *Cucumis flexuosus* L.

Cucumis melo L. subsp. *melo* var. *inodorus* H. Jacq.

Family: Cucurbitaceae

Grin Nomen Number: 12571

Common Names: casaba melon (English), honeydew melon (English), Honig-Melone (German), winter melon (English).

Cultivated: Only cultivated.

Field Infestation:

+Lee et al. 1992:

Taiwan

From June 1989 to September 1991, rotten and ripening *Cucumis melo* L. subsp. *melo* var. *inodorus* fruits (listed as honeydew melon) were collected every 2 weeks from two sites (Chun-Wai and Nan-Aou agricultural plantations) in Taiwan. Fruits were transferred to the laboratory and held until adult emergence. *Bactrocera cucurbitae* (listed as *Dacus cucurbitae*) was recovered from infested *Cucumis melo* L. subsp. *melo* var. *inodorus* fruits with infestation rates of 0.4% and 0.5% in Chun-Wai and Nan-Aou, respectively.

Listing Only: +Walker 2005 (listed as honeydew).

Cucumis melo L. var. *acidulus* Naudin, see *Cucumis melo* L.

Cucumis melo L. var. *aegyptiacus* (Sickenb.) Hassib, see *Cucumis melo* L.

Cucumis melo L. var. *ameri* Gabaev, see *Cucumis melo* L.

Cucumis melo L. var. *cantalupensis* Naudin, see *Cucumis melo* L. subsp. *melo* var. *cantalupo* Ser.

Cucumis melo L. var. *duripulposus* Filov, nom. Inval., see *Cucumis melo* L.

Cucumis melo L. var. *hibernus* Filov, nom. inval., see *Cucumis melo* L.

Cucumis melo L. var. *makuwa* Makino, see *Cucumis melo* L.

Cucumis melo L. var. *microspermus* Nakai, see *Cucumis melo* L.

Cucumis melo L. var. *momordica*, see *Cucumis melo* L. subsp. *agrestis* (Naudin) Pangalo var. *momordica* (Roxb.) Duthie and J. B. Fuller

Cucumis melo L. var. *pubescens* (Willd.) Kurz, see *Cucumis melo* L.

Cucumis melo L. var. *reticulatus* Naudin, see *Cucumis melo* L. subsp. *melo* var. *cantalupo* Ser.

Cucumis melo L. var. *utilissimus* (Roxb.) Duthie and J. B. Fuller, see *Cucumis melo* L. subsp. *agrestis* (Naudin) Pangalo var. *conomon* (Thunb.) Makino

Cucumis metuliferus E. Mey. ex Naudin

Family: Cucurbitaceae

Grin Nomen Number: 12574

Common Names: African horned cucumber (English), African horned melon (English), concombrec africain (French), Hommelone (German), Horn-Gurke (German), horny cucumber (English), jelly melon (English), kiwano (English), Kiwano (German).

Native: AFRICA – *Northeast Tropical Africa:* Ethiopia, Sudan; *East Tropical Africa:* Kenya, Tanzania, Uganda; *West-Central Tropical Africa:* Cameroon, Central African Republic, Zaire; *West Tropical Africa:* Burkina Faso, Liberia, Senegal; *South Tropical Africa:* Angola, Malawi, Mozambique, Zambia, Zimbabwe; *Southern Africa:* Botswana, Namibia, South Africa – KwaZulu-Natal, Limpopo, Mpumalanga; Swaziland; ASIA-TEMPERATE – *Arabian Peninsula:* Yemen.

Naturalized: AUSTRALASIA – *Australia:* Australia Queensland; NORTHERN AMERICA – *South-eastern U.S.A.:* United States – Florida.

Cultivated: AFRICA – Africa.

Listing Only: Cantrell et al. 1999; Kandybina 1987 (listed as *Dacus cucurbitae*); White and Elson-Harris 1992 (authors state “requires confirmation”).

Synonyms: *Ogurets afrikanskii*

Cucumis microspermus Nakai, see *Cucumis melo* L.

Cucumis momordica Roxb., see *Cucumis melo* L. subsp. *agrestis* var. *momordica* (Roxb.) Duthie and J. B. Fuller

Cucumis moschatus Gray, see *Cucumis melo* L.

Cucumis pepo (L.) Dumort., see *Cucurbita pepo* L. subsp. *pepo*

Cucumis pubescens Willd., see *Cucumis melo* L.

Cucumis sativus L.

Family: Cucurbitaceae

Grin Nomen Number: 404426

Common Names: cucumber (English); khira (India).

Native: ASIA-TEMPERATE – *China*: China – Guangxi, Guizhou, Yunnan; ASIA-TROPICAL – *Indian Subcontinent*: India, Sri Lanka; *Indo-China*: Myanmar, Thailand.

Naturalized: Occasionally naturalized.

Cultivated: Widely cultivated.

Field Infestation:

+*Akhtaruzzaman et al. 1999:*

Gazipur, Bangladesh

During October 1997 to February 1998, *Cucumis sativus* var. ‘Hiramati’ fruits were collected from 20 plants grown in the field of the Bangabandhu Sheikh Mujibur Rahman Agricultural University (BSMRAU) experimental farm in Gazipur, Bangladesh as part of an experiment to assess the value of bagging fruits to minimize infestation. Fruits were harvested at the fruit initiation stage, the early fruiting stage, the mid fruiting stage and the late fruiting stage (about 4, 8, 12, and 14 days after flowering, respectively) and sorted into healthy versus infested fruits. The control (unbagged) fruits were 31.2%, 25.53%, 14.39%, and 5.73% infested at the four stages of harvest, respectively.

+*Allwood et al. 1999:*

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 66 samples of *C. sativus* fruits. Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

+*Back and Pemberton 1917:*

Hawaii, U.S.A.

Cucumis sativus (listed as cucumber) is listed by the authors as a preferred host of *B. cucurbitae*. The authors reported that 150 out of 153 cucumbers ready for a midwinter market at Moiliili (Island of Oahu, Hawaii, U.S.A.) were “variously infested.”

+*Back and Pemberton 1918:*

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+*Badii et al. 2015:*

Northern Ghana

Cucumis sativus fruits were collected from Northern, Upper West and Upper East regions of Ghana. Fruits were brought to a laboratory in Nyankpala, Ghana, and held over a layer of sterilized sand. Pupae recovered from the sand were held on moistened filter paper in Petri plates until adult emergence. Adults were killed and identified after being fed for 3 days. Taxonomic keys were used for species identification, with final species confirmation provided by Dr. Maxwell Billah. Adult *B.*

cucurbitae were recovered from *C. sativus* fruits. Also recovered were adult *Bactrocera dorsalis* (listed as *Bactrocera invadens*) and *Dacus bivittatus*.

Bains and Sidhu 1984:

Punjab, India

Field observations of infestation of *C. sativus* fruits by *B. cucurbitae* (listed as *Dacus cucurbitae*) were made at 10-day intervals in Punjab, India, between May and July. Infested fruits were found in 1 of 5 observations (20%) with an average infestation rate of 1.2 (± 1.2 [standard error])%.

+*Borah 1996:*

Assam, India

From 1993 to 1995 yearly, three varieties of *C. sativus* (listed as cucumber) were grown with three replicates in a factorial randomized block design during each of three sowing seasons (summer, *Kharif*, and *rabi*), in the hill zone of Assam, India. Fruit fly infestation by *B. cucurbitae* (listed as both *Baetocera cucurbitae* and as *Dacus Cucurbitae*) was recorded by counting infested fruits and uninfested fruits per plot at flower-bud initiation stage, followed by 15 and 30 days after the first observation. Infestation rates averaged across seasons and years were 29.8% (variety AAUC-1), 30.2% (variety AAUC-2), and 26.9% (Diphu local).

Borah 1997:

Assam, India

During 1994 and 1995 *C. sativus* (listed as cucumber), variety AAUC-1, was planted in Diphu, Assam, India, in a randomized block design to test for the effectiveness of insecticides for the control of *B. cucurbitae* (listed as *Dacus cucurbitae*) and red pumpkin beetle (*Raphidopalpa foveicollis* L.). Infestation by *B. cucurbitae* was recorded by counting infested fruits and uninfested fruits per plot at flower-bud initiation stage followed by 15 and 30 days after the first observation. Infestation rate in control fruits, averaged across years, was 40.1%.

+*Chen 1960:*

China

Approximately 400 cucumbers (a mix of young to mature) were collected at each of seven sites in China in a study testing the effectiveness of bait sprays for control of infestation of *C. sativus* fruits (listed as cucumber) by *B. cucurbitae* (listed as *Dacus cucurbitae*). Out of 80 kg of mature fruits harvested from the control plots, 72.9% were infested by *B. cucurbitae*.

Chinajariyawong et al. 2000:

Thailand

Bactrocera cucurbitae was reared from 2 samples of *C. sativus* collected in Thailand. No infestation rate data were given.

Clarke et al. 2001:

Thailand

Two thousand four hundred one (2,401) (219.6 kg) infested *C. sativus* fruits were collected in Thailand from 1986 to 1994. Five regions of Thailand (Chiang Rai, Chiang Mai, Bangkok, Surat Thani, Songkhla) recorded infestation rates of 2.7, 2.6, 1.3, 3.1, and 2.2 *B. cucurbitae* per infested fruit and 12.2, 20.7, 20.3, 25.9, and 21.2 *B. cucurbitae* per kg infested fruit, respectively. *Bactrocera cucurbitae* were identified by either R.A.I. Drew or D. L. Hancock.

Clausen et al. 1965:

Island of Luzon, Philippines

From *C. sativus* collections in March 1947 on the island of Luzon in the Philippines, 63 *B. cucurbitae* puparia (listed as *Dacus cucurbitae*) were recovered.

Peninsular Malaysia (listed as Malaya, but locations listed are in present day Peninsular Malaysia)

From *C. sativus* collections from June 1948 to January 1949 in Malaysia, 2,110 puparia were recovered, a mix of two predominant species: *B. cucurbitae* (listed as *Dacus cucurbitae* Coq.) and *Bactrocera tau* (listed as *D. hageni* Meij) (ratio not stated).

Sabah, Malaysia (referred to as North Borneo; place names listed are in present day Sabah, Malaysia)

From collections of *C. sativus* from January to July 1951, in Sabah, Malaysia (referred to as North Borneo), 9,398 puparia were recovered, a mix of two predominant species: *Bactrocera cucur-*

bitae (listed as *Dacus cucurbitae* Coq) and *Bactrocera tau* (listed as *Dacus hageni* Meij) (*B. cucurbitae* was the dominant species).

North India

From *C. sativus* collections from June to September, 1950, in Northern India, 539 *Bactrocera cucurbitae* (listed as *Dacus cucurbitae* Coq) puparia were recovered.

Sri Lanka (referred to as Ceylon)

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) puparia recovered from *C. sativus* collections in Sri Lanka were shipped to Hawaii during August and September 1951.

+Coquillett 1899:

Honolulu, Island of Oahu, Hawaii, U.S.A.

Two (2) male and 2 female adults were recovered by Mr. George Compere from larvae in green *C. sativus* fruits (listed as cucumber).

+Drew 1982:

Papua New Guinea

Specimens of *B. cucurbitae* (listed as *Dacus cucurbitae*) were reared from several varieties of *C. sativus* (listed as cucumber) and are held in the collection of the Wau Ecology Institute in Papua New Guinea.

+Ebeling et al. 1953:

Island of Oahu, Hawaii, U.S.A.

On 16 October 1950, prior to spray treatments, 789 out of 791 *C. sativus* fruits (listed as cucumber) (99.75%) collected from the Mid-Pacific Farm of the University of Hawaii at Manoa had *B. cucurbitae* (listed as *Dacus cucurbitae*) oviposition punctures ("stings"), with an average of 8.89 stings per fruit (In addition, 9.25 per cent of fruits were so rotted that oviposition punctures could not be counted; such fruits usually had the greatest number of "stings.").

+Froggatt 1909:

Central or North-Western India

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from maggot-infested *C. sativus* fruits (listed as cucumbers) from gardens in Central or North-Western India. No infestation rate data were given.

+Fullaway 1916:

Singapore

Bactrocera cucurbitae adults (listed as *Dacus cucurbitae*) were reared out of *C. sativus* fruits (listed as cucumbers). No infestation rate data were given.

+Gupta and Verma 1992:

State of Himachal Pradesh, India

The average total number of maggots within *C. sativus* fruits (listed as cucumber) in the field was determined from examination of 10 fruits randomly selected on a weekly basis from May to August 1986, and May to October 1987. Maggots included both *B. cucurbitae* (listed as *Dacus cucurbitae*) and *B. tau* (listed as *D. tau*), with no indication given as to the relative proportion of the two species. Mean maggot population per fruit reached a maximum of 14.24 and 16.08 in 1986 and 1987, respectively.

+Harris et al. 1986:

Island of Kauai, Hawaii, U.S.A.

Six (6) collections of *C. sativus* fruits (12.811 kg) (listed as cucumber) were made on the Island of Kauai, Hawaii, between July 1980 and September 1982, with fruits held over moist sand for assessment of infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). Seventy-six (76) *B. cucurbitae* flies were recovered (5.93 flies/kg fruit).

+Holdaway 1940:

Koko Head, Island of Oahu, Hawaii, U.S.A.

During 1938, *C. sativus* fruits (listed as cucumber) were reported to be seriously attacked by *B. cucurbitae* (listed as *Dacus cucurbitae*) in Koko Head, on the Island of Oahu. No infestation data were given.

Hollingsworth et al. 1996:

Honiara, Guadalcanal, Solomon Islands

From April to September 1996, *C. sativus* fruits were collected at 2-week intervals at seven sites in the Honiara area of the island of Guadalcanal in the Solomon Islands. *Bactrocera cucurbitae* was recovered from 2 of 4 collections (50.0%). Seven (7) *B. cucurbitae* were recovered from the 9 fruits (1.378 kg) collected with overall infestation rates of 0.78 *B. cucurbitae* per fruit and 5.1 *B. cucurbitae* per kg fruit.

Hollingsworth et al. 2003:

Solomon Islands

From June 1994 to June 1998, *C. sativus* fruits were collected from up to seven provinces of the Solomon Islands (Central, Choiseul, Guadalcanal, Isabel, Malaita, Temotu, Western). *Bactrocera cucurbitae* was recovered from 1 of 16 samples (6.25%). One hundred and three (103) *B. cucurbitae* flies were recovered from 61 fruits (16.23 kg) for overall infestation rates of 1.7 flies per fruit and 6.3 flies/kg fruit.

+*Inayatullah et al. 1993:*

Faisalabad, Pakistan

Based on observations, the average rate of infestation of *C. sativus* fruits (listed as cucumber) by *B. cucurbitae* (listed as *Dacus cucurbitae*) in the vicinity of the University of Agriculture in Faisalabad was about 30%.

Jacquard et al. 2013:

Réunion Island, France

Bactrocera cucurbitae-infested *C. sativus* fruits were collected from seven locations on Réunion Island in 2009 and held over sand. Puparia, recovered by sifting the sand, were held for adult emergence. Two hundred and forty-seven (247) adult *B. cucurbitae* were recovered.

+*Jakhar and Pareek 2005:*

Jobner, State of Rajasthan, India

Seeds of nine cucurbit species were sown in a randomized block design with four replications at the Horticultural Farm of S.K.N. College of Agriculture in Jobner, India during the kharif season in 2000. The infestation rate of *C. sativus* fruits (listed as cucumber) by *B. cucurbitae* averaged 23.93% (range: 13.39–36.04%) over the course of 6 collection dates, each 3 days apart, between August and September, 2000.

Khan et al. 2011:

Bangladesh

A *B. cucurbitae* laboratory colony was established from *B. cucurbitae* recovered from infested *C. sativus* fruits collected in Bangladesh

Khan et al. 1993:

Faisalabad, Pakistan

Cucumis sativus fruit samples (1 fruit at a time) were placed in a cage with adult *B. cucurbitae* flies (listed as *Dacus cucurbitae*) for 24 hours, then, 1 week later, were dissected to count the number of 2nd and 3rd instar larvae. Over five replications, averages of 35.8 and 30.20, 2nd instar and 3rd instar larvae, respectively, were recovered.

One hundred (100) *C. sativus* fruits (when available) were randomly observed in the field monthly from 1985 to 1986 and percentage infestation by *B. cucurbitae* calculated. *Cucumis sativus* infestation averaged 26–50% in April and 51–75% in May.

Kittayapong et al. 2000:

Thailand

Cucumis sativus fruits were collected throughout Thailand within the time period, October 1995 to December 1998. Collections were placed over sawdust in a ventilated plastic container and brought back to the laboratory at Mahidol University in Bangkok. *Bactrocera cucurbitae* was recovered from *C. sativus* fruits. Total number of fruits collected and infestation rate data were not given.

Kumar et al. 2008:

Bangalore, South India

Cucumis sativus fruits were harvested monthly at the Indian Institute of Horticultural Research, Bangalore, South India from July 2002 to October 2003 (a total of 67 harvests). At each harvest, damaged and healthy fruits were sorted and weighed separately, with damaged fruits placed in separate cages on a thin layer of sand to facilitate pupation and adult emergence. *Bactrocera cucurbitae*

and *D. ciliatus* adults that emerged were counted. Infestation of *C. sativus* (by month of collection) by *B. cucurbitae* averaged 35.3% (range: 7.19–73.83%), with an average infestation rate of 142.4 individuals per kg fruit (range: 32.26–431.97).

Leblanc et al. 2012:

Papua New Guinea (PNG) and the Solomon Islands

Cucumis sativus fruits were collected during 1997 to 2000 in PNG and 1994 to 1999 in the Solomon Islands and held in plastic containers over finely sieved sawdust that had been sterilized in an oven or frozen overnight to kill mites. The sawdust was sieved to recover tephritid fruit fly puparia. Puparia were kept in moist sawdust until adult emergence. Adults were fed for 5 days, then killed by freezing to allow colors and markings, necessary for correct species identification, to fully develop. *Bactrocera cucurbitae* was recovered in 7 of 32 (21.9%) samples in PNG and in 3 of 21 (14.3%) samples in the Solomon Islands.

Leblanc et al. 2013a:

Papua New Guinea (PNG), Solomon Islands

Cucumis sativus fruits were collected during 1997 to 2000 in PNG (374 fruits; 90.95 kg) and 1994 to 1999 in the Solomon Islands (107 fruits; 25.16 kg) and held in plastic containers over finely sieved sawdust that had been sterilized in an oven or frozen overnight to kill mites. The sawdust was sieved to recover tephritid fruit fly puparia. Puparia were kept in moist sawdust until adult emergence. Adults were fed for 5 days, then killed by freezing to allow colors and markings, necessary for correct species identification, to fully develop. *Bactrocera cucurbitae* was recovered in 7 of 32 (21.9%) samples in PNG with an overall infestation rate of 7.08 flies/kg fruit and 84.18 flies/kg infested fruit. *Bactrocera cucurbitae* was recovered in 3 of 21 (14.3%) samples in the Solomon Islands with an overall infestation rate of 4.81 flies/kg fruit and 23.73 flies/kg infested fruit.

+Lee 1972:

Taiwan

Cucumis sativus plants (listed as cucumber) were grown in the field year-round from 2 June 1969 to 10 June 1970, and from March to August 1971. Fruits, picked 5, 10, and 15 days after flowering, were placed over sand in holding boxes. The sand was screened weekly to recover *B. cucurbitae* pupae (listed as *Dacus cucurbitae*). Pupal recovery per fruit was averaged quarterly for 1969 to 1970 harvests. Pupal recovery per kg fruit was averaged monthly for 1971 harvests. *Bactrocera cucurbitae* pupal recovery averaged 4.1, 7.3, and 14.4 pupae/fruit (1969–1970) and 68.1, 276.9, and 119.2 pupae/kg fruit (1971) overall, for fruits picked 5, 10, and 15 days after flowering, respectively.

Liquido et al. 1994:

Hawaii Island, Hawaii, U.S.A.

From July 1990 to October 1992, 14 (2.25 kg) ripe “on vine” or ground *C. sativus* fruits were collected (through collections made once or twice a month) from several sites on Hawaii Island, Hawaii. Fruits were weighed, counted, split into groups of 5 or 10, and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* larvae and pupae were recovered from infested *C. sativus* fruits with an overall infestation rate of 26.71 larvae and pupae per fruit (166.22 larvae and pupae/kg fruit).

+Mathew et al. 1999:

Vellanikkara, State of Kerala, India

Wilted *C. sativus* (listed as cucumber) vines were observed in the vegetable fields of Kerala Horticulture Development Programme, Kerala Agricultural University, Vellanikkara. Maggots were found in a rotten area of the vine. The maggots were reared and adult *B. cucurbitae* emerged. No infestation rate was reported.

Modjonnesso et al. 2012:

Lomé, Togo

Between June 2008 and February 2009, 6 *C. sativus* fruits with evidence of infestation by tephritid fruit flies were collected in Lomé, Togo and held in a laboratory for assessment of infestation. Twenty-four (24) adult female and 23 adult male *B. cucurbitae* were recovered.

+Mote 1975:

Rahuri, State of Maharashtra, India

Cucumis sativus plants (listed as cucumber) were set out in the kharif season, and

again in the summer season, in Rahuri, India, in a randomized block design with three replicates, to test the effectiveness of different insecticides in reducing infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). The percentage of fruits infested by *B. cucurbitae* was calculated after making observations on infested and healthy fruits at each picking. Averages of 31.46% and 35.69% of *C. sativus* fruits (in the untreated control) were infested by *B. cucurbitae* in the kharif and summer seasons, respectively.

Mwatawala et al. 2009a:

Morogoro Region, Central Tanzania

Tender-skinned immature *C. sativus* fruits were randomly collected at regular intervals between October 2004 and October 2006 from areas within the Sokoine University of Agriculture campus in Morogoro and from Nyandira, Mikese, Mkindo in the Morogoro region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupation of infesting tephritid fruit flies. Emerged adults were removed and identified. Ten (10) of 15 (66.7%) *C. sativus* samples (9.49 kg) were infested by *B. cucurbitae*.

Mwatawala et al. 2009b:

Morogoro Region, Central Tanzania

Cucumis sativus fruits were randomly collected weekly between October 2004 through October 2006, and from August through December, 2007, from areas within the Sokoine University of Agriculture campus in Morogoro and from Nyandira, Mikese, Mkindo in the Morogoro region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupation of infesting tephritid fruit flies. Emerged adults were removed and identified. Out of 683 collected fruits (22.52 kg), infestation by *B. cucurbitae* averaged 62.76 emerged adults per kg fruit.

Mwatawala et al. 2010:

Morogoro Region, Central Tanzania

Six hundred fifty two (652) immature *C. sativus* fruits (35.233 kg) were collected at irregular intervals between October 2004 and April 2008, from the Morogoro Region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupariation of infesting tephritid fruit flies. Emerged adults were removed and identified. *Bactrocera cucurbitae* flies were recovered from 44 of 61 collections (72.13%), with an overall infestation rate of 64.09 flies/kg fruit and 150.95 flies/kg infested fruit.

Mwatawala et al. 2015:

Morogoro Region, Central Tanzania

Cucumis sativus, *Citrullus lanatus* and *Cucurbita* sp. (“pumpkin”) were directly sown both in mono-cropped plots and in plots where all three crops were “haphazardly mixed both within and between lines.” Two plots of each type were planted in each of three seasons: March–June 2013, October–December 2013 and April–July 2014. Planting dates for each crop species were adjusted based on days to flowering in order to synchronize fruit setting. Fruits in all plots were subject to natural infestation by *B. cucurbitae* (listed as *Zeugodacus cucurbitae*). At each sampling date, fruits of each species were randomly harvested from each plot and held in rearing containers containing sterilized sand as a pupation medium. Pupae were removed and held on Petri dishes with moist filter paper until adult emergence. From the mono-cropped *C. sativus* plots, 56.7% of fruits were infested by *B. cucurbitae* with an average infestation rate of 48.85 flies/kg fruit (out of 6.98 kg fruits). From the mix-cropped plots, 70.0% of *C. sativus* fruits were infested by *B. cucurbitae* with an average infestation rate of 55.4 flies/kg fruit (out of 8.00 kg fruits).

Nath and Bhushan 2006:

Varanasi, State of Uttar Pradesh, India

Cucumis sativus was sown, with three replications, in Varanasi, India, the last week of March (summer season) and again the last week of June (rainy season) in both 2001 and 2002. Percentage infestation by *B. cucurbitae* averaged 13.4% (range: 10.1–16.8%) in the summer season and 28.6% (range: 27.6–29.5%) in the rainy season.

Ndiaye et al. 2012:

Niayes and Thiès plateau zones, Senegal

Cucumis sativus fruits were collected in December 2008, and held over sieved coarse sand in cloth-covered pots. Recovered tephritid fruit fly pupae were transferred to Petri dishes for adult

emergence and species identification. *Bactrocera cucurbitae* was recovered from the 1.0 kg of *C. sativus* fruits sampled, with an infestation rate of between 100 and 200 individuals per kg fruit.

+Nishida 1953:

Island of Oahu, Hawaii, U.S.A.

A monthly survey of *B. cucurbitae* (listed as *Dacus cucurbitae*) infestation of *C. sativus* fruits (listed as cucumber) was made in Waimanalo and Waianae, on the Island of Oahu, between 1951 and 1952. The rate of infestation ranged from 5 to 60% in Waianae and 10 to 100% in Waimanalo. Number of fruits observed were not reported.

+Nishida 1954:

Island of Oahu, Hawaii, U.S.A.

In a test of the effectiveness of applying insecticides with conventional-type sprayers on border vegetation to reduce infestation of *C. sativus* (listed as cucumber) by *B. cucurbitae* (listed as *Dacus cucurbitae*), percentage infestation of fruits was observed in two fields which received border sprays and in three (check) fields in which only on-crop sprays were applied. The presence of oviposition punctures was used as the criterion to identify infested fruits, irrespective of whether eggs or larvae were found. Average rate of infestation of 10-cm long *C. sativus* fruits from the three check fields ranged between 70 and 100%.

Nishida 1955:

Island of Oahu, Hawaii, U.S.A.

Infested *C. sativus* fruits, with nearly full grown *B. cucurbitae* (listed as *Dacus cucurbitae*) larvae, were collected at cultivated areas in two locations on the Island of Oahu, Hawaii from 1950 to 1951: Waianae and Waimanalo. Larvae were extracted from fruits and placed in small wax paper cups containing pumpkin pulp. The cups were placed on sand in jars in which a high humidity was maintained. Six hundred twenty-four (624) and 390 *Bactrocera cucurbitae* larvae were recovered from the fruits at the two sites, respectively. Number of fruits and infestation rate data were not given.

Oke 2008:

Anse Boileau, Mahe Island, Seychelles

In order to test the effectiveness of insecticides in controlling melon fly in *C. sativus*, cucumber (variety 'slicer no. 5') was sown in a nursery in April 2007 and then planted out in a randomized complete block design with three replicates at the Vegetable Evaluation and Research Station Farm at Anse Boileau, Mahe Island, Seychelles. Fruits were harvested five times from each plot with fruits held in plastic bags that had holes for aeration and contained sand as a pupation medium. *Cucumis sativus* fruits from the untreated control plot averaged 3.40 *B. cucurbitae* pupae per fruit over the five harvests. No adult flies were recovered.

+Pareek and Kavadia 1994:

Jobner and Udaipur, state of Rajasthan, India

Cucumis sativus fruits (listed as cucumber, variety 'Khera-75') were raised in a randomized block design with nine other cucurbit crops (each with three replicated plots) for assessment of preference of *B. cucurbitae* (listed as *Dacus cucurbitae*). The trials were conducted from February to June in 1979, and again in 1981, in Udaipur (semi-humid agroclimatic conditions) and in 1980 and 1981 in Jobner (semi-arid agroclimatic condition). Fruits were harvested twice a week, examined for fruit fly damage, and then percentage of fruits infested by *B. cucurbitae* calculated. Percentage infestation averaged 14.2% (range:13.8–14.7%) in Udaipur and 11.7% (range: 9.7–13.7%) in Jobner.

Prabhakar et al. 2012:

State of Himachal Pradesh, India

Infested *C. sativus* fruits were collected from six districts of the State of Himachal Pradesh in India from 29 May to 2 September 2009. Fruits from each location were held in separate rearing cages under laboratory conditions in Palampur. Emerging tephritid fruit flies were identified following adult emergence. Adult *B. cucurbitae* were recovered from *C. sativus* fruits collected in Bilaspur, Hamirpur, Kangra, Mandi, Solan and Una Districts.

Pradhan 1977:

Nepal

Cucumis sativus was planted by seed in Nepal in four separate plots (four replicates) during the first week of April in 1974 and again in 1975. Daily counts were made of infestation of flow-

ers and then of fruits by *B. cucurbitae* (listed as *Dacus cucurbitae*). Infested flowers and fruits were detached and thrown to the ground after observations were completed. Infestation rate of fruits averaged 20.42% (range: 19.4–22.1%) in 1974 and 14.60% (range: 10.9–22.8%) in 1975.

Purcell and Messing 1996:

Island of Kauai, Hawaii, U.S.A.

Cucumber (*C. sativus* var. 'Slice Master') seeds were planted on two occasions: 9 May 1994 and 1 September 1995. On 14 October, 2 November, and 14, 19 December, 1995, between 250–400 female *B. cucurbitae* adults were released into the fields to produce high infestation rates in hosts. Four age/ripeness categories of fruits were collected: immature, commercial sized, oversize, and rotting. Fruits were sampled weekly from eight randomly selected quadrats. Average recovery was 81.4 (40 samples), 13.3 (40 samples), 1.3 (28 samples), and 113.7 (22 samples) *B. cucurbitae* per kg fruit from the four fruit categories, respectively.

Ramadan and Messing 2003:

Thailand

Seven (7) collections of immature and mature *C. sativus* fruits (16.7 kg) with oviposition scars or signs of larval infestation were made in 1996 from four localities in Thailand (Hatyai, Rattaphum, Betong, and Nakhom Pathom). Fruits were held over sawdust, which was subsequently sifted for recovery of tephritid fruit fly puparia. Five hundred fifty-four (554) adult *B. cucurbitae* were recovered, for an infestation rate of 33.2 adult *B. cucurbitae* per kg *C. sativus* fruit.

+Ranganath et al. 1997:

Andaman Island, India

In a test, from June to August 1996, of the effectiveness of "safer insecticides" for control of *B. cucurbitae*, two unsprayed control plots were included: (1) Control: two rows of *C. sativus* (listed as cucumber, variety 'white long') were planted in between rows of *Luffa acutangula* (listed as ridge gourd, local variety), with two rows of marigold plants in between them; and (2) Absolute Control: two rows of *C. sativus* (listed as cucumber, variety 'white long') were planted in between rows of *Luffa acutangula* (listed as ridge gourd, local variety) with no marigold plants. Each treatment was replicated four times. Percentage damage of fruits was determined at each of 12 harvests. Damage of *C. sativus* fruits by *B. cucurbitae* averaged 33.8% and 38.7% in the control and absolute control plots, respectively.

+Singh et al. 2000:

Kanpur, State of Uttar Pradesh, India

Cucumis sativus fruits (listed as cucumber) were collected weekly at growers' fields at the bank of the river Ganga in Kanpur beginning in February 1997. Percentage infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) was determined (by observation) at each picking. The overall average *B. cucurbitae* infestation rate was 21.5%.

Sookar and Khayratee 2000:

Plaine Sophie, Mauritius

Control of infestation of *C. sativus* fruits by *B. cucurbitae* through the use of only cover sprays (year one) was compared with control by cover sprays plus spot sprays of protein bait + toxicant and cuelure + toxicant traps (year two). Every 2 weeks, *C. sativus* fruits with fruit fly punctures were randomly sampled and placed in a plastic tray over dry sand. The sand was sifted after 10 days for *B. cucurbitae* pupal recovery. Pupae were held in insect cages until adult emergence. From January to December 1999, when the cover spray only control method was used, average infestation of *C. sativus* fruits over 2-week intervals ranged from 136 to 230 pupae/kg infested fruit.

+Steiner et al. 1965:

Island of Rota, Mariana Islands

Cucumis sativus fruits (listed as cucumber) were collected on the island of Rota as part of a *B. cucurbitae* (listed as *Dacus cucurbitae*) eradication program. Mature fruits were randomly collected and held until surviving larvae matured. Monthly *C. sativus* fruit infestation averaged 19.3 *B. cucurbitae* larvae/kg fruit (range: 2.20–32.2 larvae/kg fruit) over the months of January–July 1960–1962, before the initiation of either bait sprays or sterile fly releases.

Syed 1971:

Faisalabad, Gujranwala and Murree, Province of Punjab; Peshawar Valley, Khyber Pakhtunkhwa Province, Pakistan

In Faisalabad and Gujranwala (1962–1963), 2.0% of *C. sativus* fruits were infested in July by *B. cucurbitae* (listed as *Dacus cucurbitae*); in Murree (1963), *B. cucurbitae* was reared from *C. sativus* fruits in September and October, with fruits reaching 38% infestation in October; in the Peshawar Valley (1962–1963), 69% of fruits were infested in May. Total number of fruits collected were not given.

Tan and Lee 1982:

Penang Island, Malaysia

Infested *C. sativus* fruits were randomly collected on Penang Island. Fruits were held over moist sterilized sand in fine wire mesh-covered plastic containers until pupation. Pupae were transferred and held at 27–29°C (80±5% RH) until adult emergence. *Bactrocera cucurbitae* (listed as *Dacus cucurbitae*) was recovered from infested *C. sativus* fruits. Total number of fruits collected and infestation rate were not given.

Tsuruta et al. 1997:

Sri Lanka

Four (4) adult *B. cucurbitae* were recovered from an unspecified number of *C. sativus* fruits collected in Sri Lanka. Two (2) came from fruits collected in the Madabavita area and 2 came from fruits collected in the Katunayake area. No infestation rate data were given.

Vargas et al. 1990:

Island of Kauai, Hawaii, U.S.A.

Between March 1987 and February 1989, 5 (year one) and 2 (year two) samples of *Cucumis sativus* fruits were collected in the Moloaa area on the Island of Kauai. Fruits were placed on metal trays in plastic holding boxes containing sand. Mature *B. cucurbitae* (listed as *Dacus cucurbitae*) larvae and pupae, recovered through weekly sifting of the sand, were held for adult emergence. Out of 132 fruits collected in year one, 585 tephritid fruit fly pupae were recovered, from which 493 *B. cucurbitae* adults emerged, for an infestation rate of 16.3 *B. cucurbitae* adults per kg fruit. Out of 30 fruits collected in year two, 11 tephritid fruit fly pupae were recovered, from which 11 *B. cucurbitae* adults emerged, for an infestation rate of 0.6 *B. cucurbitae* adults per kg fruit.

Vayssières et al. 2007:

Benin, Burkina Faso, Cameroon, Côte d'Ivoire, Guinea, Mali, Niger and Senegal, West

Africa

Tephritid fruit fly-infested *C. sativus* fruits were collected from untreated orchards in eight countries in West Africa. Fruits were placed on mesh supports over sand. Tephritid fruit fly pupae, recovered through weekly sieving of the sand, were transferred to small hatching boxes lined with wet blotting paper and held for adult emergence. The average *B. cucurbitae* infestation level in *C. sativus* fruits in West Africa fell in the range of 26–50 pupae/kg fruit. For comparison, the authors indicated that the infestation level of *C. sativus* fruits averaged over 100 pupae/kg fruit on Réunion Island.

Vayssières and Carel 1999:

Réunion Island, France

Two varieties of *C. sativus* fruits were collected over the course of a year from up to 70 localities on Réunion Island. Fruits with evidence of fruit fly infestation were held in individual containers, with recovered pupae held for adult emergence. *Bactrocera cucurbitae* recovery averaged 142.2 (standard deviation [SD] = 329.5) adults per kg infested fruit (local variety); and 734.4 (SD = 994.8) adults per kg infested fruit (var. 'RS 87757').

+Wen 1985:

Taiwan

Cucumis sativus fruits (listed as cucumber) were collected in southern Taiwan from November 1983 to June 1984. Infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) averaged 17.01% (bimonthly averages ranged from 8.46–35.97%).

+Willard 1920:

Island of Oahu, Hawaii, U.S.A.

From July to December 1918, 90.72 kg of *C. sativus* fruits (listed as cucumber) were collected in Honolulu and held for recovery of infesting *B. cucurbitae* larvae. Forty-seven thousand eight hundred eighty-eight (47,888) *B. cucurbitae* larvae were recovered for an average of 527.9 larvae/kg

fruit. From January to August 1919, 152.9 kg of *C. sativus* fruits were collected from which 57,921 *B. cucurbitae* larvae were recovered, for an average of 378.9 larvae/kg fruit.

+Wong *et al.* 1989:

Rota, Commonwealth of the Northern Mariana Islands

On the island of Rota, 137 *C. sativus* fruits (listed as cucumber) (from 19 collections) were collected in 1985, 411 fruits (from 34 collections) were collected in 1986, and 243 fruits (from 22 collections) were collected in 1987. Fruits were held over moist sand in plastic containers with screened lids for recovery of *B. cucurbitae* pupae and adult emergence. *Bactrocera cucurbitae* recovery averaged 28.6 pupae/kg fruit (1985), 50.6 pupae/kg fruit (1986), and 93.0 pupae/kg fruit (1987).

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Cucumis sativus* fruits at airports in Hawaii on 27 occasions. Interceptions were at airports in Honolulu (26) and in Kahului (1) between 1988 and 2011, with an average recovery of 6.2 live larvae. On one occasion in 2004, two live adults were recovered; and on another occasion in 2011, two live pupae were recovered.

Bangladesh

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) in New York (JFK) from a flight originating in Bangladesh on one occasion in 1990. One (1) live larva was recovered.

Iran

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) in California (Los Angeles) from a flight originating in Iran on one occasion in 1999. Three (3) live larvae were recovered.

Takeishi 1992:

Thailand

One (1) *B. cucurbitae*-infested (listed as *Dacus cucurbitae*) *C. sativus* fruit was collected from an airline passenger at Narita Airport, Japan, who had arrived on a flight originating in Thailand. At the time of confiscation, the larval-infested fruit was held in an individual container with sand at 20–28°C until adult emergence. Infestation rate data were not given.

USDA 1924:

Bactrocera cucurbitae was recovered from *C. sativus* which originated from a port in Hawaii and was intercepted at a port in Pennsylvania (3 interceptions) between 1 January 1923 and 31 December 1923 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1926:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from cucumber (*C. sativus*) which originated from a port in Hawaii and was intercepted at a port in California (11 interceptions) between 1 January 1924 and 31 December 1925 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1927:

Bactrocera cucurbitae was recovered from cucumber (*C. sativus*) which originated from a port in Hawaii and was intercepted at a port in California (2 interceptions) between 1 January 1926 and 31 December 1926 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1928:

Bactrocera cucurbitae was recovered from cucumber (*C. sativus*) which originated from a port in Hawaii and was intercepted at a port in California (6 interceptions) between 1 January 1927 and 31 December 1927 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1929:

Bactrocera cucurbitae was recovered from cucumber (*C. sativus*) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in baggage, 1 interception in quarters, and 5 interceptions in stores) between 1 January 1928 and 31 December 1928 (number of individuals recovered and life stages not reported). Host was recorded by state inspector of California. Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1932a:

Bactrocera cucurbitae was recovered from cucumber (*C. sativus*) which originated from a port in Hawaii and was intercepted at a port in California (5 interceptions in stores) between 1 January 1930 and June 30 1931 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1932b:

Bactrocera cucurbitae was recovered from cucumber (*C. sativus*) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in stores) between 1 July 1931 and 30 June 1932 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1935:

Bactrocera cucurbitae was recovered from cucumber (*C. sativus*) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in quarters) between 1 July 1933 and 30 June 1934 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1937:

Bactrocera cucurbitae was recovered from cucumber (*C. sativus*) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in stores) between 1 July 1935 and 30 June 1936 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1939b:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from cucumber (*C. sativus*) which originated from a port in the Philippines and was intercepted at a port in California (1 interception in stores) between 1 July 1937 and 30 June 1938 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1940:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from cucumber (*C. sativus*) which originated from a port in Hawaii and was intercepted at a port in California (3 interceptions in stores) between 1 July 1938 and 30 June 1939 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1941:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from debris in a box of cucumbers (*C. sativus*) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in stores) between 1 July 1939 and 30 June 1940 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1945:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from cucumber (*C. sativus*) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1943 and 30 June 1944 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1946:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from cucumber (*C. sativus*) which originated from a port in Hawaii and was intercepted at ports in California and Washington (2 interceptions in non-entry hosts) between 1 July 1944 and 30 June 1945 (number of individu-

als recovered and life stages not reported). Host was recovered by state inspectors of California and taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1948a:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from cucumber (*C. sativus*) which originated in Hawaii and was intercepted once at a port in California (1 interception in non-entry host) between 1 July 1945 and 30 June 1946 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1948b:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from cucumber (*C. sativus*) which originated from a port in Hawaii and was intercepted at a port in California (15 interceptions in non-entry hosts) between 1 July 1946 and 30 June 1947 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1950:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from cucumber (*C. sativus*) which originated from a port in Hawaii and was intercepted at a port in California (5 interceptions in non-entry hosts) between 1 July 1947 and 30 June 1948 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1951:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from cucumber (*C. sativus*) which originated from a port in Hawaii and was intercepted at a port in California (4 interceptions in non-entry hosts) between 1 July 1948 and 30 June 1949 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1951:

Bactrocera cucurbitae (listed as *Dacus cucurbitae?*) was recovered from cucumber (*C. sativus*) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1948 and 30 June 1949 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1952a:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from cucumber (*C. sativus*) which originated from a port in Hawaii and was intercepted at a port in California (4 interceptions in non-entry hosts) between 1 July 1949 and 30 June 1950 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1952a:

Bactrocera cucurbitae (listed as *Dacus cucurbitae?*) was recovered from cucumber (*C. sativus*) which originated from a port in Hawaii and was intercepted at a port in California (3 interceptions in non-entry hosts) between 1 July 1949 and 30 June 1950 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1952b:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from cucumber (*C. sativus*) which originated in cargo and stores from Hawaii and was intercepted at a port in California (1 interception in consumption host and 1 in non-entry host) between 1 July 1950 and 30 June 1951 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1952b:

Bactrocera cucurbitae (listed as *Dacus cucurbitae?*) was recovered from cucumber (*C. sativus*) which originated from a port in Hawaii and was intercepted at a port in Washington (1 intercep-

tion in non-entry host) between 1 July 1950 and 30 June 1951 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1953:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from cucumber (*C. sativus*) which originated from a port in Hawaii and was intercepted at a port in California (2 interceptions in consumption hosts; 1 interception in non-entry host) between 1 July 1951 and 30 June 1952 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1954:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from cucumber (*C. sativus*) which originated from Hawaii and was intercepted at a port in California (3 interceptions in non-entry hosts) between 1 July 1952 and 30 June 1953 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1954:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from cucumber (*Cucumis sativus*) which originated from Hawaii and was intercepted at ports in California and Texas (4 interceptions in non-entry hosts) between 1 July 1952 and 30 June 1953 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1955:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from cucumber (*C. sativus*) which originated in Hawaii and was intercepted at a port in California (3 interceptions in non-entry host) between 1 July 1952 and 30 June 1953 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1955:

Bactrocera cucurbitae (listed as *Dacus cucurbitae?*) was recovered from cucumber (*C. sativus*) which originated in Hawaii and was intercepted at a port in California (5 interceptions in non-entry hosts) between 1 July 1952 and 30 June 1953 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1956:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from cucumber (*C. sativus*) which originated in Hawaii and was intercepted at a port in California (2 interceptions in consumption and 5 interceptions in non-entry hosts) between 1 July 1954 and 30 June 1955 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1956:

Bactrocera cucurbitae (listed as *Dacus cucurbitae?*) was recovered from cucumber (*C. sativus*) which originated in Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1954 and 30 June 1955 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1957:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from cucumber (*C. sativus*) which originated in Hawaii and was intercepted at a port in California (6 interceptions in non-entry hosts) between 1 July 1955, and 30 June 1956 (number of individuals recovered and life stages not reported). Host was recovered by state inspectors in California. Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1957:

Bactrocera cucurbitae (listed as *Dacus cucurbitae?*) was recovered from cucumber (*C. sativus*) which originated in Hawaii and was intercepted at a port in California (3 interceptions in non-

entry hosts) between 1 July 1955, and 30 June 1956 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1958:

Bactrocera cucurbitae (listed as *Dacus cucurbitae?*) was recovered from cucumber (*C. sativus*) which originated in Hawaii and was intercepted at a port in California (4 interceptions in non-entry hosts) between 1 July 1956 and 30 June 1957 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1959:

Bactrocera cucurbitae (listed as *Dacus cucurbitae?*) was recovered from cucumber (*C. sativus*) which originated in Hawaii and was intercepted at a port in California (2 interceptions in non-entry hosts) between 1 July 1957 and 30 June 1958 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1960:

Bactrocera cucurbitae (listed as *Dacus cucurbitae?*) was recovered from cucumber (*C. sativus*) which originated in Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1960 and 30 June 1961 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1962:

Bactrocera cucurbitae (listed as *Dacus cucurbitae?*) was recovered from cucumber (*C. sativus*) which originated in Hawaii and was intercepted at a port in California and stores in Hawaii (2 interceptions in non-entry hosts) between 1 July 1960 and 30 June 1961 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1962:

Bactrocera cucurbitae (listed as *Dacus cucurbitae?*) was recovered from cucumber (*C. sativus*) which originated in Hawaii and was intercepted at a port in California and stores in Hawaii (2 interceptions in non-entry hosts) between 1 July 1960 and 30 June 1961 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1964:

Bactrocera cucurbitae (listed as *Dacus cucurbitae?*) was recovered from cucumber (*C. sativus*) which originated in Hawaii and the Ivory Coast and was intercepted at stores in California and Massachusetts (2 interceptions in non-entry hosts) between 1 July 1962 and 30 June 1963 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1964:

Bactrocera cucurbitae (listed as *Dacus cucurbitae?*) was recovered from cucumber (*C. sativus*) which originated in Hawaii and was intercepted at stores in California (4 interceptions in non-entry hosts) between 1 July 1962 and 30 June 1963 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1965:

Bactrocera cucurbitae (listed as *Dacus cucurbitae?*) was recovered with cucumber seed (*C. sativus*) in mail which originated from Nepal and was intercepted at a port in Washington D. C. (1 interception in propagation host) between 1 July 1963 and 30 June 1964 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1965:

Bactrocera cucurbitae (listed as *Dacus cucurbitae?*) was recovered from cucumber (*C. sativus*) which originated in Hawaii and was intercepted at stores in California and Washington (3

interceptions in non-entry hosts) between 1 July 1963 and 30 June 1964 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

Lab Infestation:

Agarwal and Yazdani 1991:

One hundred (100) eggs, collected from adult *B. cucurbitae* flies (listed as *Dacus cucurbitae*) which emerged from field-infested *Luffa aegyptiaca* Mill. fruits (listed as *Luffa cylindrica*), were inserted in a triangular cut in a *Cucumis sativus* fruit (four replications) and held at 29.85±8.33°C and 61.72±22.05%RH. An average of 72% survived from larval stage to adult emergence.

+*Armstrong and Garcia 1985:*

A total of 36.08 kg of two greenhouse-grown *C. sativus* varieties (listed as cucumber, varieties 'Daleva' and 'Burpee Hybrid') was obtained from farms in Mountain View and Keaau, on the island of Hawaii (Hawaii, U.S.A.) and exposed to 140 sexually mature *Bactrocera cucurbitae* (listed as *Dacus cucurbitae*) (1:1 sex ratio) per kg fruit for 18±2 hours. Following exposure, cucumbers were held on trays with dry fruit fly larval diet for 2 weeks. Seventy-five thousand eight hundred sixty (75,860) *B. cucurbitae* pupae were recovered for an infestation rate of 2,102.5 pupae/kg fruit.

Akter et al. 2010:

In a laboratory host preference study conducted in Bangladesh during 2005 to 2006, 250 g of *C. sativus*, along with 250 g of each of five other vegetables (*Cucurbita maxima*, *Momordica charantia*, *Solanum lycopersicum* var. *lycopersicum*, *S. melongena*, and *Trichosanthes cucumerina*), were simultaneously exposed to one hundred (100) 15–20-day-old gravid female *B. cucurbitae* flies for 3 hours, then placed over saw dust. The saw dust was sieved to recover pupae which were transferred to Petri dishes and held until adult emergence. The trial was replicated five times. Recovery of *B. cucurbitae* pupae and adults averaged 280±55.98 and 257±55.32, respectively (1,120 and 1,028 per kg fruit, respectively). The order of adult recovery (greatest to smallest) was: *S. melongena* > *T. cucumerina* > *C. maxima* > *C. sativus* > *M. charantia* > *S. lycopersicum*.

+*Back and Pemberton 1917:*

Sixty-six (66) *B. cucurbitae* larvae were able to complete instars one–three on *C. sativus* (listed as cucumber), transferred daily from one piece of pulp to a fresh piece of pulp, in an average time of 7.0 days at an average temperature of 26.0°C.

Carey et al. 1985:

Fifty (50) newly emerged 1st generation *B. cucurbitae* larvae (listed as *Dacus cucurbitae*) (four replications) were added to a small portion of *C. sativus* and held at 25 (±2.0)°C and 60.0 (±6.0)% RH in a covered Petri plate, with additional host material added as needed. When some of the larvae approached maturity, the Petri plate was opened and placed in sand in a larger container to allow for pupation. The sand was then sifted daily to recover pupae which were held at the same conditions of temperature and relative humidity. On average, 78% of the larvae survived to adult emergence, with an average larva to adult development time of 17.1 days.

+*Gupta and Verma 1995:*

A cohort of 50 *B. cucurbitae* (listed as *Dacus cucurbitae*) newly emerged maggots was placed on a small slice of *C. sativus* fruit (listed as cucumber) kept in a Petri dish. Maggots were shifted daily to a new slice and mortality was recorded. Mature larvae were allowed to burrow into sand for pupation and, after 6 days, pupae were recovered and placed in plastic tubes until eclosion. Average adult survivorship from newly emerged larvae placed on cucumber was 54%, which was intermediate in value to survivorship on sponge gourd (*Luffa aegyptiaca*) (44%) and on bitter melon (*Momordica charantia*) (60%).

+*Hagen 1952:*

Bactrocera cucurbitae adults (listed as *Dacus cucurbitae*) used in laboratory studies were reared from *C. sativus* fruits (listed as cucumber).

Khan et al. 2011:

In a choice test, 50.0 g of *C. sativus* fruits, along with 50.0 g of each of eight other natural hosts, were exposed for 20 minutes to 50 pairs of 15–20-day-old *B. cucurbitae* and 50 pairs of 15–20-day-old *B. tau* inside a small cage, after which fruit samples were removed and placed separately on sawdust inside a cloth-covered plastic bowl for pupation. The sawdust was sieved after 6 to 8 days

to recover pupae (of both fly species) which were held for adult emergence. Out of a mean infestation of 193 ± 13.86 pupae recovered (mixed infestation of *B. cucurbitae* and *B. tau*), 63.21% (122.0) of the recovered pupae emerged as adult *B. cucurbitae*.

In a no-choice test, 50.0 g of *C. sativus* fruits, as well as 50.0 g of each of eight other natural hosts, were exposed for 20 minutes to 5 pairs of 15–20-day-old *B. cucurbitae* and 5 pairs of 15–20-day-old *B. tau* inside separate small cages, after which fruit samples were removed and placed separately on sawdust inside a cloth-covered plastic bowl for pupation. The sawdust was sieved after 6 to 8 days to recover pupae (of both fly species) which were held for adult emergence. Out of a mean infestation of 170 ± 5.77 pupae recovered (mixed infestation of *B. cucurbitae* and *B. tau*), 47.05% (80.0) of the recovered pupae emerged as adult *B. cucurbitae*.

Koul and Bhagat 1994b:

Bottle gourd (*Lagenaria siceraria*) was used to rear *B. cucurbitae* (listed as *Dacus cucurbitae*) in the lab. Eggs obtained from flies maintained on bottle gourd were placed on a thin slice of tender and fresh *C. sativus* fruit. Newly emerged *B. cucurbitae* larvae were transferred to freshly cut *C. sativus* slices placed in glass tubes for 2–5 days and then held over sand (4 cm thick) until pupation. Pupae were sieved daily and individually transferred to glass tubes with a 3 cm sand layer moistened with water and held until adult emergence. Freshly emerged flies were held in glass tubes after pairing, provided with a slice of *C. sativus* fruit and a cotton plug soaked in 10% honey solution. Larval duration averaged 4.7 days, compared to 3.5, 4.2, 4.7, and 5.7 days, when reared on *Momordica charantia*, *Lagenaria siceraria*, *Benincasa fistulosa*, and *Cucurbita pepo*, respectively. No temperature or relative humidity data were provided.

+*Lall and Singh 1969:*

A stock culture of *B. cucurbitae* (listed as *Dacus cucurbitae*) was maintained on freshly sliced *C. sativus* fruits (listed as cucumber). Freshly sliced *C. sativus* fruits were placed in a cage holding adult flies. The sliced fruits were examined daily. Fruits found to contain eggs were transferred to a glass trough with a layer of moist sand at its bottom. Fresh slices of fruit were added as needed. The sand was sieved to recover pupae which were transferred to Petri dishes where they were held under a moist layer of sand. Emerged adult flies were transferred to the breeding cage. Duration of life stages, along with temperature and relative humidity, were recorded for nine to ten generations over the course of a year. The duration of the larval period averaged 7.36 days (range: 5.00–13.09 days).

Rajamannar 1962:

Using *B. cucurbitae* (listed as *Dacus cucurbitae*) 1st instar larvae obtained from eggs oviposited on bottle gourd (*Lagenaria siceraria*; listed as *L. vulgaris*), 89 of 100 (89%) 1st instar larvae raised on *C. sativus* (listed as cucumber) pupated, with an average time to pupation of 4.0 days. In a separate test, 85 of 100 (85%) 1st instar larvae were found to feed on *C. sativus* discs (an average of 17.0 out of 20 larvae, based on five replicated trials).

Saha et al. 2007:

The relative quality of seven different *B. cucurbitae* fruit hosts was assessed by comparing pupal recovery (in F₁ and F₂ generations) following exposure of 500 g of each fruit to 200 gravid *B. cucurbitae* adults (from laboratory-adapted stock culture) for 30 minutes. For *C. sativus*, 292 and 339 pupae (584 and 678 pupae/kg fruit) and 228 and 268 adults (456 and 436 adults per kg fruit) were recovered in the F₁ and F₂ generations, respectively.

Shivashankar et al. 2015:

Bactrocera cucurbitae adults maintained on a protein hydrolysate diet were exposed to 5-day-old *C. sativus* fruits (listed as cucumber) for 6 hours for oviposition. Oviposited fruits were placed on a thin layer of moist sand in plastic trays. Pupae were collected and transferred to separate cages for adult emergence.

One (1) 1st instar *B. cucurbitae* larva, emerged from an egg oviposited on a tender *Sechium edule* fruit, was inserted into a 5 mm diameter by 2 mm deep hole punched into the surface of a freshly harvested tender *C. sativus* fruit (listed as cucumber). Fruits were held, in large plastic containers having a thin layer of sand, at the mean ambient temperature and relative humidity of $28.2 \pm 1.0^\circ\text{C}$ and $58.7 \pm 1.0\% \text{RH}$, respectively. Pupae recovered were transferred to a different container with a thin layer of moist sand for adult emergence. There were ten replications with 10 fruits per replication. An average of 8.90 adult *B. cucurbitae* emerged per replication.

+Tan 1994:

Adult *B. cucurbitae* (for use in laboratory trials looking at lizard predation) were obtained by raising the flies on fresh uninfested *C. sativus* fruits (listed as cucumber) with moist sterilized sand available as a pupation medium. No infestation rate data were given.

Tsatsia and Hollingsworth 1997:

Various numbers of *B. cucurbitae* eggs were added to either whole or sections of *C. sativus* fruits. Fruits were held over sterilized sawdust from which pupae were obtained. Pupae were obtained from each of the 6 *C. sativus* fruits that were infested, with no dead larvae observed. On average, about 360 pupae were recovered per kg fruit (range: 71.9–670).

Vayssières et al. 2004:

B. cucurbitae eggs were collected from ‘wild strain’ adults (though no host is listed from which they were recovered and no indication whether the strains may have completed one or more generations in the laboratory prior to egg collection). Eggs were placed on *C. sativus* fruits with life stage durations recorded through adult emergence at three different constant temperatures and 75±10% relative humidity (photoperiod used not indicated). Total duration of the larval stage averaged 159.7 hours (6.65 days) (at 20±0.5°C); 112 hours (4.67 days) (at 25±1.0°C); and 85.3 hours (3.56 days) (at 30±1.0°C).

Vayssières et al. 2008:

Eggs of *B. cucurbitae*, collected from adults reared for two generations on *Cucumis sativus* fruits, were placed on 150 g of *C. sativus* fruit with fresh fruit added as needed, and reared through pupariation to adult emergence. Survivorship from egg to adult, at 25°C, was 82±3%. Larvae successfully developed through pupariation at 15°C, 20°C, 25°C, and 30°C.

Listing Only: +Agarwal et al. 1987 (listed as *Dacus cucurbitae*; listed as cucumber); +Agrawal and Mathur 1991 (listed as *Dacus cucurbitae*; listed as cucumber); +Australian Quarantine Service, Commonwealth Department of Primary Industry 1987 (listed as *Dacus cucurbitae*; listed as cucumber); +Ayyar 1935 (listed as *Chaetodacus cucurbitae*; listed as cucumber); +Back and Pemberton 1914 (listed as cucumber); +Bateman 1989 (listed as *Dacus cucurbitae*; listed as cucumber); Beller and Bhenchitr 1936 (listed as *Dacus cucurbitae*); Botha et al. 2004 (listed as a secondary host); CABI 2016 (listed as a secondary host); California Department of Food and Agriculture 2001; Cantelo and Pholboon 1965 (listed as *Dacus cucurbitae*); Cantrell et al. 1999; Chaturvedi 1947 (listed as *Dacus cucurbitae*); Chawla 1966 (listed as *Dacus cucurbitae*); +Christenson and Foote 1960 (listed as *Dacus cucurbitae*; listed as cucumber); Copeland et al. 2009; +Cunningham et al. 1970 (listed as *Dacus cucurbitae*; listed as cucumber); De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Dhillon et al. 2005a; EcoPort 2008; European and Mediterranean Plant Protection Organization 2015 (listed as a major host); Etienne 1967 (listed as *Dacus cucurbitae*); Etienne 1972 (listed as *Dacus cucurbitae*; adults obtained very frequently); Government of Western Australia Department of Agriculture and Food 2015; +Greene 1929 (listed as cucumber); Hardy and Adachi 1956 (listed as *Dacus cucurbitae* Coquillett); +Harris 1989 (listed as *Dacus cucurbitae*; listed as cucumber); Harris et al. 2010; +Hawaii Department of Agriculture 2009 (listed as cucumber); +Heppner 1989 (listed as *Dacus cucurbitae*; listed as cucumber); Holbrook 1967 (listed as “heavily or generally infested”); Hollingsworth and Allwood 2000; +Isnadi 1991 (listed as *Dacus cucurbitae*; listed as cucumber); +Kalshoven 1981 (listed as *Dacus cucurbitae*; listed as ketimun); Kandybina 1987 (listed as *Dacus cucurbitae*; listed as *Cucumis sativus* L.); Kapoor 1970 (listed as *Dacus cucurbitae*); Kapoor 1991 (listed as *Dacus cucurbitae*); +Kapoor 2005–2006 (listed as cucumber); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*); +Keck 1951 (listed as *Dacus cucurbitae*; listed as cucumber); +Khan et al. 1989 (listed as *Dacus cucurbitae*; listed as cucumber); +Lall and Singh 1959 (listed as *Dacus cucurbitae*; listed as cucumbar); +Leblanc 2000 (listed as cucumber); Leblanc et al. 2013b; +Lee et al. 1992 (listed as *Dacus cucurbitae*; listed as cucumber); Liquido 1991b (listed as *Dacus cucurbitae*); +Liu 1993 (listed as *Dacus cucurbitae*; listed as cucumber); Mamet and Williams 1993 (listed as *Dacus cucurbitae*); +Margosian et al. 2009 (listed as cucumber); +Mau et al. 2007 (listed as cucumbers); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as a plant that is frequently injured); Meksongsee et al. 1991 (listed as *Dacus cucurbitae*; listed both as *Cucumis* sp. and as cucumber); Messing et al. 1995; Moiz et al. 1967 (listed as *Dacus cucurbitae*; listed as *Cucumis sativa* L.); +NAPPO, PAS 2015 (listed as cucumber); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Nishida 1963 (listed as *Dacus cucurbitae*); +Nishida and Bess 1950 (listed

as *Dacus cucurbitae*; listed as cucumber); +Nishida and Bess 1957 (listed as *Dacus cucurbitae*; listed as cucumber); Oakley 1950 (listed as *Dacus cucurbitae*); +Okinawa Prefectural Fruit Fly Eradication Project 1987 (listed as *Dacus cucurbitae*; listed as cucumber); Orian and Moutia 1960 (listed as *Dacus cucurbitae*); Pacific Fruit Fly Web 2002; Phillips 1946; Plantwise Knowledge Bank 2015; Ponce 1937 (listed as *Dacus cucurbitae*); Puttarudriah and Usman 1954 (listed as *Dacus cucurbitae*); +Queensland Government 2015 (listed as cucumber); Quilici and Jeuffrault 2001 (listed as being very favorable as a host); Qureshi et al. 1974 (listed as *Dacus cucurbitae*); Ramsamy 1989 (listed as *Dacus cucurbitae*); Rejesus et al. 1991 (listed as *Dacus cucurbitae*); Renjhen 1949 (listed as *Dacus cucurbitae*); Ryckewaert et al. 2010; +Severin et al. 1914 (listed as *Dacus cucurbitae*; listed as cucumber); Singh et al. 2004; +Symonds et al. 2009 (listed as cucumber); +Terry 1906 (listed as *Dacus cucurbitae*; listed as cucumber); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host); +USDA-ARS 1959 (listed as cucumber; listed as a preferred host); +Vagalo et al. 1997 (listed as cucumber); +Van Dine 1906 (listed as *Dacus cucurbitae*; listed as cucumber); Vargas et al. 2004; Vargas and Prokopy 2006; Vijaysegaran 1991 (listed as *Dacus cucurbitae*); +Vijaysegaran and Osman 1991 (listed as cucumber); +Walker 2005 (listed as cucumber); +Weems 1964 (listed as *Dacus cucurbitae*; listed as cucumber; listed as a preferred host); +Weems 1967 (listed as *Dacus cucurbitae*; listed as cucumber; listed as a preferred host); +Weems et al. 2001 (listed as cucumber; listed as a preferred host); White and Elson-Harris 1992 (listed as infesting both fruit and stem); +Yang 1991 (listed as *Dacus cucurbitae*; listed as cucumber); +Yong 1992 (listed as *Dacus cucurbitae*; listed as cucumber); Yunus and Hua 1980 (listed as *Dacus cucurbitae*).

Cucumis sativus L. var. *anatolicus* Gabaev, see *Cucumis sativus* L. var. *sativus*

Cucumis sativus L. var. *anglicus* L. H. Bailey, see *Cucumis sativus* L. var. *sativus*

Cucumis sativus L. var. *cilicicus* Gabaev, see *Cucumis sativus* L. var. *sativus*

Cucumis sativus cv.-gr. *pickling cucumber*, see *Cucumis sativus* L. var. *sativus*

Cucumis sativus cv. –gr. *slicing cucumber*, see *Cucumis sativus* L. var. *sativus*

Cucumis sativus L. var. *europaeus* Gabaev, see *Cucumis sativus* L. var. *sativus*

Cucumis sativus L. var. *falcatus* Gabaev, see *Cucumis sativus* L. var. *sativus*

Cucumis sativus L. var. *indo-europaeus* Gabaev, see *Cucumis sativus* L. var. *sativus*

Cucumis sativus L. var. *irano-turanicus* Gabaev, see *Cucumis sativus* L. var. *sativus*

Cucumis sativus L. var. *izmir* Gabaev, see *Cucumis sativus* L. var. *sativus*

Cucumis sativus L. var. *sativus*

Family: Cucurbitaceae

Grin Nomen Number: 12580

Common Names: cetriolino da sottaceto (Italian), cetriolo (Italian), cetriolo da tavola (Italian), cohombro (Spanish), concombres (French), concombres commun (French), cornichon (French), cucumber (English), gherkin (English), gurka (Swedish), Gurke (German), huang gua (transcribed Chinese), khira (India), ky-uri (Japanese romaji), kyuri (Japanese romaji), oi (transcribed Korean), pepino (Portuguese), pepino (Spanish).

Cultivated: Widely cultivated.

Field Infestation:

Kumar et al. 2008:

Bangalore, South India

Cucumis sativus variety 'Ijax' fruits (listed, also, as pickling cucumber and gherkin) were harvested monthly at the Indian Institute of Horticultural Research, Bangalore, South India from July 2002 to October 2003 (a total of 67 harvests). At each harvest, damaged and healthy fruits were sorted and weighed separately, with damaged fruits placed in separate cages on a thin layer of sand to facilitate pupation and adult emergence. *Bactrocera cucurbitae* and *D. ciliatus* adults that emerged were counted. Infestation of *C. sativus* L. var. 'Ijax' (by month of collection) by *B. cucurbitae* (using data from July 2002–April 2003, June 2003, August 2003 and October 2003 only, because the remaining collections in 2003 were co-infested by *D. ciliatus*) averaged 27.45% (range: 0.0–63.31%), with an average infestation rate of 76.19 individuals per kg fruit (range: 0.0–307.51).

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 47,208 *C. sativus* var. *sativus* fruits were collected (187 collections overall) from four islands/island groups (Amami, Miyako, Okinawa, Yaeyama) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 1,470 fruits, giving an average percentage infestation rate (weighted by the number of collections in each of the islands/island groups) of 8.4%.

Synonym: *Cucumis sativus* L. var. *anatolicus* Gabaev, *Cucumis sativus* L. var. *anglicus* L. H. Bailey, *Cucumis sativus* L. var. *cilicicus* Gabaev, *Cucumis sativus* cv.-gr. *pickling cucumber*, *Cucumis sativus* cv.-gr. *slicing cucumber*, *Cucumis sativus* L. var. *europaeus* Gabaev, *Cucumis sativus* L. var. *falcatus* Gabaev, *Cucumis sativus* L. var. *indo-europaeus* Gabaev, *Cucumis sativus* L. var. *irano-turanicus* Gabaev, *Cucumis sativus* L. var. *izmir* Gabaev, *Cucumis sativus* L. var. *squamosus* Gabaev, *Cucumis sativus* L. var. *testudaceus* Gabaev, *Cucumis sativus* L. var. *tverculatus* Gabaev, *Cucumis sativus* L. var. *vulgatus* Gabaev

Cucumis sativus L. var. *squamosus* Gabaev, see *Cucumis sativus* L. var. *sativus*

Cucumis sativus L. var. *testudaceus* Gabaev, see *Cucumis sativus* L. var. *sativus*

Cucumis sativus L. var. *tverculatus* Gabaev, see *Cucumis sativus* L. var. *sativus*

Cucumis sativus L. var. *vulgatus* Gabaev, see *Cucumis sativus* L. var. *sativus*

Cucumis spp.

Family: Cucurbitaceae

Grin Nomen Number: 300158

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 2 samples of *Cucumis* sp. Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Mwatawala et al. 2009b:

Morogoro Region, Central Tanzania

Cucumis sp. fruits were randomly collected weekly between October 2004 through October 2006, and from August through December 2007, from areas within the Sokoine University of Agriculture campus in Morogoro and from Nyandira, Mikese, Mkindo in the Morogoro region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupation of infesting tephritid fruit flies. Emerged adults were removed and identified. Out of 551 collected fruits (6.214 kg), infestation by *B. cucurbitae* averaged 88.83 emerged adults per kg fruit.

Mwatawala et al. 2010:

Morogoro Region, Central Tanzania

Twenty-four (24) immature *Cucumis* sp. fruits (wild fruits, green with stout thorns) (0.22 kg) were collected at irregular intervals between October 2004 and April 2008, from the Morogoro Region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupariation of infesting tephritid fruit flies. Emerged adults were removed and identified. *Bactrocera cucurbitae* flies were recovered from 2 of 2 collections (100%), with an overall infestation rate of 136.36 flies/kg fruit and 136.36 flies/kg infested fruit.

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Cucumis* spp. fruits, originating in Hawaii, at an airport in Hawaii (Honolulu) on four occasions between 1999 and 2007. Average recovery of live larvae (three occasions) was 11.0 (range: 2–22); and on one occasion in 2007, 20 live pupae were recovered.

Bangladesh

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Cucumis* spp. fruits, originating in Bangladesh, in New York (JFK) on five occasions in 1990. Average recovery was 1.0 live larva.

India

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Cucumis* spp. fruit(s), originating in India, in Texas (Dallas/Ft. Worth) on one occasion in 1997. Recovery was three live larvae.

United Kingdom of Great Britain and N. Ireland

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Cucumis* spp. fruit(s), originating in the United Kingdom of Great Britain and N. Ireland, in Missouri (St. Louis) on one occasion in 1994. Recovery was three live pupae.

Listing Only: European and Mediterranean Plant Protection Organization 2015 (listed as a minor host); Isnadi 1991 (listed as *Dacus cucurbitae*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); Vijaysegaran 1985 (listed as *Dacus cucurbitae*); Vijaysegaran 1991 (listed as *Dacus cucurbitae*); Yunus and Hua 1980 (listed as *Dacus cucurbitae*).

Cucumis trigonus Roxb., see *Cucumis melo* L. subsp. *melo*

Cucumis utilissimus Roxb., see *Cucumis melo* L. subsp. *agrestis* (Naudin) Pangalo var. *conomon* (Thunb.) Makino

Cucumis vulgaris var. *fistulosus*, see *Benincasa fistulosa* (Stocks) H. Schaef. and S. S. Renner

Cucurbita citrullus L., see *Citrullus lanatus* (Thunb.) Matsum. and Nakai subsp. *lanatus*

Cucurbita hispida Thunb., see *Benincasa hispida* (Thunb.) Cogn.

Cucurbita lagenaria L., see *Lagenaria siceraria* (Molina) Standl.

Cucurbita leucantha Duchesne, see *Lagenaria siceraria* (Molina) Standl.

Cucurbita longa hort., see *Lagenaria siceraria* (Molina) Standl.

Cucurbita luffa hort., see *Luffa aegyptiaca* Mill.

Cucurbita maxima Duchesne

Family: Cucurbitaceae

Grin Nomen Number: 12597

Common Names: great pumpkin (English), halva kaddu (Urdu-Pakistan), jättepumpa (Swed-

ish), mitha kaddu (Urdu-Pakistan), pumpkin (English), red gourd (English), Reisen-Kürbis (German), Speise-Kürbis (German), squash (English), sun gua (transcribed Chinese), winter squash (English), zucca (Italian).

Native: SOUTHERN AMERICA – *Southern South America*: Argentina, Uruguay.

Cultivated: Widely cultivated.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 1 sample of *C. maxima*.

Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Clausen et al. 1965:

Malaysia (Sabah) (referred to as North Borneo; place names listed are in present day Sabah, Malaysia)

From collections of *C. maxima* in June 1951 in Sabah, Malaysia (referred to as North Borneo), 105 *B. cucurbitae* (listed as *Dacus cucurbitae* Coq) puparia were recovered.

Jacquard et al. 2013:

Réunion Island, France

Bactrocera cucurbitae-infested *C. maxima* fruits were collected from nine locations on Réunion Island in 2009 and held over sand. Puparia, recovered by sifting the sand, were held for adult emergence. Seven hundred and thirty-eight (738) adult *B. cucurbitae* were recovered.

+*Jakhar and Pareek 2005:*

Jobner, State of Rajasthan, India

Seeds of nine cucurbit species were sown in a randomized block design with four replications at the Horticultural Farm of S.K.N. College of Agriculture in Jobner, India during the kharif season in 2000. The infestation rate of *C. maxima* fruits (listed as pumpkin) by *B. cucurbitae* averaged 15.87% (range: 13.39–17.73%) over the course of four collection dates, each 3 days apart, in September 2000.

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 60,152 *C. maxima* and *C. moschata* fruits (the two species not differentiated) were collected (182 collections overall) from five islands/island groups (Amami, Kume, Miyako, Okinawa, Yaeyama) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 2,494 fruits, giving an average percentage infestation rate (weighted by the number of collections in the islands/island groups) of 8.01%.

Nath et al. 1976:

Hessaraghatta, Bangalore, State of Karnataka, India

Eighty-two (82) varieties of pumpkin (a mix of *Cucurbita maxima* Duch and *C. moschata* Duch varieties) were screened for the resistance to *B. cucurbitae* damage (listed as *Dacus cucurbitae*) in Bangalore, India in 1969. Varieties were planted in mid-July in a randomized block design with 3 replications. Resistance was measured by estimating the percentage damaged fruits per plant three times at 2-week intervals. No infestation was found in 8 of the varieties (9.75%) at any of the three assessment periods. Five (5) of these varieties, which also had good yield with moderate fruit qualities, were selected for further trials (IHR 79-2 [*C. maxima*], IHR 35 [*C. moschata*], IHR 40 [*C. moschata*], IHR 83 [*C. moschata*], and IHR 86 [*C. moschata*]). Further trials with these 5 varieties were conducted in 1970, where IHR 35 and IHR 86 were found to be susceptible to infestation by *B. cucurbitae* and production or quality issues were identified for IHR 40 and IHR 83. Pumpkin line IHR 79-2, renamed Arka Suryamukhi, was released as the first *B. cucurbitae* resistant pumpkin cultivar for general cultivation in the southern parts of India.

+*Severin et al. 1914:*

Hawaii, U.S.A.

Six (6) *C. maxima* fruits (listed as pumpkin), ranging in size from 6.4–12.1 cm long, were taken from a field and held in separate breeding jars. Two thousand two hundred twenty-two (2,222) *B. cucurbitae* adults were recovered, averaging 370 per pumpkin (range: 183–637).

Syed 1971:

Faisalabad, Gujranwala, Murree, and Rawalpindi, Province of Punjab; Hyderabad, Sindh Province, Pakistan

In Faisalabad and Gujranwala (1962–1963), some *C. maxima* fruits were infested by *B. cucurbitae* (listed as *Dacus cucurbitae*) in June; in Murree (1963), *B. cucurbitae* was reared from *C. maxima* fruits in September and October; in Rawalpindi (1962–1963), a few *C. maxima* fruits were infested by *B. cucurbitae* in October; In Hyderabad (1964–1965), 3% of *C. maxima* fruits were infested in July by a mix of *B. cucurbitae* and *Dacus ciliatus* (40%:60%). Total number of fruits collected were not given.

Tsuruta et al. 1997:

Sri Lanka

Bactrocera cucurbitae adults (numbers not reported) were recovered from unspecified numbers of *C. maxima* fruits collected from the Palakuda and Wattala areas of Sri Lanka. No infestation rate data were given.

Vayssières et al. 2007:

Benin, Burkina Faso, Cameroon, Côte d'Ivoire, Guinea, Mali, Niger and Senegal, West Africa

Tephritid fruit fly-infested *C. maxima* fruits were collected from untreated orchards in eight countries in West Africa. Fruits were placed on mesh supports over sand. Tephritid fruit fly pupae, recovered through weekly sieving of the sand, were transferred to small hatching boxes lined with wet blotting paper and held for adult emergence. The average *B. cucurbitae* infestation level in *C. maxima* fruits in West Africa fell in the range of 51–75 pupae/kg fruit. For comparison, the authors indicated that the infestation level of *C. maxima* fruits averaged over 100 pupae/kg fruit on Réunion Island.

Vayssières and Carel 1999:

Réunion Island, France

Cucurbita maxima fruits of an undetermined variety were collected over the course of a year from up to 70 localities on Réunion Island. Fruits with evidence of fruit fly infestation were held in individual containers, with recovered pupae held for adult emergence. *Bactrocera cucurbitae* recovery averaged 1,152.2 (standard deviation = 1,866) adults per kg infested fruit.

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Cucurbita maxima* fruits, originating in Hawaii, at an airport in Hawaii (Honolulu) on two occasions in 1988. Average recovery was 2.0 live larvae.

South Korea

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Cucurbita maxima* fruit(s), originating in South Korea, on a ship at a port in Texas (Houston) on one occasion in 2010. Recovery was six live larvae, 30 live pupae, and two live adults.

USDA 1946:

Bactrocera cucurbitae (listed as *Dacus cucurbitae?*) was recovered from squash (*C. maxima*) which originated from a port in Hawaii and was intercepted at a port in Washington (1 interception in non-entry host) between 1 July 1944 and 30 June 1945 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1948a:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from squash (*C. maxima*) which originated in Hawaii and was intercepted at ports in California and Massachusetts (6 interceptions in non-entry host) between 1 July 1945 and 30 June 1946 (number of individuals recovered not reported).

ered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1948b:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from squash (*C. maxima*) which originated from a port in Hawaii and was intercepted at a port in California (2 interceptions in non-entry hosts) between 1 July 1946 and 30 June 1947 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1950:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from squash (*C. maxima*) which originated from a port in Hawaii and was intercepted at a port in California (2 interceptions in non-entry hosts) between 1 July 1947 and 30 June 1948 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1951:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from squash (*C. maxima*) which originated from a port in Hawaii and was intercepted (1 interception in non-entry host) at a port in California between 1 July 1948 and 30 June 1949 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1954:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from squash (*C. maxima*) which originated from Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1952 and 30 June 1953 (number of individuals recovered and life stages not reported). Taxonomic identification was done by state inspection in California.

USDA 1954:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from squash (*C. maxima*) which originated from Hawaii and was intercepted at a port in Texas (1 interception in non-entry host) between 1 July 1952 and 30 June 1953 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1965:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from winter squash (*C. maxima*) which originated in air baggage and was intercepted in Hawaii (1 interception in consumption host) between 1 July 1963 and 30 June 1964 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

Lab Infestation:

Akter et al. 2010:

In a laboratory host preference study conducted in Bangladesh during 2005 to 2006, 250 g of *C. maxima*, along with 250 g of each of five other vegetables (*Cucumis sativus*, *Momordica charantia*, *Solanum lycopersicum* var. *lycopersicum*, *S. melongena*, and *Trichosanthes cucumerina*), were simultaneously exposed to 100 15–20-day-old gravid female *B. cucurbitae* flies for 3 hours, then placed over saw dust. The saw dust was sieved to recover pupae which were transferred to Petri dishes and held until adult emergence. The trial was replicated five times. Recovery of *B. cucurbitae* pupae and adults averaged 319±44.40 and 275±38.19, respectively (1,276 and 1,100 per kg fruit, respectively). The order of adult recovery (greatest to smallest) was: *S. melongena* > *T. cucumerina* > *C. maxima* > *C. sativus* > *M. charantia* > *S. lycopersicum*.

Khan et al. 2011:

In a choice test, 50.0 g of *C. maxima* fruits, along with 50.0 g of each of eight other natural hosts, were exposed for 20 minutes to 50 pairs of 15–20-day-old *B. cucurbitae* and 50 pairs of 15–20-day-old *B. tau* inside a small cage, after which fruit samples were removed and placed separately on sawdust inside a cloth-covered plastic bowl for pupation. The sawdust was sieved after 6 to 8 days to recover pupae (of both fly species) which were held for adult emergence. Out of a mean infestation of

118±6.64 pupae recovered (mixed infestation of *B. cucurbitae* and *B. tau*), 72.03% (85.0) of the recovered pupae emerged as adult *B. cucurbitae*.

In a no-choice test, 50.0 g of *C. maxima* fruits, as well as 50.0 g of each of eight other natural hosts, were exposed for 20 minutes to 5 pairs of 15–20-day-old *B. cucurbitae* and 5 pairs of 15–20-day-old *B. tau* inside separate small cages, after which fruit samples were removed and placed separately on sawdust inside a cloth-covered plastic bowl for pupation. The sawdust was sieved after 6 to 8 days to recover pupae (of both fly species) which were held for adult emergence. Out of a mean infestation of 52±0.33 pupae recovered (mixed infestation of *B. cucurbitae* and *B. tau*), 40.38% (21.0) of the recovered pupae emerged as adult *B. cucurbitae*.

Ponce 1937:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was reared in the laboratory on *C. maxima* fruit. At a mean temperature of 29.07°C, the overall larval period lasted 6.66 days, based on “six cultures” (replications).

Rajamannar 1962:

Using *B. cucurbitae* (listed as *Dacus cucurbitae*) 1st instar larvae obtained from eggs oviposited on bottle gourd (*Lagenaria siceraria*; listed as *L. vulgaris*), 90 of 100 (90%) 1st instar larvae raised on *C. maxima* (listed as pumpkin) fruit pupated, with an average time to pupation of 4.9 days. In a separate test, 92 of 100 (92%) 1st instar larvae were found to feed on pieces of *C. maxima* fruit (an average of 18.4 out of 20 larvae, based on five replicated trials).

Saha et al. 2007:

The relative quality of seven different *B. cucurbitae* fruit hosts was assessed by comparing pupal recovery (in F₁ and F₂ generations) following exposure of 500 g of each fruit to 200 gravid *B. cucurbitae* adults (from laboratory-adapted stock culture) for 30 minutes. For *C. maxima*, 355 and 429 pupae (710 and 858 pupae/kg fruit) and 312 and 420 adults (625 and 841 adults per kg fruit) were recovered in the F₁ and F₂ generations, respectively.

Listing Only: Botha et al. 2004 (listed as a primary host); CABI 2016 (listed as a primary host); California Department of Food and Agriculture 2001; Cantrell et al. 1999; Chawla 1966 (listed as *Dacus cucurbitae*); De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Dhillon et al. 2005a; Government of Western Australia Department of Agriculture and Food 2015; Holbrook 1967 (listed as “heavily or generally infested”); Kandybina 1987 (listed as *Dacus cucurbitae*); Kapoor 1970 (listed as *Dacus cucurbitae*); Kapoor 1991 (listed as *Dacus cucurbitae*); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*); Liquido 1991b (listed as *Dacus cucurbitae*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as a plant that is frequently injured); Moiz et al. 1967 (listed as *Dacus cucurbitae*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Nishida 1963 (listed as *Dacus cucurbitae*; listed both as phat and as *C. maxima*); Oakley 1950 (listed as *Dacus cucurbitae*); Orian and Moutia 1960 (listed as *Dacus cucurbitae*); Phillips 1946; Plantwise Knowledge Bank 2015; Ponce 1937 (listed as *Dacus cucurbitae*); Quilici and Jeuffraut 2001 (listed as being very favorable as a host); Qureshi et al. 1974 (listed as *Dacus cucurbitae*); Ramsamy 1989 (listed as *Dacus cucurbitae*); Rejesus et al. 1991 (listed as *Dacus cucurbitae*); Ryckewaert et al. 2010; Singh et al. 2004; USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host); Vargas and Prokopy 2006; Vijayasegaran 1991 (listed as *Dacus cucurbitae*); White and Elson-Harris 1992 (listed as infesting both fruit and stems); +Yong 1992 (listed as *Dacus cucurbitae*; listed as pumpkin); Yunus and Hua 1980 (listed as *Dacus cucurbitae*).

Cucurbita melopepo L., see *Cucurbita pepo* L. subsp. *ovifera* (L.) D. S. Decker var. *ovifera* (L.) Harz

Cucurbita moschata Duchesne

Family: Cucurbitaceae

Grin Nomen Number: 12601

Common Names: abóbora-rasteira (Portuguese), auyama (Spanish), ayote (Spanish), Bisam-Kürbis (German), butternut pumpkin (English), butternut squash (English), calabaza moscada (Spanish), calabaza pellejo (Spanish), calabaza pumpkin (English), cheese pumpkin (English), chicamita (Spanish), citrouille (French), courge musquée (French), golden cushaw (English), halva kaddu (Urdu-Pakistan),

hobag (transcribed Korean), kikuza-kabocha (Japanese Rōmaji), lacayote (Spanish), Moschuskürbis (German), nan gua (transcribed Chinese), pâtisson (French), pumpkin (English), red gourd (English-Pakistan), sequaloa (Spanish), sitaphal (India), Spanish gourd (English-Pakistan), squash (English), squash gourd (English-Pakistan), sweet gourd (English – Bangladesh), winter crookneck squash (English), zapallo (Spanish), zucca torta (Italian).

Cultivated: Only cultivated.

Origin: Probable origin N. Colombia.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 24 samples of both fruits and flowers of *C. moschata*. Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Amin et al. 2011:

Dinajpur, Bangladesh

From April through July 2009, *C. moschata* was grown in a randomized complete design with four other cucurbit species (four replicates) at the Entomology Farm Laboratory, Hajee Mohammad Danesh Science and Technology University, Dinajpur, Bangladesh. Fruits were observed for infestation by *B. cucurbitae*, and harvested at maturity stage. An average of $71.5 \pm 3.7\%$ of *C. moschata* fruits were infested by *B. cucurbitae*. Adult *B. cucurbitae* were also recovered from field-infested *C. moschata* fruits brought to the laboratory.

Bains and Sidhu 1984:

State of Punjab, India

Field observations of infestation of pumpkin (*C. moschata*) fruits by *B. cucurbitae* (listed as *Dacus cucurbitae*) were made at 10-day intervals in Punjab, India, between May and September. Infested fruits were found in 7 of 14 observations (50%) with an average infestation rate of 4.69 (± 1.78 [standard error])%.

Chaudhary and Patel 2007a:

State of Gujarat, India

During 2004 through 2005, naturally infested *C. moschata* fruits (listed, also, as pumpkin) were kept on a 5.0 cm layer of sieved soil in a galvanised round cage. Adult *B. cucurbitae*, emerged from pupae recovered by sieving the soil, were used in laboratory-based *B. cucurbitae* life cycle studies.

Chinajariyawong et al. 2000:

Thailand

Bactrocera cucurbitae was reared from 1 sample of *C. moschata* collected in Thailand. No infestation rate data were given.

Clarke et al. 2001:

Thailand

Eighty-six (86) (8.99 kg) infested *C. moschata* fruits were collected in Chiang Rai, Thailand from 1986 to 1994. Infestation rates of 1.3 *B. cucurbitae* per infested fruit and 12.3 *B. cucurbitae* per kg infested fruit were observed. *Bactrocera cucurbitae* individuals were identified by either R.A.I. Drew or D. L. Hancock.

+Gupta and Verma 1978:

Hisar (listed as Hissar), State of Haryana, India

Cucurbita moschata (listed as pumpkin) was grown from seed planted 28 February 1975, in a randomized complete block design with ten other cucurbit crops in Hisar, Haryana State, India. Fallen and marketable sized fruits were collected/picked every 3 days and assessed for infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). Infestation results were summarized weekly. *Bactrocera cucurbitae* infestation was found in 3 of 7 weekly summaries (42.9%). Overall, 40 (179.6 kg) fruits were collected, of which 5 were infested, for averages of 5.7 fruits collected per week with an average infestation rate of 12.5%.

Kittayapong et al. 2000:

Thailand

Cucurbita moschata fruits and flowers were collected throughout Thailand within the time period of October 1995 through December 1998. Collections were placed over sawdust in a ventilated plastic container and brought back to the laboratory at Mahidol University in Bangkok. *Bactrocera cucurbitae* was recovered from *C. moschata* fruits and both *B. cucurbitae* and *B. tau* sp. A were recovered from *C. moschata* flowers. Total number of fruits collected and infestation rate data were not given.

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 60,152 *C. maxima* and *C. moschata* fruits (the two species were not differentiated) were collected (182 collections overall) from five islands/island groups (Amami, Kume, Miyako, Okinawa, Yaeyama) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 2,494 fruits, giving an average percentage infestation rate (weighted by the number of collections in the islands/island groups) of 8.01%.

Mwatawala et al. 2010:

Morogoro Region, Central Tanzania

Seven hundred seventy-one (771) immature *C. moschata* fruits (33.269 kg) were collected at irregular intervals between October 2004 and April 2008, from the Morogoro Region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupariation of infesting tephritid fruit flies. Emerged adults were removed and identified. *Bactrocera cucurbitae* flies were recovered from 51 of 93 collections (54.84%), with an overall infestation rate of 43.85 flies/kg fruit and 61.08 flies/kg infested fruit.

Nath et al. 1976:

Hessaraghatta, Bangalore, State of Karnataka, India

Eighty-two (82) varieties of pumpkin (a mix of *Cucurbita maxima* Duch and *C. moschata* Duch varieties) were screened for resistance to *B. cucurbitae* damage (listed as *Dacus cucurbitae*) in Bangalore, India in 1969. Varieties were planted in mid-July in a randomized block design with three replications. Resistance was measured by estimating the percentage damaged fruits per plant three times at 2-week intervals. No infestation was found in 8 of the varieties (9.75%) at any of the three assessment periods. Five (5) of these varieties, which also had good yield with moderate fruit qualities, were selected for further trials (IHR 79-2 [*C. maxima*], IHR 35 [*C. moschata*], IHR 40 [*C. moschata*], IHR 83 [*C. moschata*], and IHR 86 [*C. moschata*]). Further trials with these 5 varieties were conducted in 1970, where IHR 35 and IHR 86 were found to be susceptible to infestation by *B. cucurbitae* and production or quality issues were identified for IHR 40 and IHR 83. Pumpkin line IHR 79-2, renamed Arka Suryamukhi, was released as the first *B. cucurbitae* resistant pumpkin cultivar for general cultivation in the southern parts of India.

Nath and Bhushan 2006:

Varanasi, State of Uttar Pradesh, India

Cucurbita moschata was sown, with three replications, in Varanasi, India, the last week of March (summer season) and again the last week of June (rainy season) in both 2001 and 2002. Percentage infestation by *B. cucurbitae* averaged 2.0% (range: 1.3–2.7%) in the summer season and 9.3% (range: 7.4–11.1%) in the rainy season.

+Pareek and Kavadia 1994:

Jobner and Udaipur, state of Rajasthan, India

Cucurbita moschata fruits (listed as pumpkin, variety 'Arka suryamukhi') were raised in a randomized block design with nine other cucurbit crops (with three replicated plots) for assessment of preference of *B. cucurbitae* (listed as *Dacus cucurbitae*). The trials were conducted from February to June in 1979, and again in 1981, in Udaipur (semi-humid agroclimatic conditions) and in 1980 and 1981 in Jobner (semi-arid agroclimatic condition). Fruits were examined on 10 plants per replicate twice a week, and then percentage of fruits infested by *B. cucurbitae* calculated. Percentage infestation averaged 22.6% (range: 21.5–23.8%) in Udaipur and 12.3% (range: 12.7–11.9%) in Jobner.

Pradhan 1977:

Nepal

Cucurbita moschata was planted by seed in Nepal in four separate plots (four replicates) during the first week of April in 1974 and again in 1975. Daily counts were made of infestation of flowers and then of fruits by *B. cucurbitae* (listed as *Dacus cucurbitae*). Infested flowers and fruits were detached and thrown to the ground after observations were completed. Infestation rate of flowers averaged 52.14% (range: 29.03–76.92%) in 1974 and 58.73% (range: 41.55–70.22%) in 1975. Infestation rate of fruits averaged 36.97% (range: 28.7–59.2%) in 1974 and 24.2% (range: 8.3–33.5%) in 1975.

Lab Infestation:

Amin et al. 2011:

Bactrocera cucurbitae larvae and *B. cucurbitae*-infested *C. moschata* fruits were collected from a field at the Entomology Farm Laboratory, Hajee Mohammad Danesh Science and Technology University, in Dinajpur, Bangladesh and held in jars in a laboratory at 25±2°C, 60±5% RH and a 12:12 (L:D) h photoperiod. Adult male and female *B. cucurbitae* that emerged were kept in the same jar and provided fresh *C. moschata* fruit for oviposition. Larvae, pupae and adults that emerged from these stock cultures were used for observation of *B. cucurbitae* life history parameters.

+*Batra 1964:*

From December 1959 to April 1960, adult *B. cucurbitae* flies (listed as *Dacus cucurbitae*) in rearing cages were supplied with *Psidium guajava* fruit (halved) (listed as guava), peeled *C. moschata* flesh (listed as pumpkin), *Lagenaria siceraria* ovaries or very young fruits (listed as bottle gourd) and bottle gourd flowers, placed in separate corners. Food was changed at an interval of 3 to 4 days. On every change, infested fruit was held in a rearing jar for adult recovery. Adult recovery came 52.46% from pumpkin. Eggs were recovered in pumpkin sections in 16 out of 18 replications (88.9%). From 16 replications of eggs laid in pumpkin, the average egg to adult development period ranged from 18.93 to 22.13 days (but no rearing temperature was given).

Bhatia and Mahto 1970:

A stock colony of *B. cucurbitae* (listed as *Dacus cucurbitae*) was maintained in the laboratory on *C. moschata* fruit.

Additionally, freshly laid *B. cucurbitae* eggs (zero-one hour old) were collected, placed on a thin slice of pumpkin placed on moist sand, and maintained at a range of temperatures until pupation. Newly formed pupae were held on moist sand in glass tubes. Average *B. cucurbitae* durations, from oviposition to adult emergence, were 36.30, 23.60, 12.61 11.17 and 12.5 days at 15.0°C, 20.0°C, 25.0°C, 27.5°C and 30.0°C, respectively.

Chaudhary and Patel 2007a:

Details on the duration of *B. cucurbitae* life cycle stages were recorded following oviposition by 1st generation flies on fresh and tender *C. moschata* fruits (also listed as pumpkin), followed by transfer of eggs to pumpkin pulp, followed by transfer of 3rd instars to 2.5 x 2.5 cm pumpkin pieces. Total life period of *B. cucurbitae* flies reared on pumpkin from egg to adult death, at an average of 24.6°C and 53.6% RH, averaged 54.15 (25.5–66.5) days (males) and 57.65 (45–77.5) days (females).

Doharey 1983:

A colony of *B. cucurbitae* was maintained on cut, small pieces of pumpkin (*Cucurbita moschata*). Eggs laid in fruits were removed daily and placed on sterilized sand in glass rearing jars. Freshly formed pupae were transferred to smaller glass jars and held on sterile sand until adult emergence. Holding temperature was 27±1°C. The incubation period on pumpkin averaged 4.0 days, the larval period averaged 5.0 days, and the pupal period averaged 7.2 days, totaling 16.2 days from egg to adult.

Duyck et al. 2004:

Laboratory-reared *B. cucurbitae* flies were reared from the host plant, *Cucurbita moschata*, for use in field cage tests of the relative attractiveness of different protein hydrolysate solutions.

+*Finney 1951:*

Cucurbita moschata fruit (listed as Kona pumpkin) was reported by the author as an excellent medium for culturing *B. cucurbitae* (listed as *Dacus cucurbitae*).

+*Gupta and Verma 1979:*

In a study assessing the effectiveness of insecticides as contact poisons to kill adult *B. cucurbitae* (listed as *Dacus cucurbitae*) fruit flies, immatures were raised on *C. moschata* fruits (listed as pumpkin) at a controlled temperature of 28±2°C.

+Gupta and Verma 1977:

In a study assessing the effectiveness of insecticidal dusts applied to soil in killing *B. cucurbitae* (listed as *Dacus cucurbitae*) fruit flies before adult emergence, immatures were raised on *C. moschata* fruits (listed as pumpkin) at a controlled temperature of 28±2°C, and were then transferred to jars (20 per jar; three replications) holding moistened soil and a small piece of pumpkin fruit. In the control group, an average of 91.7% of maggots emerged successfully as adults.

Kuba and Koyama 1982:

Three strains of *Bactrocera cucurbitae* (listed as *Dacus cucurbitae*) were all reared on *C. moschata* at 25°C (40–70% RH; 14:10 [L:D] h) for use in mating behavior studies.

Matsuyama and Kuba 2002:

First generation (F1) *B. cucurbitae* adult flies for use in a mating compatibility test were obtained from larvae reared in the lab on *C. moschata* fruits following oviposition of adult flies recovered from naturally infested *Luffa aegyptiaca* (listed as *L. cylindrica*) fruits.

Yang et al. 1994:

Larvae of *B. cucurbitae* were reared on *C. moschata* fruits. After three generations, the offspring were used in experiments. A pumpkin slice was exposed to gravid adult *B. cucurbitae* for 1 hour, after which eggs were removed and placed on moist black cloth in a Petri dish. Fifty (50) newly emerged larvae were placed on fresh pieces of pumpkin held over a layer of sand in a mesh-covered 1-liter jar. Growth and survival were monitored at a temperature of 25±0.5°C, 50–75% RH and a photoperiod of 12:12 (L:D) h. The average durations of larval and pupal stages were 3.8±0.8 and 9.0±0.6 days, respectively, with an average survivorship of 90% for both life stages.

Listing Only: Beller and Bhenchitr 1936 (listed as *Dacus cucurbitae*); CABI 2016 (listed as a secondary host); Cantrell et al. 1999; Chaturvedi 1947 (listed as *Dacus cucurbitae*); Chaudhary and Patel 2007b; De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Dhillon et al. 2005a; +Hawaii Department of Agriculture 2009 (listed as pumpkin); Holbrook 1967 (listed as “heavily or generally infested”); Jamnongluk et al. 2002; Kandybina 1987 (listed as *Dacus cucurbitae*); Kapoor 1970 (listed as *Dacus cucurbitae*); Kapoor 1991 (listed as *Dacus cucurbitae*); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as a plant that is frequently injured); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); Phillips 1946; Plantwise Knowledge Bank 2015; Singh et al. 2004; Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host); White and Elson-Harris 1992 (authors state “requires confirmation”).

Synonyms: *Cucurbita pepo* var. *moschata* Duchesne

Cucurbita pepo L.

Family: Cucurbitaceae

Grin Nomen Number: 12606

Common Names: bitter bottle gourd (English), bush squash (English), calabaza (Spanish-Mexico), citrouille (French), courge pepon (French), Gemüse-Kürbis (German), ghia kaddu (Urdu-Pakistan), marrow (English), pumpa (Swedish), pumpkin (English), squash (English), xi hu lu (transcribed Chinese), zucchini (Italian).

Native: NORTHERN AMERICA – *North-Central U.S.A.*: United States – Missouri, Oklahoma; *Southeastern U.S.A.*: United States – Arkansas, Louisiana, Mississippi; *South-Central U.S.A.*: United States – Texas; *Northern Mexico*: Mexico – Nuevo Leon, Tamaulipas.

Naturalized: NORTHERN AMERICA – *North-Central U.S.A.*: United States – Illinois; *Southeastern U.S.A.*: United States – Kentucky.

Cultivated: Widely cultivated.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 1 sample of *C. pepo*. Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

+Back and Pemberton 1917:

Hawaii, U.S.A.

(Note: the authors referred to the scientific name *Cucurbita pepo* for their use of the common name “pumpkin” in Back and Pemberton 1914). *Cucurbita pepo* (listed as pumpkin) is listed as a preferred host of *B. cucurbitae*. The authors reported that as many as 650 adult melon flies were reared from a pumpkin no more than 4 inches long and that a staminate bloom, while still in bud, may support as many as 37 melon fly larvae. Illustrations were provided of infested flowers and fruits.

+Back and Pemberton 1918:

Hawaii, U.S.A.

(Note: the authors referred to the scientific name *Cucurbita pepo* for their use of the common name “pumpkin” in Back and Pemberton 1914). Pumpkin is listed as a preferred host of *B. cucurbitae*. The authors reported that it “may support numerous colonies of larvae in open surface wounds and become badly deformed.” During the winter months in Kahuku, 250 out of 254 nearly full-grown pumpkins were found variously deformed. The authors reported that as many as 650 adult melon flies were reared from a pumpkin not more than 10 cm long and that a staminate bloom, while still in bud, may support as many as 37 well-grown melon fly larvae. It was also noted that, in March, a field of pumpkins was found badly infested in Haleiwa, on the Island of Oahu, Hawaii. Illustrations were provided of infested flowers and fruits.

Badii et al. 2015:

Northern Ghana

Cucurbita pepo fruits were collected from Northern, Upper West and Upper East regions of Ghana. Fruits were brought to a laboratory in Nyankpala, Ghana, and held over a layer of sterilized sand. Pupae recovered from the sand were held on moistened filter paper in Petri plates until adult emergence. Adults were killed and identified after being fed for 3 days. Taxonomic keys were used for species identification, with final species confirmation provided by Dr. Maxwell Billah. Adult *B. cucurbitae* were recovered from *C. pepo* fruits. Also recovered were adult *Dacus ciliatus* and *D. vertebratus*.

Bains and Sidhu 1984:

State of Punjab, India

Field observations of infestation of summer squash (*C. pepo*) fruits by *B. cucurbitae* (listed as *Dacus cucurbitae*) were made at 10-day intervals in Punjab, India, between March and June. Infested fruits were found in 3 of 7 observations (42.9%) with an average infestation rate of 0.86 (± 0.45 [standard error])%.

Carey et al. 1985:

Waimanalo, Island of Oahu, Hawaii, U.S.A.

A *B. cucurbitae* lab colony (listed as *Dacus cucurbitae*) was established from *B. cucurbitae*-infested *C. pepo* fruits (also listed as zucchini squash) collected at the Hawaii Agricultural Field Station, near Waimanalo, on the Island of Oahu, Hawaii, U.S.A.

+Gupta and Verma 1978:

Hisar (listed as Hissar), State of Haryana, India

Cucurbita pepo (listed as summer squash) was grown from seed planted 28 February 1975, in a randomized complete block designs with ten other cucurbit crops in Hisar, Haryana State, India. Fallen and marketable sized fruits were collected/picked every 3 days and assessed for infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). Infestation results were summarized weekly. *Bactrocera cucurbitae* infestation was found in 4 of 6 weekly summaries (66.7%). Overall, 77 (31.9 kg) fruits were collected, of which 8 were infested, for averages of 12.8 fruits collected per week with an average infestation rate of 9.1%.

Harris and Lee 1989:

Island of Molokai, Hawaii, U.S.A.

Between August 1978 and January 1980, 15 *C. pepo* fruits were collected at Hoolehua, Island of Molokai, Hawaii and held over sand in fruit holding buckets or boxes. Seven hundred thirty-six (736) *B. cucurbitae* (listed as *Dacus cucurbitae*) pupae were recovered from which 647 adults emerged.

Overall infestation rate was 37.0 *B. cucurbitae* per kg fruit.

Jacquard et al. 2013:

Réunion Island, France

Bactrocera cucurbitae-infested *C. pepo* fruits were collected from three sites on Réunion Island from January to April 2009, and held over sand. Puparia, recovered by sifting the sand, were held for adult emergence. Seventy-three (73) adult *B. cucurbitae* were recovered.

Khan et al. 1993:

Faisalabad, Pakistan

One hundred (100) *C. pepo* fruits (when available) were randomly observed monthly in the field from 1985 through 1986 and percentage infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) calculated. *Cucurbita pepo* infestation averaged 0–25% in May and between October to December; 26–50% in April, June, July and September; and 51–75% in August.

Leblanc et al. 2012:

Papua New Guinea (PNG)

Cucurbita pepo fruits were collected during 1997 to 2000 in PNG and held in plastic containers over finely sieved sawdust that had been sterilized in an oven or frozen overnight to kill mites. The sawdust was sieved to recover tephritid fruit fly puparia. Puparia were kept in moist sawdust until adult emergence. Adults were fed for 5 days, then killed by freezing to allow colors and markings, necessary for correct species identification, to fully develop. *Bactrocera cucurbitae* was recovered in 24 of 64 (37.5%) samples in PNG.

Leblanc et al. 2013a:

Papua New Guinea (PNG)

Cucurbita pepo fruits (580 fruits; 316.17 kg) were collected during 1997 to 2000 in PNG and held in plastic containers over finely sieved sawdust that had been sterilized in an oven or frozen overnight to kill mites. The sawdust was sieved to recover tephritid fruit fly puparia. Puparia were kept in moist sawdust until adult emergence. Adults were fed for 5 days, then killed by freezing to allow colors and markings, necessary for correct species identification, to fully develop. *Bactrocera cucurbitae* was recovered in 12 of 50 (24.0%) of the samples in PNG with an overall infestation rate of 2.75 flies/kg fruit and 10.70 flies/kg infested fruit.

Liquido et al. 1994:

Island of Maui, Hawaii, U.S.A.

From July 1990 to October 1992, 3 (0.047 kg) ripe “on plant” or ground *C. pepo* cv. *zucchini* fruits were collected (through collections made once or twice a month) from several sites on Maui Island, Hawaii. Fruits were weighed and counted and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* larvae and pupae were recovered from infested *C. pepo* cv. *zucchini* fruits with an overall infestation rate of 15.67 larvae and pupae per fruit (1,000.00 larvae and pupae/kg fruit).

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 13 *C. pepo* fruits were collected (3 collections overall) from one island/island group (Amami) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 5 fruits, giving an average percentage infestation rate (weighted by the number of collections in the island/island group) of 33.3%.

Purcell and Messing 1996:

Island of Kauai, Hawaii, U.S.A.

Zucchini (*C. pepo* var. ‘Green Magic’) seeds were planted on two occasions: 9 May 1994, and 1 September 1995. On 14 October, 2 November, 14 December, and 19 December 1995, between 250–400 sexually mature female *B. cucurbitae* adults were released into the fields to produce high infestation rates in hosts. Four age/ripeness categories of fruits were collected: immature, commercial sized, oversize, and rotting. Fruits were sampled weekly from eight randomly selected quadrats. Average recovery was 54.9 (27 samples), 37.0 (28 samples), 3.7 (14 samples), and 107.8 (18 samples) *B. cucurbitae* per kg fruit from the four fruit categories, respectively.

Sapkota et al. 2010:

Lamjung, Nepal

In a test of methods of control to reduce infestation of *C. pepo* var. 'Bulam House' by *B. cucurbitae*, 28-day-old seedlings were set out on 25 January 2008, in Lamjung, Nepal, in a randomized complete block design with four replications. In the untreated control, *B. cucurbitae* caused damage to 2.27 ovaries of unopened flowers per plant, to 32.5% of immature (<100 g) post-set fruits, and to 21.82% of market-sized (>100 g) fruits.

+*Singh et al. 2000:*

Kanpur, State of Uttar Pradesh, India

Cucurbita pepo fruits (listed as pumpkin) were collected weekly at growers' fields at the bank of the river Ganga in Kanpur beginning in February 1997. Percentage infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) was determined (by observation) at each picking. The overall average *B. cucurbitae* infestation rate was 21.6%.

+*Sookar and Khayratee 2000:*

Plaine Sophie, Mauritius

Control of infestation of *C. pepo* fruits (listed as courgette, squash and pumpkin) by *B. cucurbitae* through the use of only cover sprays (year one) was compared with control by cover sprays plus spot sprays of protein bait + toxicant and cuelure + toxicant traps (year two). Every 2 weeks, courgette, squash and pumpkin fruits with fruit fly punctures were randomly sampled and placed in a plastic tray over dry sand. The sand was sifted after 10 days for *B. cucurbitae* pupal recovery. Pupae were held in insect cages until adult emergence. From January to December 1999, when the cover spray only control method was used, average infestation of courgette fruits over 2-week intervals ranged from 163 to 386 pupae/kg infested fruit; average infestation of squash fruits over 2-week intervals ranged from 324 to 530 pupae/kg infested fruit; and average infestation of pumpkin fruits over 2-week intervals ranged from 325 to 467 pupae/kg infested fruit.

Stonehouse et al. 2007:

Sardarkrushinagar, State of Gujarat, India

In a study comparing the effectiveness of protein bait spray applications for control of tephritid fruit fly infestation in *C. pepo* fruits (also listed as pumpkin) at the farm level versus the village level (defined to be 1.0 km²) in Sardarkrushinagar, India, between 3 and 12 harvests of *C. pepo* fruits were made in each of 2 years at farms with varying extent of bait spray application. Percentage infestation was determined based either on visual examination of fruit to detect oviposition or by rearing out adult flies in the laboratory. On two farms in Sardarkrushinagar where no bait spray was applied, an average of 56.6% of the fruits was infested. Infestation was primarily by *B. cucurbitae*, but accompanied in some cases by a minority of other species.

Syed 1971:

Peshawar Valley, Khyber Pakhtunkhwa Province, Pakistan

In Peshawar Valley (1962–1963), 56% of *C. pepo* fruits were infested by *B. cucurbitae* (listed as *Dacus cucurbitae*) in May; infestation rate dropped to 25% in June. Total number of fruits collected were not given.

Vayssières and Carel 1999:

Réunion Island, France

Five (5) varieties of *Cucurbita pepo* fruits were collected over the course of a year from up to 70 localities on Réunion Island. Fruits with evidence of fruit fly infestation were held in individual containers, with recovered pupae held for adult emergence. *Bactrocera cucurbitae* recovery averaged 944 (standard deviation [SD] = 1,670) adults per kg infested fruit (a local variety of citrouille); 443 (SD = 914.7) adults per kg infested fruit (courgette var. 'Aphrodite'); 433.3 (SD = 674.7) adults per kg infested fruit (courgette var. 'Aurore'); 0.6 (SD = 4.2) adults per kg infested fruit (courgette var. 'Supremo'); and 0.8 (SD = 8.7) adults per kg infested fruit (courgette var. 'Tarmino').

Vayssières et al. 2007:

Benin, Burkina Faso, Cameroon, Côte d'Ivoire, Guinea, Mali, Niger and Senegal, West Africa

Tephritid fruit fly-infested *Cucurbita pepo* fruits were collected from from untreated orchards in eight countries in West Africa. Fruits were placed on mesh supports over sand. Tephritid

fruit fly pupae, recovered through weekly sieving of the sand, were transferred to small hatching boxes lined with wet blotting paper and held for adult emergence. The average *B. cucurbitae* infestation level in *C. pepo* fruits in West Africa fell in the range of 26–50 pupae/kg fruit. For comparison, the authors indicated that the infestation level of *C. pepo* fruits averaged over 100 pupae/kg fruit on Réunion Island.

Wong et al. 1986:

Waimanalo, Island of Oahu, Hawaii, U.S.A.

Wild *B. cucurbitae* adults (listed as *Dacus cucurbitae*) were obtained from mature larvae and pupae recovered from naturally infested *C. pepo* fruits collected from 1982 to 1985 in Waimanalo, on the Island of Oahu, Hawaii.

Wong et al. 1991:

Waimanalo, Island of Oahu, Hawaii, U.S.A.

Wild *B. cucurbitae* adults (listed as *Dacus cucurbitae*) were obtained from mature larvae and pupae recovered from naturally infested *C. pepo* fruits collected from 1984 to 1985 in Waimanalo, on the Island of Oahu, Hawaii.

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Cucurbita pepo* fruits, originating in Hawaii, at an airport in Hawaii (Honolulu) on five occasions between 1992 and 2005. Average recovery of live larvae was 5.0; and on one occasion in 2005, two live pupae were recovered.

USDA 1954:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from pumpkin (*C. pepo*) which originated from Hawaii and was intercepted at a port in California (1 interception in consumption host) between 1 July 1952 and 30 June 1953 (number of individuals recovered and life stages not reported). Taxonomic identification was done by state inspection in California.

USDA 1955:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from pumpkin (*C. pepo*) which originated in Hawaii and was intercepted at a port in Texas (1 interception in non-entry host) between 1 July 1952 and 30 June 1953 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1959:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from zucchini squash (*C. pepo*) which originated in Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1957 and 30 June 1958 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1962:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from zucchini squash (*C. pepo*) which originated in Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1960 and 30 June 1961 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1966:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from zucchini squash (*C. pepo*) which originated in Hawaii and was intercepted at stores in California (1 interception in non-entry host) between 1 July 1964 and 30 June 1965 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

Lab Infestation:

Carey et al. 1985:

Fifty (50) newly emerged 1st generation *B. cucurbitae* larvae (listed as *Dacus cucurbitae*) (four replications) were added to a small portion of *C. pepo* fruit (also listed as zucchini squash) and

held at 25 (± 2.0)°C and 60.0 (± 6.0)% RH in a covered Petri plate, with additional host material added as needed. When some of the larvae approached maturity, the Petri plate was opened and placed in sand in a larger container to allow for pupation. The sand was then sifted daily to recover pupae which were held at the same conditions of temperature and relative humidity. On average, 79% of the larvae survived to adult emergence, with an average larva to adult development time of 17.2 days.

Fifty (50) newly emerged 1st generation *B. cucurbitae* larvae (listed as *Dacus cucurbitae*) (4 replications) were added to a small portion of *C. pepo* fruit (also listed as long squash) and held at 25 (± 2.0)°C and 60.0 (± 6.0)% RH in a covered Petri plate, with additional host material added as needed. When some of the larvae approached maturity, the Petri plate was opened and placed in sand in a larger container to allow for pupation. The sand was then sifted daily to recover pupae which were held at the same conditions of temperature and relative humidity. On average, 44% of the larvae survived to adult emergence, with an average larva to adult development time of 20.0 days.

Koul and Bhagat 1994b:

Bottle gourd (*Lagenaria siceraria*) was used to rear *B. cucurbitae* (listed as *Dacus cucurbitae*) in the lab. Eggs obtained from flies maintained on bottle gourd were placed on a thin slice of tender and fresh *C. pepo* fruit. Newly emerged *B. cucurbitae* larvae were transferred to freshly cut *C. pepo* slices placed in glass tubes for 2–5 days and then held over sand (4 cm thick) until pupation. Pupae were sieved daily and individually transferred to glass tubes with a 3-cm sand layer moistened with water and held until adult emergence. Freshly emerged flies were held in glass tubes after pairing, provided with a slice of *C. pepo* fruit and a cotton plug soaked in 10% honey solution. Larval duration averaged 5.7 days, compared to 3.5, 4.2, 4.7, and 4.7 days, when reared on *Momordica charantia*, *Lagenaria siceraria*, *Cucumis sativus*, and *Benincasa fistulosa*, respectively. No temperature or relative humidity data were provided.

Quilici et al. 2004:

In parasitoid efficacy experiments, *C. pepo* fruits were placed in cages and exposed to gravid *B. cucurbitae* females for 24 hours. Fruits were transferred to plastic boxes and held with potato florets for 6 days. *Bactrocera cucurbitae* larvae were recovered from artificially infested *C. pepo* fruits, exposed to parasitoids, and held with their media (potato florets) over dry sawdust in plastic boxes (355x235x130mm) at 25 \pm 1°C (60 \pm 10% RH) until adult emergence (3–4 days). *Bactrocera cucurbitae* was recovered from artificially infested *C. pepo* fruits.

Sarwar et al. 2013:

Healthy, undamaged, mature and ripe *C. pepo* fruits were collected from a local marketplace in Faisalabad, Pakistan. One hundred twenty-five (125) g of fruits were placed in the bottom of a sieve that was suspended from a guava (*Psidium guajava*) tree in a guava orchard that was not bearing fruits (with 3 replications). Fruits were left exposed to wild *B. cucurbitae* flies for 48 hours. Fruits from each replication were placed over sand in muslin cloth-topped plastic containers and held for 2 to 3 weeks. *Bactrocera cucurbitae* puparia, recovered by sieving the sand, were placed in moist sand in a Petri plate and held for adult emergence. An average of 3.83 *B. cucurbitae* pupae (30.6 pupae/kg fruit) were recovered from which an average of 2.17 adult flies (17.4 adult flies/kg fruit) emerged.

Shelly and Edu 2010:

Zucchini fruits (*C. pepo*), purchased in local supermarkets, were rinsed in water and introduced periodically for oviposition by *B. cucurbitae* adults. Infested fruits were held over vermiculite, with pupae sifted out, held in screen-covered trays, and marked with a dye 2 days before adult emergence. Emerged adults were held until sexually mature and then released in mark-release recapture trials. No infestation rate data were given.

Vayssières et al. 2004:

Bactrocera cucurbitae eggs were collected from 'wild strain' adults (although no host from which they were recovered is listed and there is no indication as to whether the strains may have completed one or more generations in the laboratory prior to egg collection). Eggs were placed on *C. pepo* fruits (separate tests for 'pumpkin' and 'squash') with life stage durations recorded through adult emergence at three different constant temperatures (four for pumpkin) and 75 \pm 10% relative humidity (photoperiod used not indicated). Total duration of the larval stage on pumpkin averaged 325 hours (13.54 days) (at 15 \pm 0.2°C); 174 hours (7.25 days) (at 20 \pm 0.5°C); 107.7 hours (4.49 days) (at 25 \pm 1.0°C); and 105.7 hours (4.40 days) (at 30 \pm 1.0°C). Total duration of the larval stage on squash averaged 179.7

hours (7.49 days) (at 20±0.5°C); 113 hours (4.71 days) (at 25±1.0°C); and 87.3 hours (3.64 days) (at 30±1.0°C).

Vayssières et al. 2008:

Bactrocera cucurbitae eggs, collected from adults reared for two generations on *C. pepo* (“pumpkin”), were placed on 150g of pumpkin, with fresh pumpkin added as needed, and reared through pupariation to adult emergence. Survivorship from egg to adult, at 25°C, was 84±2%. Larvae successfully developed through pupariation at 20°C, 25°C, and 30°C, but did not develop at 15°C.

Bactrocera cucurbitae eggs, collected from adults reared for two generations on *Cucurbita pepo* (“squash”), were placed on 150 g of squash, with fresh squash added as needed, and reared through pupariation to adult emergence. Survivorship from egg to adult, at 25°C, was 77±2%. Larvae successfully developed through pupariation at 20°C, 25°C, and 30°C, but did not develop at 15°C.

Listing Only: Back and Pemberton 1914 (can lay eggs in fruit, unopened male and female flowers, stem and seedling); +Bateman 1989 (listed as *Dacus cucurbitae*; listed as pumpkin); Botha et al. 2004 (listed as a primary host); CABI 2016 (listed as a primary host); California Department of Food and Agriculture 2001; Cantrell et al. 1999; Chawla 1966 (listed as *Dacus cucurbitae*); De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Dhillon et al. 2005a; EcoPort 2008; European and Mediterranean Plant Protection Organization 2015 (listed as a major host); Etienne 1967 (listed as *Dacus cucurbitae*); Etienne 1972 (listed as *Dacus cucurbitae*; adults obtained very frequently); Government of Western Australia Department of Agriculture and Food 2015; Hardy and Adachi 1956 (listed as *Dacus cucurbitae*); Holbrook 1967 (listed as “heavily or generally infested”); Hollingsworth et al. 1996; Hollingsworth and Allwood 2000; Kapoor 1970 (listed as *Dacus cucurbitae*); +Khan et al. 1989 (listed as *Dacus cucurbitae*; listed as pumpkin); Leblanc 2000; Mamet and Williams 1993 (listed as *Dacus cucurbitae*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as a plant that is frequently injured); +Margosian et al. 2009 (listed as pumpkin); Messing et al. 1995; Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Nishida 1963 (listed as *Dacus cucurbitae*; listed as *Cucumis pepo*); Oakley 1950 (listed as *Dacus cucurbitae*); Orian and Moutia 1960 (listed as *Dacus cucurbitae*); Pacific Fruit Fly Web 2002; Phillips 1946 (listed as *Cucurbita pepo*); Plantwise Knowledge Bank 2015; Quilici and Jeuffrault 2001 (listed as being very favorable as a host); Ramsamy 1989 (listed as *Dacus cucurbitae*); Ryckewaert et al. 2010; Singh et al. 2004; Tsatsia and Hollingsworth 1997 (both squash and pumpkin were listed as varieties of *Cucurbita pepo*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host); Vargas et al. 2004; Vijayasegaran 1991 (listed as *Dacus cucurbitae*); White and Elson-Harris 1992 (listed as infesting both fruit and stem in pumpkin *C. pepo*); Yunus and Hua 1980 (listed as *Dacus cucurbitae*).

Synonyms: *Cucurbita galeottii* Cogn., *Cucurbita mammeata* Molina

Cucurbita pepo var. *moschata* Duchesne, see *Cucurbita moschata* Duchesne

Cucurbita pepo L. subsp. *ovifera* (L.) D. S. Decker var. *ovifera* (L.) Harz

Family: Cucurbitaceae

Grin Nomen Number: 12607

Common Names: acorn squash (English), fordhook squash (English), kazari-kabocha (Japanese Rōmaji), ornamental gourd (English), pattypan squash (English), scallop squash (English), straightneck squash (English), summer crookneck squash (English), table queen squash (English).

Cultivated: Only cultivated.

Field Infestation:

Khan et al. 1992:

Faisalabad, Pakistan

In 1986, *Cucurbita pepo* subsp. *ovifera* var. *ovifera* (listed as both *Cucurbita melopepo* and as squashmelon; note that this scientific name was given for squashmelon in this paper, but, in Khan et al. 1993, the scientific name *Citrullus lanatus* var. *fistulosus* was given for squashmelon) was intersown in melon (*Cucumis melo* L.) as a trap crop, with another plot of melon grown nearby as a control. The percentage fruit infestation was recorded every 10 days following initial fruit set. *Cucurbita pepo* subsp. *ovifera* var. *ovifera* infestation averaged 15.5%.

Khan et al. 1993:

Faisalabad, Pakistan

Cucurbita pepo subsp. *ovifera* var. *ovifera* fruit samples (listed as *Cucurbita melopepo*) (1 fruit at a time) were placed in a cage with adult *B. cucurbitae* flies (listed as *Dacus cucurbitae*) for 24 hours, then, 1 week later, were dissected to count the number of 2nd and 3rd instar larvae. Over five replications, averages of twenty-nine (29) 2nd instar and one hundred forty (140) 3rd instar larvae were recovered.

One hundred (100) *Cucurbita pepo* subsp. *ovifera* var. *ovifera* fruits (when available) were randomly observed monthly in the field between 1985 and 1986 and percentage infestation by *B. cucurbitae* calculated. *Cucurbita pepo* subsp. *ovifera* var. *ovifera* infestation averaged 26–50% in February and June; 51–75% in July; and 76–100% in April and July through December.

Listing Only: +Khan et al. 1989 (listed as *Dacus cucurbitae*; listed as squashmelon); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *C. pepo ovifera*); Orian and Moutia 1960 (listed as *Dacus cucurbitae*; listed as *Cucurbita ovifera* L.); Ramsamy 1989 (listed as *Dacus cucurbitae*; listed as *Cucurbita ovifera* L.); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*; listed as *Cucurbita pepo* var. *ovifera*).

Synonyms: *Cucurbita melopepo* L., *Cucurbita ovifera* L., *Cucurbita pepo* var. *melopepo* (L.) Harz, *Cucurbita pepo* L. var. *patisson* Filov, nom. nud.

Cucurbita pepo L. subsp. *pepo*

Family: Cucurbitaceae

Grin Nomen Number: 314934

Common Names: cocozelle (English), courgette (English), marrow (English), ornamental gourd (English), Patisson (German), pumpkin (English), spaghetti squash (English), vegetable marrow (English), zucchini (English), Zucchini (German).

Cultivated: Only cultivated.

Field Infestation:

+Drew 1982:

Papua New Guinea

Specimens of *B. cucurbitae* (listed as *Dacus cucurbitae*) were reared from *Cucurbita pepo* subsp. *pepo* fruits (listed as marrow) and are held in the collection of the Wau Ecology Institute in Papua New Guinea.

Lab Infestation:

+Vargas et al. 2004:

In a study on parasitization of *B. cucurbitae* by *Psytalia fletcheri*, *Cucurbita pepo* subsp. *pepo* fruits (listed as zucchini) were held in field cages with 200 male + 200 female F₁ generation flies (P₁ generation flies recovered from *Coccinia grandis*; with collected eggs used to infest *Carica papaya* for the F₁ generation flies) alone (control) or with sterile *B. cucurbitae* flies, *P. fletcheri*, or with sterile flies + *P. fletcheri*. In the control cage, there was an average recovery of 840 *B. cucurbitae* adults per kg fruit.

Listing Only: Botha et al. 2004 (listed as a primary host); +Dhillon et al. 2005a (listed as vegetable marrow); +EcoPort 2008 (listed as zucchini); +Hardy and Adachi 1956 (listed as *Dacus cucurbitae* Coquillett; listed as zucchini squash); Harris et al. 2010 (listed both as *C. pepo* and as zucchini); +Hollingsworth et al. 1996 (listed as marrow, a variety of *C. pepo*); +Leblanc 2000 (listed as zucchini); +Mau et al. 2007 (listed as zucchini); +Phillips 1946 (listed as vegetable marrow); +Ponce 1937 (listed as *Dacus cucurbitae*; listed as marrow squash); +Queensland Government 2015 (listed as zucchini); +Ramadan and Messing 2003 (listed as zucchini); +Symonds et al. 2009 (listed as marrow); Vargas and Prokopy 2006 (listed as both *Cucurbita pepo* and as zucchini).

Synonyms: *Cucumis pepo* (L.) Dumort., *Cucurbita pepo* L. var. *citrulina* Filov, nom. nud., *Cucurbita pepo* L. var. *giraumontia* Filov, nom. nud., *Cucurbita pepo* L. var. *styriaca* Greb.

Cucurbita pepo L. var. *citrulina* Filov, nom. nud., see *Cucurbita pepo* L. subsp. *pepo*

Cucurbita pepo L. var. *giraumontia* Filov, nom. nud., see *Cucurbita pepo* L. subsp. *pepo*

Cucurbita pepo L. var. *patisson* Filov, nom. nud., see *Cucurbita pepo* L. subsp. *ovifera* (L.) D. S. Decker var. *ovifera* (L.) Harz

Cucurbita pepo L. var. *styriaca* Greb., see *Cucurbita pepo* L. subsp. *pepo*

Cucurbita siceraria Molina, see *Lagenaria siceraria* (Molina) Standl.

Cucurbita spp.

Family: Cucurbitaceae

Grin Nomen Number: 300161

Field Infestation:

+Back and Pemberton 1917:

Hawaii, U.S.A.

(Note: the authors referred to the scientific name *Cucurbita* sp. for their use of the common name “squash” in Back and Pemberton 1914) *Cucurbita* spp. (listed as squash) is listed as a preferred host of *B. cucurbitae*. Both squash stems and fruits can be infested by melon fly larvae. Illustration provided of infested squash vine.

+Back and Pemberton 1918:

Hawaii, U.S.A.

(Note: the authors referred to the scientific name *Cucurbita* sp. for their use of the common name “squash” in Back and Pemberton 1914) *Cucurbita* spp. (listed as squash) is listed as a preferred host of *B. cucurbitae*. Both squash stems and fruits can be infested by melon fly larvae. Illustration provided of infested squash vine.

+Harris et al. 1986:

Island of Kauai, Hawaii, U.S.A.

One (1) collection of *Cucurbita* sp. fruits (about 1.2 kg) (listed as squash) was made on the Island of Kauai, Hawaii, between July 1980 and September 1982, with fruits held over moist sand for assessment of infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). One hundred and eight (108) *B. cucurbitae* flies were recovered (90 flies/kg fruit).

+Lee 1972:

Taiwan

Cucurbita sp. plants (listed as squash) were grown in the field year-round from 2 June 1969 to 10 June 1970, and from March-August 1971. Fruits, picked 5, 10, and 15 days after flowering, were placed over sand in holding boxes. The sand was screened weekly to recover *B. cucurbitae* pupae (listed as *Dacus cucurbitae*). Pupal recovery per fruit was averaged quarterly for 1969 to 1970 harvests. Pupal recovery per kg fruit was averaged monthly for 1971 harvests. *Bactrocera cucurbitae* pupal recovery averaged 9.5, 0.0 and 0.0 pupae/fruit (1969–1970) and 1.6, 50.6, and 0.0 pupae/kg fruit (1971) overall, for fruits picked 5, 10, and 15 days after flowering, respectively.

Mwatawala et al. 2009a:

Morogoro Region, Central Tanzania

Tender-skinned immature *Cucurbita* sp. fruits (referred to as both ‘pumpkin’ and as *Cucurbita* sp.) were randomly collected at regular intervals between October 2004 and October 2006 from areas within the Sokoine University of Agriculture campus in Morogoro and from Nyandira, Mikese, Mkindo in the Morogoro region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupation of infesting tephritid fruit flies. Emerged adults were removed and identified. Six (6) of 9 (66.7%) *Cucurbita* sp. samples (3.82 kg) were infested by *B. cucurbitae*.

Mwatawala et al. 2009b:

Morogoro Region, Central Tanzania

Cucurbita sp. fruits (also referred to as pumpkin) were randomly collected weekly between October 2004–October 2006, and from August-December 2007, from areas within the Sokoine University of Agriculture campus in Morogoro and from Nyandira, Mikese, Mkindo in the Morogoro region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupation of infesting tephritid fruit flies. Emerged adults were removed and identified. Out of 119 collected fruits (6.22 kg), infestation by *B. cucurbitae* averaged 51.45 emerged adults per kg fruit.

Mwatawala et al. 2015:

Morogoro Region, Central Tanzania

Cucurbita sp. (“pumpkin”), *Cucumis sativus*, and *Citrullus lanatus* were directly sown both in mono-cropped plots and in plots where all three crops were “haphazardly mixed both within and between lines.” Two plots of each type were planted in each of three seasons: March–June 2013, October–December 2013 and April–July 2014. Planting dates for each crop species were adjusted based on days to flowering in order to synchronize fruit setting. Fruits in all plots were subject to natural infestation by *B. cucurbitae* (listed as *Zeugodacus cucurbitae*). At each sampling date, fruits of each species were randomly harvested from each plot and held in rearing containers containing sterilized sand as a pupation medium. Pupae were removed and held in Petri dishes with moist filter paper within emergence containers until adult emergence. From the mono-cropped *Cucurbita* sp. plots, 41.7% of fruits were infested by *B. cucurbitae* with an average infestation rate of 49.79 flies/kg fruit (out of 2.95 kg fruits). From the mix-cropped plots, 48.3% of fruits were infested by *B. cucurbitae* with an average infestation rate of 89.77 flies/kg fruit (out of 2.32 kg fruits).

+Wen 1985:

Taiwan

Cucurbita sp. fruits (listed as pumpkin) were collected in southern Taiwan from September 1983 to April 1984. Infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) averaged 3.02% (bimonthly averages ranged from 2.04–3.74%).

+Wong et al. 1989:

Rota, Commonwealth of the Northern Mariana Islands

On the island of Rota, 6 *Cucurbita* sp. fruits (listed as pumpkin) (from 4 collections) were collected in 1985, and 4 fruits (from 1 collection) were collected in 1987. Also, 38 *Cucurbita* sp. fruits (listed as squash) (from 8 collections) was collected in 1985, 2 fruits (from 2 collections) were collected in 1986, and 42 fruits (from 8 collections) were collected in 1987. Fruits were held over moist sand in plastic containers with screened lids for recovery of *B. cucurbitae* pupae and adult emergence. *Bactrocera cucurbitae* recovery from “pumpkin” fruits averaged 0.0 pupae/kg fruit (1985) and 2.2 pupae/kg fruit (1987). *Bactrocera cucurbitae* recovery from “squash” fruits averaged 0.6 pupae/kg fruit (1985), 0.0 pupae/kg fruit (1986), and 227.1 pupae/kg fruit (1987).

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Cucurbita* sp. fruits, originating in Hawaii, at an airport in Hawaii (Honolulu) on 18 occasions between 1989 and 2013. Average recovery of live larvae was 5.3. Live pupae were also recovered in 2005 (2) and in 2013 (12).

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Cucurbita* sp. flowers, originating in Hawaii, at an airport in Hawaii (Honolulu) on two occasions between 2002 and 2003. Average recovery of live larvae was 5.5.

India

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Cucurbita* sp. fruits, originating in India, at airports in San Francisco (1) and in New York (JFK: 2) on three occasions between 1992 and 1995. Average recovery was 2.3 live larvae.

Philippines

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Cucurbita* sp. fruit(s), originating in the Philippines, at an airport in Hawaii (Honolulu) on one occasion in 2001. Recovery was 12 live larvae.

USDA 1948b:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from acorn squash (*Cucurbita* sp.) which originated from a port in Hawaii and was intercepted at a port in Washington (1 interception in non-entry host) between 1 July 1946 and 30 June 1947 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1951:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*?) was recovered from squash (*Cucurbita* sp.) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1948 to 30 June 1949 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

Lab Infestation:*Matsuyama and Kuba 2009:*

First (F1) and second (F2) generation *B. cucurbitae* adult flies (for use in mating-related tests) were obtained from larvae reared in the lab on *Cucurbita* sp. fruits following oviposition of adult flies recovered from naturally infested *Luffa aegyptiaca* (listed as *L. cylindrica* Roem) fruits.

Listing Only: +Agrawal and Mathur 1991 (listed as *Dacus cucurbitae*; listed as pumpkin); Back and Pemberton 1914 (can lay eggs in fruit, unopened male and female flowers, stem and seedling); +Chen 1960 (listed as *Dacus cucurbitae*; listed as pumpkin); +Christenson and Foote 1960 (listed as *Dacus cucurbitae*; listed as cucurbits); De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); European and Mediterranean Plant Protection Organization 2015 (listed as a minor host); +Hawaii Department of Agriculture 2009 (listed as winter squash); +Heppner 1989 (listed as *Dacus cucurbitae*; listed as both squash and as pumpkin); Isnadi 1991 (listed as *Dacus cucurbitae*); +Kalshoven 1981 (listed as *Dacus cucurbitae*; listed as waluh); Margosian et al. 2009; +NAPPO, PAS 2015 (listed as pumpkin); +Nishida 1953 (listed as *Dacus cucurbitae*; listed as pumpkin); +Symonds et al. 2009 (both pumpkin and squash are listed); USDA 1986 (listed as *Dacus cucurbitae*); +Vagalo et al. 1997 (listed as pumpkin); +Van Dine 1906 (listed as *Dacus cucurbitae*; listed as pumpkins); +Weems 1964 (listed as *Dacus cucurbitae*; listed as both pumpkin and squash; listed as a preferred host); +Weems 1967 (listed as *Dacus cucurbitae*; listed as both pumpkin and squash; listed as a preferred host); +Weems et al. 2001 (listed as both pumpkin and squash; listed as a preferred host); White and Elson-Harris 1992; +Willard 1920 (listed as both squash and pumpkin); +Yong 1992 (listed as *Dacus cucurbitae*; listed as squash).

Cucurbitaceae Juss., nom. cons.

Grin Family Number: 312

Field Infestation:*Clausen et al. 1965:*

Malaysia (referred to as Malaya; place names indicate that it is predominantly present day Malaysia, but may include fruits from Singapore as well)

From mixed species of Cucurbitaceae collected from January to May 1949, in Malaysia (predominantly present day Malaysia, but may include fruits from Singapore as well), 23,851 puparia were recovered, a mix of two predominant species: *B. cucurbitae* (listed as *Dacus cucurbitae* Coq.) and *Bactrocera tau* (listed as *D. hageni* Meij) (ratio not stated).

South China

From mixed species of Cucurbitaceae collected from July to September 1950 in South China, 3,465 puparia were recovered, a mix of two predominant species: *B. cucurbitae* (listed as *Dacus cucurbitae* Coq.) and *Bactrocera tau* (listed as *Dacus nubilus* Hendel) (ratio not stated).

North India

From collections of mixed species of Cucurbitaceae fruits from September 1949 to October 1950 in Northern India, 11,904 puparia were recovered, a mix of two predominant species: *B. cucurbitae* (listed as *Dacus cucurbitae* Coq) and *Dacus ciliatus* Loew.

South India

From collections of mixed species of Cucurbitaceae fruits from March to May 1950 in Southern India, 9,833 *B. cucurbitae* puparia (listed as *Dacus cucurbitae* Coq) were recovered.

Sri Lanka (referred to as Ceylon)

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) puparia recovered from collections of mixed species of Cucurbitaceae fruits in Sri Lanka were shipped to Hawaii during August and September 1951.

Kenya

From collections of mixed species of Cucurbitaceae fruits from August 1949 to June 1950, in Kenya, some *B. cucurbitae* puparia (listed as *Dacus cucurbitae*) were recovered, but relatively few compared to puparia recovered of *Dacus bivittatus* var. *cucumarius* Sack and *Dacus ciliatus* Loew.

Interception Data:

PestID 2016:

Bahrain

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Cucurbitaceae* fruit(s), originating in Bahrain, at an airport in Massachusetts (Boston) on one occasion in 2001. Recovery was 18 live larvae.

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Cucurbitaceae* fruit(s), originating in Hawaii, at airports in Hawaii (Honolulu–1; Lihue–2) on three occasions between 1991 and 2006. Average recovery was 3.3 live larvae.

India

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Cucurbitaceae* fruit(s), originating in India, at airports in Pennsylvania (Pittsburgh) and in California (Los Angeles) on two occasions (1989 and 1994, respectively). Recovery was 31 live larvae (1989), and one live larva (1994).

Pakistan

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Cucurbitaceae* fruit(s), originating in Pakistan, at a California airport (Los Angeles) on one occasion in 2001. Recovery was one live larva.

Listing Only: +Agarwal et al. 1987 (listed as *Dacus cucurbitae*; listed as cucurbits); +Back and Pemberton 1917 (listed as cucurbitaceous plants); +Back and Pemberton 1918 (listed as cucurbitaceous plants); +Batra 1953 (listed as *Dacus cucurbitae*; listed as cucurbit vegetables); +Bhagat et al. 1998 (listed as *Dacus cucurbitae*; listed as cucurbits); +Bhatia and Mahto 1970 (listed as *Dacus cucurbitae*; listed as cucurbitaceous vegetables); +Borah 1997 (listed as *Dacus cucurbitae*; listed as cucurbit fruits); +Botha et al. 2004 (listed as cucurbits); CABI 2016; CERIS 1993 (listed as cucurbit crops); +Chaudhary and Patel 2007a (listed as cucurbitaceous fruits); +Commonwealth Institute of Entomology 1978 (listed as cucurbits); Clausen et al. 1965 (listed as *Dacus cucurbitae*); +Drew 1989 (listed as cucurbit crops); +Drew et al. 1978 (listed as cucurbits); European and Mediterranean Plant Protection Organization 2015 (listed as a minor host); +Fletcher 1987 (listed as *Dacus cucurbitae*; listed as infesting the male flowers of cucurbits); +Gupta and Verma 1977 (listed as *Dacus cucurbitae*; listed as cucurbits); +Gupta and Verma 1982 (listed as *Dacus cucurbitae*; listed as cucurbit fruits); +Hardy 1949 (listed as *Dacus cucurbitae*; listed as cucurbits); +Harris 1989 (listed as *Dacus cucurbitae*; listed as cucurbits); +Hawaii Department of Agriculture 2009 (listed as cucurbits); +Holdaway and Look 1942 (listed as *Dacus cucurbitae*; listed as cucurbits); +Hollingsworth et al. 1996 (listed as cucurbits); Isnadi 1991 (listed as *Dacus cucurbitae*); +Iwahashi et al. 1976 (listed as *Dacus cucurbitae*; listed as cucurbit crops); +Kakinohana et al. 1997 (listed as cucurbit crops); +Kapoor 1989 (listed as *Dacus cucurbitae*; listed as cucurbits); +Kapoor 2005–2006 (listed as cucurbits); +Kazi 1976 (listed as *Dacus cucurbitae*; listed as cucurbits); Kumagai et al. 1996; +Kumar et al. 2008 (listed as cucurbitaceous vegetables and fruits); +Lall 1964 (listed as *Dacus cucurbitae*; listed as cucurbits and cucurbitaceous vegetables); +Lall 1975 (listed as *Dacus cucurbitae*; listed as cucurbits and cucurbitaceous vegetables); +Lall and Singh 1959 (listed as *Dacus cucurbitae*; listed as cucurbit vegetables); +Mahmood and Mishkatullah 2007 (listed as cucurbit crops); +Margosian et al. 2009 (listed as cucurbits); +Messing et al. 1995 (listed as cucurbits); Munro 1984 (listed as *Zeugodacus cucurbitae*; listed as infesting cucurbits generally, cultivated and wild); Nafus 1997 (infests cucurbits in the Mariana Islands); +Nath 1964 (listed as *Dacus cucurbitae*; listed as cucurbits); Nath et al. 1976; +Nishida 1953 (listed as *Dacus cucurbitae*); Oakley and Dohanian 1957 (listed as *Dacus cucurbitae*); Plantwise Knowledge Bank 2015; +Pruthi and Batra 1938 (listed as *Chaetodacus cucurbitae*; listed as cucurbits); +Queensland Government 2015 (listed as cucurbits); +Qureshi et al. 1987 (listed as *Dacus cucurbitae*; listed as cucurbitaceous vegetables); +Rajamannar 1962 (listed as *Dacus cucurbitae*; listed as cucurbits); Ramadan and Messing 2003; +Ramsamy 1989 (listed as *Dacus cucurbitae*); +Rejesus et al. 1991 (listed as *Dacus cucurbitae*); +Talpur et al. 1994 (listed as cucurbit vegetables); +Tenakanai 1997 (listed as all cucurbits, wild and cultivated); +Terry 1906

(listed as *Dacus cucurbitae*; listed as cucurbitaceous fruits); +Van Dine 1906 (listed as *Dacus cucurbitae*; listed as all the members of the plant family Cucurbitaceae); +Vijaysegaran and Hong 2000 (listed as cucurbits); +Weems 1964 (listed as *Dacus cucurbitae*; listed as cucurbits); +Weems 1967 (listed as *Dacus cucurbitae*; listed as cucurbits); +Weems et al. 2001 (listed as cucurbits).

Cupania sapida Voigt, see *Blighia sapida* K. D. Koenig

Cyclanthera pedata (L.) Schrad.

Family: Cucurbitaceae

Grin Nomen Number: 12773

Common Names: achoccha (Quichua-Peru), achocha (English), achocha (French), caiba (Spanish), caifa (Spanish-Costa Rica), caigua (Spanish), caihua (Spanish), caygua (Spanish), concombre grim pant (French), jaiba (Spanish-Costa Rica), Korila (German), korila (Swedish), lady's-slipper (English), pepino de comer (Spanish), pepino de rellenar (Spanish-Columbia), penino hueco (Spanish), slipper goard (English), stuffing gourd (English), stuffing-cucumber (English), tamiá de cipō (Portuguese), tamiá de comer (Portuguese), wild cucumber (English), xiao que gua (transcribed Chinese).

Cultivated: ASIA-TEMPERATE – *China:* China – Xizang, Yunnan; *Eastern Asia:* Taiwan; ASIA-TROPICAL – *Indian Subcontinent:* Bhutan; India; Nepal; *Malesia:* Malaysia; SOUTHERN AMERICA – *Central America:* Costa Rica; Guatemala; Honduras; Nicaragua; Panama; *Northern South America:* Venezuela; *Western South America:* Bolivia; Colombia; Ecuador; Peru; *Southern South America:* Argentina – Jujuy, Salta.

Origin: Andean South America.

Field Infestation:

Jacquard et al. 2013:

Réunion Island, France

Bactrocera cucurbitae-infested *C. pedata* fruits were collected from three sites on Réunion Island from June to September 2009, and held over sand. Puparia, recovered by sifting the sand, were held for adult emergence. Sixty-four (64) adult *B. cucurbitae* were recovered.

Vayssières and Carel 1999:

Réunion Island, France

Cyclanthera pedata fruits of a local variety were collected over the course of a year from up to 70 localities on Réunion Island. Fruits with evidence of fruit fly infestation were held in individual containers, with recovered pupae held for adult emergence. *Bactrocera cucurbitae* recovery averaged 519.8 (standard deviation = 1,084) adults per kg infested fruit.

Listing Only: De Meyer et al. 2014 (listed as *Cyclanthera pedata*); De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Quilici and Jeuffrault 2001 (listed as *Cyclanthera pedata*; listed as being very favorable as a host).

Synonyms: *Cyclanthera pedata* var. *edulis* (Naudin) Cogn., *Momordica pedata* L.

Cyclanthera pedata var. *edulis* (Naudin) Cogn., see *Cyclanthera pedata* (L.) Schrad.

Cydonia oblonga Mill.

Family: Rosaceae

Grin Nomen Number: 12779

Common Names: ajva (transliterated Russian), cognassier (French), coing (French), kvitten (Swedish), marmelo (Portuguese), membrillero (Spanish), membrillo (Spanish), quince (English), Quitte (German), Quittenbaum (German), wen po (transcribed Chinese).

Native: ASIA-TEMPERATE – *Western Asia:* Iran; *Caucasus:* Armenia, Azerbaijan, Russian Federation – Ciscaucasia, Dagestan; *Middle Asia:* Turkmenistan [Kopet Dagh].

Naturalized: Naturalized elsewhere.

Cultivated: also cultivated.

Field Infestation:

Syed 1971:

Harnai and Quetta, Province of Balochistan, Pakistan

In Harnai and Quetta (1964–1965), *B. cucurbitae* (listed as *Dacus cucurbitae*) was reared from *Cydonia oblonga* (listed as *Cydonia vulgaris*) in December. Total number of fruits collected and infestation rate data were not given.

Listing Only: Botha et al. 2004 (listed as a secondary host); CABI 2016; Cantrell et al. 1999; Hollingsworth et al. 1996; +Margosian et al. 2009 (listed as quince); Plantwise Knowledge Bank 2015; White and Elson-Harris 1992.

Synonyms: *Cydonia vulgaris* Pers., *Pyrus cydonia* L.

Cydonia vulgaris Pers., see *Cydonia oblonga* Mill.

Cyclanthera pedata (L.) Schrad., see *Cyclanthera pedata* (L.) Schrad.

Cyphomandra betacea (Cav.) Sendtn., see *Solanum betaceum* Cav.

Cyphomandra crassifolia Kuntze, see *Solanum betaceum* Cav.

Cyphomandra Mart. ex Sendtn., see *Solanum* L.

Cyphomandra spp., see *Solanum* spp.

Cyrtonema Schrad., see *Kedrostis* Medik.

Cytisus cajan L., see *Cajanus cajan* (L.) Huth

Daubentonia DC., see *Sesbania* Scop.

Daubentonia spp., see *Sesbania* spp.

Detariaceae Hess, see *Fabaceae* Lindl., nom. cons.

Dimocarpus longan Lour.

Family: Sapindaceae

Grin Nomen Number: 14131

Common Names: longan (English), longán (Spanish), longan (Swedish), Longanbaum (German), Longanbeere (German), longanier (French), mata kucing (Malay), oeil de dragon (French).

Native: ASIA-TEMPERATE – *China*: China – Fujian, Guangdong, Guangxi, Guizhou, Sichuan, Yunnan; *Eastern Asia*: Taiwan; ASIA-TROPICAL – *Indian Subcontinent*: India, Sri Lanka; *Indo-China*: Cambodia, Laos, Myanmar, Thailand, Vietnam; *Malesia*: Indonesia, Malaysia, Philippines.

Cultivated: Cultivated elsewhere.

Listing Only: White and Elson-Harris 1992 (authors state “requires confirmation”).

Synonyms: *Euphoria longana* Lam., *Nephelium longana* (Lam.) Cambess.

Dimocarpus longan Lour. subsp. *longan*

Family: Sapindaceae

Grin Nomen Number: 403166

Common Names: longan (English).

Native: ASIA TROPICAL – *Indo-China*: Cambodia, Laos, Thailand; *Malesia*: Indonesia, Malaysia.

Field Infestation:

McBride and Tanada 1949:

Honolulu, Hawaii, U.S.A.

Ninety-four (94) *D. longan* fruits (listed as *Euphoria longan* [Lour.] Steud.) were collected on 14 July 1947, in Nuuanu, Honolulu, by M. Chong. Recovered from these fruits were 10 *B. dorsalis* (listed as *Dacus dorsalis*), and 2 *B. cucurbitae* (listed as *Dacus cucurbitae*). The authors listed *D. longan* as a doubtful host.

Listing Only: Chawla 1966 (listed as *Dacus cucurbitae*; listed as *Euphoria longan* [Lour.] Steud.); Dhillon et al. 2005a (listed as *Euphoria longan*); Holbrook 1967 (listed as *Euphoria longan*; listed as a “non-host or host of undetermined status”); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Euphorbia longan*, which is listed as a doubtful host); USDA 1986 (listed as *Dacus cucurbitae*; listed as *Euphorbia longan*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Euphoria longan*; insufficient data to justify regulation).

Synonyms: *Euphoria longan* (Lour.) Steud., *Nephelium longan* (Lour.) Hook.

Diospyros digyna Jacq.

Family: Ebenaceae

Grin Nomen Number: 14280

Common Names: barbaquois (French), black persimmon (English), black sapote (English), Ebenholzbaum (German), schwarze Sapote (German), sapote negro (Spanish), svart sapote (Swedish), zapote negro (Spanish).

Native: SOUTHERN AMERICA – *Central America*: Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama; *Western South America*: Colombia.

Cultivated: also cultivated.

Interception Data:

PestID 2016:

Nigeria

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Diospyros digyna* fruit(s), originating in Nigeria, at an airport in Michigan (Detroit) on one occasion in 2001. Recovery was one live larva.

Diplocyclos palmatus (L.) C. Jeffrey

Family: Cucurbitaceae

Grin Nomen Number: 409855

Common Names: lollipop-climber (English), polkagrisreva (Swedish), striped-cucumber (English).

Native: AFRICA – *Northeast Tropical Africa*: Ethiopia, Sudan; *East Tropical Africa*: Kenya, Tanzania, Uganda; *West-Central Tropical Africa*: Burundi, Equatorial Guinea – Bioko; Rwanda, Sao Tome and Principe, Zaire; *South Tropical Africa*: Mozambique, Zambia; ASIA-TEMPERATE – *China*: China – Guangdong, Guangxi; *Eastern Asia*: Japan – Ryukyu Islands, Taiwan; ASIA-TROPICAL – *Indian Subcontinent*: Bhutan, India – Karnataka, Madhya Pradesh, Rajasthan, Uttar Pradesh, West Bengal; Nepal, Sri Lanka; *Indo-China*: Cambodia, Vietnam; *Malesia*: Malaysia, Philippines; AUSTRALASIA – *Australia*: Australia – Northern Territory, Queensland, Western Australia.

Cultivated: also cultivated.

Field Infestation:

Iwahashi 1977:

Kume Island, Okinawa Islands, Japan

Over 2,000 wild *D. palmatus* fruits (listed as *Bryonopsis laciniosa*) were collected monthly from June 1972 to January 1975 on Kume Island and assessed for infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). These collections were made before the start of an SIT-based eradication program, but male annihilation efforts and protein bait sprays were applied from November 1972 to January 1975. Infestation was assessed through dissection of fruits with apparent infestation or punctures and holding all other collected fruits on moistened sand. Average percentage infestation ranged from 2.56 to 23.62%.

Iwahashi et al. 1976:

Kume Island, Okinawa Islands, Japan

Wild *D. palmatus* fruits (listed as *Bryonopsis laciniosa*) were collected monthly from June 1972 to January 1975 on Kume Island and assessed for infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). These collections were made before the start of an SIT-based eradication program, but male annihilation efforts and protein bait sprays were applied from November 1972 to January 1975. Infestation was assessed through dissection of fruits with apparent infestation or punctures and holding all other collected fruits on moistened sand. Out of 4,910 *D. palmatus* fruits collected from June

1972–January 1975 on Kume Island (before the start of SIT), 277 fruits were found to be infested. The average monthly infestation rate was 6.44% (range: 1.28–12.0%).

Iwaizumi 1993:

Southern Okinawa Island, Japan

Diplocyclos palmatus fruits were collected monthly in the southern part of Okinawa Island from May through June 1987 and December 1987 through February 1988, and held on sand in plastic containers until adult fly emergence. Out of 1,955 fruits collected, 100 were infested by *B. cucurbitae* (listed as *Dacus cucurbitae*), with an average monthly infestation rate of 4.38% (range: 0.0–17.2%).

Kittayapong et al. 2000:

Thailand

Diplocyclos palmatus fruits (listed as *Bryonopsis laciniosa*) were collected throughout Thailand within the time period of October 1995 to December 1998. Collections were placed over sawdust in a ventilated plastic container and brought back to the laboratory at Mahidol University in Bangkok. *Bactrocera cucurbitae*, *Bactrocera rubella* (Hardy) and *B. tau* sp. A were all recovered from *D. palmatus* fruits. Total number of fruits collected and infestation rate data were not given.

Koyama et al. 1981:

Minatogawa, Okinawa, Japan

Twelve thousand three hundred fifteen (12,315) *Diplocyclos palmatus* fruits were collected in Minatogawa over the course of 12 monthly collections extending from June 1979 to May 1980. The number of fruits collected per collection ranged from 438 to 1,459 and averaged 1,026.25. *Bactrocera cucurbitae* (listed as *Dacus cucurbitae*) was recovered in 11 of 12 collections (91.7%). Out of 12,315 fruits collected, 443 were infested by *B. cucurbitae* (3.60%). The average monthly infestation rate by *B. cucurbitae* was 4.76% (range: 0.0–18.8%). Totals of 1,376 pupa and 1,109 adults of *B. cucurbitae* were recovered. Average monthly *B. cucurbitae* recoveries were 0.145 pupae/fruit, 3.28 pupae/infested fruit, 0.116 adults/fruit and 2.96 adults/infested fruit. Overall *B. cucurbitae* recoveries averaged 0.112 pupae/fruit, 3.11 pupae/infested fruit, 0.090 adults/fruit and 2.50 adults/infested fruit.

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 392,313 *D. palmatus* fruits were collected (449 collections overall) from five islands/island groups (Amami, Kume, Miyako, Okinawa, Yaeyama) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 18,905 fruits, giving an average percentage infestation rate (weighted by the number of collections in the islands/island groups) of 4.1%.

Tsuruta et al. 1997:

Sri Lanka

Sixty-three (63) *B. cucurbitae* adults were recovered from *D. palmatus* flowers and galls in Sri Lanka. Recoveries from flowers came from Kiralogama (46), Kalakaradawa (1), and Laggala (3). Recoveries from galls came from Laggala (13). No infestation rate data were given.

Listing Only: CABI 2016 (listed as a wild host); Chawla 1966 (listed as *Dacus cucurbitae*; listed as *Bryonopsis laciniosa* [L.] Naud.); Copeland et al. 2009; De Meyer et al. 2014; Dhillon et al. 2005a; Holbrook 1967 (listed as *Bryonopsis laciniosa*); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Bryonopsis laciniosa*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as *Bryonopsis laciniosa* [L.] Naud.); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as *Bryonopsis laciniosa*); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *Bryonopsis laciniosa*); Okinawa Prefectural Fruit Fly Eradication Project 1987 (listed as *Dacus cucurbitae*); Plantwise Knowledge Bank 2015; Prokopy and Koyama 1982 (listed as *Dacus cucurbitae*); Syed 1971 (listed as *Dacus cucurbitae*; listed as *Bryonopsis laciniosa*); USDA 1986 (listed as *Dacus cucurbitae*; listed as both *Diplocyclos palmatus* and *Bryonopsis laciniosa*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*; listed as both *Bryonopsis laciniosa* and *Diplocyclos palmatus*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Bryonopsis laciniosa*; insufficient data to justify regulation); Weems et al. 2001 (listed as a wild host); White and Elson-Harris 1992 (listed as a wild host).

Synonyms: *Bryonia laciniosa* auct., *Bryonia palmata* L., *Bryonopsis laciniosa* auct., *Zehneria erythrocarpa* F. Muell.

Dolichos lablab L., see *Lablab purpureus* (L.) Sweet subsp. *purpureus*

Dolichos purpureus L., see *Lablab purpureus* (L.) Sweet subsp. *purpureus*

Dolichos sesquipedalis L., see *Vigna unguiculata* (L.) Walp. subsp. *unguiculata* Sesquipedalis Group

Dolichos sinensis L., see *Vigna unguiculata* (L.) Walp. subsp. *unguiculata* Unguiculata Group

Dolichos unguiculata L., see *Vigna unguiculata* (L.) Walp. subsp. *unguiculata* Unguiculata Group

Dracaena curtisii Ridl.

Family: Agavaceae

Grin Nomen Number: No listing in GRIN for this species; naming authority taken from The Plant List.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 1 sample of *Dracaena curtisii* (listed as *Dracaena curtissi*). Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Listing Only: CABI 2016 (listed as a wild host; listed as *D. curtissi*); Cantrell et al. 1999 (listed as *D. curtissi*); De Meyer et al. 2014 (listed as *D. curtissi*); Plantwise Knowledge Bank 2015 (listed as *D. curtissi*).

Dracontomelon dao (Blanco) Merr. and Rolfe

Family: Anacardiaceae

Grin Nomen Number: 14665

Common Names: Argus pheasant-tree (English), dao (Swedish), Drachenapfel (German).

Native: ASIA-TROPICAL – *India Subcontinent:* India; *Indo-China:* Cambodia, Myanmar, Thailand; *Malesia:* Indonesia, Malaysia, Papua New Guinea, Philippines; PACIFIC – *Southwestern Pacific:* Solomon Islands.

Cultivated: also cultivated.

Field Infestation:

Clausen et al. 1965:

Sabah, Malaysia (referred to as North Borneo; place names listed are in present day Sabah, Malaysia)

From collections of *D. dao* in June 1951 in Sabah, Malaysia (referred to as North Borneo), 350 *B. cucurbitae* (listed as *Dacus cucurbitae* Coq) puparia were recovered. *Bactrocera cucurbitae* was the dominant infesting species in *D. dao*.

Listing Only: USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); White and Elson-Harris 1992 (authors state “requires confirmation”).

Synonyms: *Comeurya cumingiana* Baill., *Dracontomelon cumingianum* (Baill.) Baill., *Dracontomelon edule* (Blanco) Skeels, *Dracontomelon mangiferum* (Blume) Blume, *Paliurus dao* Blanco, *Paliurus edulis* Blanco

Dracontomelon cumingianum (Baill.) Baill., see *Dracontomelon dao* (Blanco) Merr. and Rolfe

Dracontomelon edule (Blanco) Skeels, see *Dracontomelon dao* (Blanco) Merr. and Rolfe

Dracontomelon mangiferum (Blume) Blume, see *Dracontomelon dao* (Blanco) Merr. and Rolfe

Endospermum diadenum (Miq.) Airy Shaw

Family: Euphorbiaceae

Grin Nomen Number: 405675

Native: ASIA-TROPICAL – *Indo-China*: Thailand; *Malesia*: Indonesia – Kalimantan, Sumatra; Malaysia.

Listing Only: Holbrook 1967 (listed as *Endospermum malaccense*, which is listed as a synonym of *Endospermum diadenum* by The Plant List); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *Endospermum malaccense*); USDA 1986 (listed as *Dacus cucurbitae*; listed as *Endospermum malaccense*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Endospermum malaccense*; insufficient data to justify regulation).

Synonyms: *Melanolepis diadema* Miq.

Endospermum malaccense Benth. Ex. Müll. Arg., see *Endospermum diadenum* (Miq.) Airy Shaw

Eriobotrya japonica (Thunb.) Lindl.

Family: Rosaceae

Grin Nomen Number: 15602

Common Names: bibasse (Unknown), bibassier (French), Japanese-medlar (English), japanische Mispel (German), japanische Wollmispel (German), japansk mispel (Swedish), loquat (English), lukwart (Afrikaans), néffier du Japon (French), nespereira (Portuguese), níspero (Spanish), níspero del Japón (Spanish), nispolero (Spanish), pi ba (transcribed Chinese).

Native: ASIA-TEMPERATE – *China*: China – Hubei, Sichuan; *Eastern Asia*: Japan – Honshu, Kyushu, Shikoku.

Cultivated: ASIA-TEMPERATE – *Eastern Asia*: Taiwan; also cultivated.

Field Infestation:

Chinajariyawong et al. 2000:

Malaysia

Bactrocera cucurbitae was reared from 1 sample of *E. japonica* collected in Malaysia.

No infestation rate data were given.

+Chong 1952:

Kula, Island of Maui, Hawaii, U.S.A.

One *Diachasmimorpha kraussii* (Fullaway) (listed as *Opius kraussi*) parasitoid was recovered in July, 1951, by Llewellyn Akaka from *Bactrocera cucurbitae* (listed as *Dacus cucurbitae*) that had infested *E. japonica* fruits (listed as loquat).

Interception Data:

PestID 2016:

Nigeria

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Eriobotrya japonica* fruit(s), originating in Nigeria, at an airport in Missouri (St. Louis) on one occasion in 2008. Recovery was one live larva.

Listing Only: +Ramadan and Messing 2003 (listed as loquat); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); Vargas et al. 2004; White and Elson-Harris 1992 (authors state “requires confirmation”).

Synonyms: *Mespilus japonica* Thunb.

Eugenia aquea Burm. f., see *Syzygium aqueum* (Burm. f.) Alston

Eugenia brasiliana (L.) Aubl., see *Eugenia uniflora* L.

Eugenia jambos L., see *Syzygium jambos* (L.) Alston

Eugenia javanica Lam., see *Syzygium samarangense* (Blume) Merr. and L. M. Perry

Eugenia malaccensis L., see *Syzygium malaccense* (L.) Merr. and L. M. Perry

Eugenia michelii Lam., see *Eugenia uniflora* L.

Eugenia myrtifolia Salisb., see *Eugenia uniflora* L.

Eugenia spp.

Family: Myrtaceae

Grin Nomen Number: 312348

Listing Only: Oakley 1950 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*).

Eugenia uniflora L.

Family: Myrtaceae

Grin Nomen Number: 16210

Common Names: Brazil-cherry (English), Cayennekirsche (German), cerezo de Cayena (Spanish), cerisier carré (French), cerisier de Cayenne (French), körsbärsmyrten (Swedish), nagapiry (Spanish), pitanga (Spanish), pitanga-da-praia (Portuguese), pitanga-mulata (Portuguese-Brazil), pitanga-roxa (Portuguese-Brazil), pitanga-vermelha (Portuguese-Brazil), Surinam-cherry (English), Surinam-Kirschmyrte (German), Surinamkirsche (German).

Native: SOUTHERN AMERICA – *Brazil:* Brazil – Minas Gerais, Parana, Rio Grande do Sul, Rio de Janeiro, Santa Catarina, Sao Paulo; *Western South America:* Bolivia – La Paz, Santa Cruz, Tarija; *Southern South America:* Argentina – Catamarca, Chaco, Corrientes, Entre Rios, Formosa, Jujuy, Misiones, Salta, Santa Fe, Tucuman; Paraguay, Uruguay.

Naturalized: AFRICA – *Southern Africa:* South Africa; AUSTRALASIA – *Australia:* Australia – Queensland; NORTHERN AMERICA – United States; SOUTHERN AMERICA – *Caribbean:* West Indies.

Cultivated: also cultivated in tropics.

Listing Only: Holbrook 1967 (listed as a “non-host or host of undetermined status”); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation).

Synonyms: *Eugenia brasiliana* (L.) Aubl., *Eugenia michelii* Lam., *Eugenia myrtifolia* Salisb., *Myrtus brasiliana* L.

Euphorbia geniculata Ortega, see *Euphorbia heterophylla* L.

Euphorbia heterophylla L.

Family: Euphorbiaceae

Grin Nomen Number: 16374

Common Names: adeus-Brasil (Portuguese-Brazil), amendoim-bravo (Portuguese-Brazil), caca poule (French), café-do-diabo (Portuguese-Brazil), flor-do-poeta (Portuguese), golondrina (Spanish), hierba de leche (Spanish), Japanese poinsettia (English), laban el-homara (Arabic), labeinah (Arabic), lechosa (Spanish), leiteira (Portuguese-Brazil), Mexican fireplant (English), milkweed (English), painted euphorbia (English), painted spurge (English), paintedleaf (English), pascuilla (Spanish), Poinsettien-Wolfsmilch (German).

Native: NORTHERN AMERICA – *Southeastern U.S.A.:* United States – Alabama, Florida, Georgia, Louisiana, Mississippi; *South-Central U.S.A.:* United States – Texas; *Southwestern U.S.A.:* United States – Arizona, California; *Northern Mexico:* Mexico – Baja Sur, Chihuahua, Durango, Nuevo Leon, San Luis Potosi, Sinaloa, Sonora, Tamaulipas; *Southern Mexico:* Mexico – Campeche, Chiapas, Colima, Guanajuato, Guerrero, Hidalgo, Jalisco, Mexico, Michoacan, Morelos, Nayarit, Oaxaca, Puebla, Queretaro, Quintana Roo, Tabasco, Veracruz, Yucatan; SOUTHERN AMERICA – *Caribbean:* Anguilla; Antigua and Barbuda; Bahamas; Bermuda; Cayman Islands; Cuba; Dominica; Dominican Republic; Gernada; Haiti; Jamaica; Martinique; Montserrat; Netherlands Antilles; Puerto Rico; St. Lucia; Trinidad and Tobago; Virgin Islands (British), Virgin Islands (U.S.); *Central America:* Belize; Costa Rica; El Salvador; Guatemala; Honduras; Nicaragua; Panama; *Northern South America:* French Guiana; Guyana; Suriname; Venezuela; *Brazil:* Brazil – Amazonas, Bahia, Federal District, Goias, Maranhao, Mato Grosso, Minas Gerais, Parana, Pernambuco, Rio de Janeiro, Rondonia, Santa Catarina, Sao

Paulo; *Western South America*: Bolivia – Cochabamba, La Paz, Santa Cruz; Colombia; Ecuador; Peru; *Southern South America*: Argentina – Cordoba, Corrientes, Formosa, Jujuy, Misiones, Salta, Tucuman; Paraguay; exact native range in neotropics obscure.

Naturalized: naturalized throughout tropic, subtropic, and warm-temperature regions

Listing Only: Botha et al. 2004 (listed as *Euphorbia geniculata*; listed as a wild host).

Synonyms: *Euphorbia geniculata* Ortega, *Euphorbia pruniflora* Jacq., *Poinsettia heterophylla* (L.) Klotzsch and Garcke

Euphorbia longana (Lour.) Steud., see *Dimocarpus longan* Lour. subsp. *longan*

Euphorbia longana Lam., see *Dimocarpus longan* Lour.

Euphorbia pruniflora Jacq., see *Euphorbia heterophylla* L.

Fabaceae Lindl., nom. cons.

Grin Family Number: 440

Listing Only: +Commonwealth Institute of Entomology 1978 (listed as legumes); European and Mediterranean Plant Protection Organization 2015 (listed as a minor host); +Terry 1906 (listed as *Dacus cucurbitae*; listed as leguminous plant fruits).

Synonyms: *Acaciaceae* E. Mey., *Aspalathaceae* Martinov, *Astragalaceae* Bercht. and J. Presl, *Caesalpiniaceae* R. Br., nom. cons., *Cassiaceae* Vest, *Ceratoniaceae* Link, *Detariaceae* Hess, *Hedysaraceae* Bercht. and J. Presl, *Inocarpaceae* Zoll., *Leguminosae* Juss., nom. cons., *Mimosaceae* R. Br., nom. cons., *Papilionaceae* Giseke, nom. cons., *Phaseolaceae* Mart., *Swartziaceae* Bartl., *Viciaceae* Oken

Feijoa sellowiana (O. Berg) O. Berg, see *Acca sellowiana* (O. Berg) Burret

Ficus beecheyana Hook. and Arn., see *Ficus erecta* Thunb.

Ficus bibracteata Miq., see *Ficus* spp.

Ficus caprificus Risso, see *Ficus carica* L.

Ficus carica L.

Family: Moraceae

Grin Nomen Number: 16801

Common Names: anjir (India-Hindi), carique (French), common fig (English), echte Feige (German), Essfeige (German), Feigenbaum (German), fico (Italian), fig (English), figo (Portuguese-Brazil), figueira (Portuguese), figueira-comum (Portuguese-Brazil), figueira-da-europa (Portuguese-Brazil), figueira-do-reino (Portuguese-Brazil), figuier commun (French), fikon (Swedish), getfikon (Swedish), higo (Spanish), higuera común (Spanish), muhwagwanamu (transcribed Korean), teen (Arabic), wu hua guo (transcribed Chinese).

Native: AFRICA – *Northern Africa*: Algeria, Morocco, Tunisia; ASIA-TEMPERATE – *Western Asia*: Afghanistan; Cyprus; Egypt – Sinai, Iran, Iraq, Israel, Jordan, Lebanon, Syria, Turkey; *Caucasus*: Azerbaijan; *Middle Asia*: Tajikistan, Turkmenistan; ASIA-TROPICAL – *Indian Subcontinent*: Pakistan; EUROPE – *Southeastern Europe*: Greece, Crete, Italy, Sardinia, Sicily; *Southwestern Europe*: France, Corsica, Spain – Balears; native range obscure.

Naturalized: AFRICA – *Macaronesia*: Cape Verde, Portugal – Azores, Madeira Islands; Spain – Canary Islands; AUSTRALASIA – *Australia*: Australia; *New Zealand*: New Zealand; EUROPE – Europe; NORTHERN AMERICA – United States; SOUTHERN AMERICA – *Western South America*: Ecuador – Galapagos Islands.

Cultivated: Widely cultivated in tropics and subtropics.

Field Infestation:

+Back and Pemberton 1917:

Kaimuki, Island of Oahu, Hawaii, U.S.A.

Ficus carica (listed as fig) is listed as “occasionally infested” by *B. cucurbitae*. The authors reported that O. H. Swezy reared adult melon flies from figs grown in Kaimuki, on the Island of Oahu, Hawaii. The authors, though, further noted that this is one of several fruits that has “never been known to serve regularly” as a melon fly host and that this record of infestation “must be considered as exceptional.”

+Back and Pemberton 1918:

Hawaii, U.S.A.

Ficus carica (listed as fig) is listed as “occasionally infested” by *B. cucurbitae*. The authors stated that adult melon flies have been reared from fig, but that fig does not serve regularly as a host; that it is attacked by melon fly only in rare instances, and then only slightly.

Listing Only: Botha et al. 2004 (listed as a secondary host); CABI 2016; California Department of Food and Agriculture 2001; Cantrell et al. 1999; Chawla 1966 (listed as *Dacus cucurbitae*); Dhillon et al. 2005a; +Hawaii Department of Agriculture 2009 (listed as fig); +Heppner 1989 (listed as *Dacus cucurbitae*; listed as fig); Holbrook 1967 (listed as “occasionally infested”); Hollingsworth et al. 1996; Kandybina 1987 (listed as *Dacus cucurbitae*); Kapoor 1970 (listed as *Dacus cucurbitae*); +Khan et al. 1989 (listed as *Dacus cucurbitae*; listed as fig); +Margosian et al. 2009 (listed as fig); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as rarely injured); +NAPPO, PAS 2015 (listed as fig); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); +Phillips 1946 (listed as figs); Plantwise Knowledge Bank 2015; +Rajamannar 1962 (listed as *Dacus cucurbitae*; listed as fig); Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host); +USDA-ARS 1959 (listed as fig); +Weems 1964 (listed as *Dacus cucurbitae*; listed as fig; listed as an occasional host); +Weems 1967 (listed as *Dacus cucurbitae*; listed as fig; listed as an occasional host); +Weems et al. 2001 (listed as fig; listed as an occasional host); White and Elson-Harris 1992.

Synonyms: *Ficus caprificus* Risso, *Ficus carica* var. *caprificus* (Risso) Tschirch and Ravasini

Ficus carica var. *caprificus* (Risso) Tschirch and Ravasini, see *Ficus carica* L.

Ficus chartacea (Wall. ex Kurz) Wall. ex King

Family: Moraceae

Grin Nomen Number: No listing in GRIN for this species; naming authority taken from The Plant List.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

In 1992, *B. cucurbitae* was recovered from 1 sample of *F. chartacea*. Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Listing Only: CABI 2016 (listed as a wild host); Cantrell et al. 1999; De Meyer et al. 2014; Plantwise Knowledge Bank 2015.

Ficus erecta Thunb.

Family: Moraceae

Grin Nomen Number: 16836

Common Names: Ai xiao tian xian guo (transcribed Chinese).

Native: ASIA-TEMPERATE – *China*: China – Fujian, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Yunnan, Zhejiang; *Eastern Asia*: Japan – Honshu, Kyushu, Ryukyu Islands, Shikoku; Korea, South – Cheju; Taiwan; ASIA-TROPICAL – *Indo-China*: Vietnam.

Cultivated: also cultivated.

Field Infestation:

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 34,749 *F. erecta* fruits were collected (19 collections overall) from one island/island group

(Okinawa) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 3 fruits, giving an average percentage infestation rate (weighted by the number of collections in the island/island group) of 0.0025%.

Synonyms: *Ficus beecheyana* Hook. and Arn., *Ficus erecta* L. var. *beecheyana* (Hook. and Arn.) King

Ficus erecta L. var. *beecheyana* (Hook. and Arn.) King, see *Ficus erecta* Thunb.

Ficus hookeri Sweet, see *Ficus* spp.

Ficus lucida Aiton, see *Ficus* spp.

Ficus pumila L.

Family: Moraceae

Grin Nomen Number: 16951

Common Names: Bi li (transcribed Chinese), climbing fig (English), creeping fig (English), creeping rubberplant (English), figvine (English), figuier rampant (French), higuera trepadora (Spanish), klätterfikus (Swedish), Kletterfeige (German), ō-itabi (Japanese Rōmaji).

Native: ASIA-TEMPERATE – *China:* China-Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang; *Eastern Asia:* Japan – Honshu, Kyushu, Ryukyu Islands, Shikoku; Taiwan; ASIA-TROPICAL – *Indo-China:* Vietnam.

Cultivated: widely cultivated.

Field Infestation:

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 12,101 *F. pumila* fruits were collected (19 collections overall) from one island/island group (Okinawa) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 7 fruits, giving an average percentage infestation rate (weighted by the number of collections in the islands/island groups) of 0.015%.

Ficus spp.

Family: Moraceae

Grin Nomen Number: 310932

Listing Only: Government of Western Australia Department of Agriculture and Food 2015 (listed as *Ficus*).

Synonyms: *Ficus bibracteata* Miq., *Ficus hookeri* Sweet, *Ficus lucida* Aiton, *Ficus wendlandii* hort. ex Gentil, nom. nud.

Ficus wendlandii hort. ex Gentil, nom. nud., see *Ficus* spp.

Fragaria ×ananassa Duchesne ex Rozier

Family: Rosaceae

Grin Nomen Number: 244

Common Names: Ananaserdbeere (German), Erdbeere (German), fresa (Spanish), fresa ananás (Spanish), fraisier (French), fraisier ananas (French), garden strawberry (English), Gartenerdbeere (German), Kulturerdbeere (German), morangueiro (Portuguese), oranda-ichigo (Japanese Rōmaji), strawberry (English), ttalgi (transcribed Korean).

Native: NORTHERN AMERICA – *Western Canada:* Canada – British Columbia; *Northwestern U.S.A.:* United States – Oregon, Washington; *Southwestern U.S.A.:* United States – California.

Cultivated: Widely cultivated.

Lab Infestation:

Iwaizumi et al. 1994:

Intact, mature *F. ×ananassa* fruits were exposed to 10 gravid female *B. cucurbitae* for 24 hours in a screen-net cage. An average (over three replications) of 19.3±9.0 adults was recovered. Strawberries punctured several times with insect pins were similarly exposed to 10 gravid females, with an average recovery of 11.3±16.0 adult flies.

Synonyms: *Fragaria chiloensis* var. *ananassa* (Duchesne ex Rozier) Ser., *Fragaria ×magna* auct., *Potentilla ×ananassa* (Duchesne ex Rozier) Mabb.

Fragaria ×magna auct., see *Fragaria ×ananassa* Duchesne ex Rozier

Fragaria chiloensis (L.) Mill.

Family: Rosaceae

Grin Nomen Number: 246

Common Names: beach strawberry (English), Chilean strawberry (English), Chileerdbeere (German), chilère (French), Chiloe strawberry (English), fraisier du Chili (French), fresa chilena (Spanish), frutilla (Spanish), moranguiero-do-Chile (Portuguese).

Native: NORTHERN AMERICA – *Subarctic America*: United States – Alaska; *Western Canada*: Canada – British Columbia; *Northwestern U.S.A.*: United States – Oregon, Washington; *Southwestern U.S.A.*: United States – California; PACIFIC – *North-Central Pacific*: United States – Hawaii; SOUTHERN AMERICA – *Southern South America*: Argentina; Chile.

Cultivated: SOUTHERN AMERICA – *Western South America*: Bolivia, Ecuador, Peru; *Southern South America*: Argentina; Chile.

Listing Only: Cantrell et al. 1999; Chawla 1966 (listed as *Dacus cucurbitae*); Dhillon et al. 2005a (listed as *Fragaria chiloensis*); Holbrook 1967; Kapoor 1970 (listed as *Dacus cucurbitae*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); White and Elson-Harris 1992 (authors state “requires confirmation”).

Fragaria chiloensis var. *ananassa* (Duchesne ex Rozier) Ser., see *Fragaria ×ananassa* Duchesne ex Rozier

Fragaria sp.

Family: Rosaceae

Grin Nomen Number: 300221

Listing Only: Oakley 1950 (listed as *Dacus cucurbitae*; listed as *Fragaria* sp. [experimentally]).

Fragaria vesca L.

Family: Rosaceae

Grin Nomen Number: 264

Common Names: alpine strawberry (English), besuka-ichigo (Japanese Rōmaji), European strawberry (English), ezo-hebi-ichigo (Japanese Rōmaji), ezo-no-hebi-ichigo (Japanese Rōmaji), fraisier commun (French), fraisier des bois (French), fresa silvestre (Spanish), fresal común (Spanish), morangueiro-bravo (Portuguese), smultron (Swedish), Walderdbeere (German), wild strawberry (English), woodland strawberry (English), ye cao mei (transcribed Chinese).

Native: AFRICA – *Northern Africa*: Tunisia; ASIA-TEMPERATE – *Western Asia*: Iran, Turkey; *Caucasus*: Armenia, Azerbaijan, Russian Federation – Ciscaucasia, Dagestan; *Siberia*: Russian Federation – Altay, Buryatia, Gorno-Altay, Irkutsk, Kemerovo, Krasnoyarsk, Kurgan, Novosibirsk, Omsk, Tomsk, Tuva, Tyumen; *Middle Asia*: Kazakhstan; Kyrgyzstan; *Mongolia*: Mongolia; *China*: China-Gansu, Guizhou, Jilin, Shaanxi, Sichuan, Xinjiang, Yunnan; EUROPE – *Northern Europe*: Denmark, Finland, Iceland, Ireland, Norway, Sweden, United Kingdom; *Middle Europe*: Austria, Belgium, Czech Republic, Germany, Hungary, Netherlands, Poland, Slovakia, Switzerland; *East Europe*: Belarus, Estonia, Latvia, Lithuania, Russian Federation – European part, Ukraine; *Southeastern Europe*: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Italy, Macedonia, Montenegro, Romania, Serbia, Slovenia; *Southwestern Europe*: France, Portugal, Spain; NORTHERN AMERICA – *Eastern Canada*:

Canada – New Brunswick, Newfoundland, Nova Scotia, Ontario, Quebec; *Western Canada*: Canada – Alberta, British Columbia, Manitoba, Saskatchewan; *Northeastern U.S.A.*: United States – Connecticut, Indiana, Maine, Massachusetts, New Hampshire, New York, Ohio, Pennsylvania, Vermont, West Virginia; *North-Central U.S.A.*: United States-Iowa, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, Wisconsin; *Northwestern U.S.A.*: United States – Colorado, Idaho, Montana, Oregon, Washington, Wyoming; *Southeastern U.S.A.*: United States – Delaware, Kentucky, Maryland, North Carolina, Virginia; *South-Central U.S.A.*: United States – New Mexico, Texas; *Southwestern U.S.A.*: United States – Arizona, California, Nevada, Utah.

Naturalized: AFRICA – *Macaronesia*: Portugal – Azores, Spain – Canary Islands; *Southern Africa*: South Africa – Eastern Cape, Limpopo, Mpumalanga, Western Cape; ASIA-TEMPERATE – *Eastern Asia*: Japan-Hokkaido; AUSTRALIA – New Zealand: *New Zealand*; NORTHERN AMERICA – *Eastern Canada*: Canada-Prince Edward Island, Mexico; SOUTHERN AMERICA – *Caribbean*: Cuba, Dominican Republic, Haiti, Jamaica; *Central America*: Guatemala; *Northern South America*: Venezuela; *Brazil*: Brazil; *Western South America*: Bolivia, Colombia, Ecuador, Peru; *Southern South America*: Argentina.

Field Infestation:

Fadlelmula and Ali 2014:

Blue Nile State, Sudan

Samples of 10 to 50 suspected infested *F. vesca* fruits were collected from plants in five localities of Blue Nile State, Sudan, during the 2009 to 2010 and 2010 to 2011 growing seasons. Collected fruits were held on moist sand in mesh-covered aerated plastic containers. Pupae were collected from the sand by sieving and transferred to Petri dishes for adult emergence. *Bactrocera cucurbitae* was recovered from *F. vesca* fruits in one of the five localities (Damazine area).

Synonym: *Fragaria insularis* Rydb.

Garcinia spp.

Family: Clusiaceae

Grin Nomen Number: 312374

Field Infestation:

Clausen et al. 1965:

Sri Lanka (referred to as Ceylon)

A small number of *Bactrocera cucurbitae* (listed as *Dacus cucurbitae*) was recovered from a small lot of fruits of *Garcinia* sp. (*Bactrocera dorsalis* [listed as *Dacus dorsalis*] was the dominant species).

Listing Only: USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*).

Synonyms: *Rheedia* spp.

Gijefa (M. Roem.) Post and Kuntze, see *Kedrostis* Medik.

Granadilla hondala Gaertn., see *Adenia hondala* (Gaertn.) W. J. de Wilde

Gymnopetalum integrifolium (Roxb.) Kurz, see *Gymnopetalum scabrum* (Lour.) W. J. de Wilde and Duyffjes

Gymnopetalum scabrum (Lour.) W. J. de Wilde and Duyffjes

Family: Cucurbitaceae

Grin Nomen Number: no listing in GRIN for this species; naming authority taken from The Plant List.

Distribution: India and Ceylon; Malay Peninsula, Thailand, Indochina and Indonesia (Java).

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 4 samples of *G. scabrum* (listed as *Gymnopetalum integrifolium*). Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Listing Only: CABI 2016 (listed as *Gymnopetalum integrifolium*; listed as a wild host); Cantrell et al. 1999 (listed as *Gymnopetalum integrifolium*); De Meyer et al. 2014 (listed as *Gymnopetalum integrifolium*); Plantwise Knowledge Bank 2015 (listed as *Gymnopetalum integrifolium*).

Hedysaraceae Bercht. and J. Presl, see *Fabaceae* Lindl., nom. cons.

Helianthus annuus L.

Family: Asteraceae

Grin Nomen Number: 27923

Common Names: alizeti (Swahili), girasol (Spanish), girasole (Italian), girassol (Portuguese), grand soleil (French), haebaragi (transcribed Korean), himawari (Japanese Rōmaji), solros (Swedish), Sonnenblume (German), sunflower (English), tournesol (French).

Native: NORTHERN AMERICA – *Western Canada:* Canada – Alberta, British Columbia, Manitoba, Saskatchewan; *Northeastern U.S.A.:* United States – Connecticut, Indiana, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, West Virginia; *North-Central U.S.A.:* United States – Illinois, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, Wisconsin; *Northwestern U.S.A.:* United States – Colorado, Idaho, Montana, Oregon, Washington, Wyoming; *Southeastern U.S.A.:* United States – Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia; *South-Central U.S.A.:* United States – New Mexico, Texas; *Southwestern U.S.A.:* United States – Arizona, California, Nevada, Utah; *Northern Mexico:* Mexico – Baja Norte, Chihuahua, Coahuila, Durango, Nuevo Leon, Sonora, Tamaulipas; probably not native in the United States.

Naturalized: NORTHERN AMERICA – *Subarctic America:* Canada – Northwest Territory; *Eastern Canada:* Canada – New Brunswick, Nova Scotia, Ontario, Prince Edward Island, Quebec; widely naturalized.

Cultivated: Widely cultivated.

Listing Only: Dhillon et al. 2005a (listed as *Helianthus annuus*).

Synonyms: *Helianthus annuus* subsp. *jaegeri* (Heiser) Heiser, *Helianthus annuus* subsp. *lentifularis* (Douglas) Cockerell, *Helianthus annuus* var. *macrocarpus* (DC.) Cockerell, *Helianthus annuus* subsp. *texanus* Heiser, *Helianthus annuus* [unranked] *lenticularis* (Douglas) Cockerell, *Helianthus jaegeri* Heiser, *Helianthus lenticularis* Douglas

Helianthus annuus subsp. *jaegeri* (Heiser) Heiser, see *Helianthus annuus* L.

Helianthus annuus subsp. *lentifularis* (Douglas) Cockerell, see *Helianthus annuus* L.

Helianthus annuus var. *macrocarpus* (DC.) Cockerell, see *Helianthus annuus* L.

Helianthus annuus subsp. *texanus* Heiser, see *Helianthus annuus* L.

Helianthus annuus [unranked] *lenticularis* (Douglas) Cockerell, see *Helianthus annuus* L.

Helianthus jaegeri Heiser, see *Helianthus annuus* L.

Helianthus lenticularis Douglas, see *Helianthus annuus* L.

Hibiscus esculentus L., see *Abelmoschus esculentus* (L.) Moench

Hylocereus undatus (Haw.) Britton and Rose

Family: Cactaceae

Grin Nomen Number: 19487

Common Names: belle-of-the-night (English), chacam (Spanish), chak-wob (Spanish), Distelbirne (German), dragon-fruit (English), junco tapatio (Spanish), moonlight cactus (English), night-blooming cereus (English), pitahaya (Spanish), pitahaya dulce (Spanish), pitahaya orejona (Spanish), pitahaya rouge (French), pitaya (French), queen-of-the-night (English), red pitaya (English), reina de la noche (Spanish), röd pitahaya (Swedish), strawberry-pear (English), tasajo (Spanish), zacamb (Spanish).

Naturalized: AFRICA – *Southern Africa*: South Africa; *Western Indian Ocean*: Réunion; ASIA-TEMPERATE – *China*: China; *Eastern Asia*: Taiwan; AUSTRALASIA – *Australia*: Australia – New South Wales, Queensland; NORTHERN AMERICA – *Southeastern U.S.A.*: United States – Florida; PACIFIC – *North-Central Pacific*: United States – Hawaii; *Southwestern Pacific*: New Caledonia, Niue; SOUTHERN AMERICA – Brazil: Brazil; *Southern South America*: Chile – Juan Fernandez.

Cultivated: Widely cultivated.

Origin: Neotropics.

Field Infestation:

McQuate 2010:

Kapoho, Hawaii Island, Hawaii, U.S.A.

During 2007 to 2008, *Hylocereus undatus* varieties, ‘Sweetest One’ and ‘Pink Star’, which were both previously imported into Hawaii from Thailand, were monitored on a 2-ha farm at an elevation of 184 m in Kapoho, Hawaii. From this plot, *B. cucurbitae* was recovered from dragonfruit in both 2007 and 2008. During 2007, 5 nonrandomly selected fruits, weighing a total of 0.9 kg, were collected on 10 October. Two (2) out of 5 fruits were infested with a total of 120 *B. cucurbitae* for an average infestation rate of 272.0 flies/kg infested fruit. No *B. dorsalis* were recovered. On 14 November 2007, 49 randomly selected fruits were collected for a total weight of 13.0 kg. Three (3) out of 49 fruits (6.1%) were infested by *B. cucurbitae*, 2 of which were also infested with *B. dorsalis*. Total recovery was 13 *B. cucurbitae* out of a total of 30 fruit flies, for average infestation rates of 1.0 *B. cucurbitae* flies/kg fruit and 13.8 *B. cucurbitae* flies/kg infested fruit.

On 12 November 2008, 50 randomly selected fruits were collected for a total weight of 15.5 kg. Four (4) out of 50 fruits (8.0%) were infested by *B. cucurbitae*, 3 of which were also infested with *B. dorsalis*. Total recovery was 23 *B. cucurbitae* out of a total of 167 fruit flies, for average infestation rates of 1.48 *B. cucurbitae* per kg fruit and 13.1 *B. cucurbitae* flies/kg infested fruit.

Interception data:

Iwaizumi et al. 1995:

Tokyo, Japan

On 12 August 1994, 11 *B. cucurbitae* larvae were detected in *H. undatus* fruits that had been imported from Vietnam into Japan. Eight (8) adults emerged: 5 males and 3 females.

Lab Infestation:

Iwaizumi et al. 1995:

Each of 6 *H. undatus* fruits (3 intact and 3 punctured) was exposed individually to 10 gravid *B. cucurbitae* females for 24 hours in a screened cage. An average of 139.7±91.1 (standard deviation) *B. cucurbitae* adults emerged from the intact fruits, while an average of 81.3±134.0 adults emerged from the punctured fruits.

Synonyms: *Cereus undatus* Haw.

Inocarpaceae Zoll., see *Fabaceae* Lindl., nom. cons.

Ipomoea batatas (L.) Lam.

Family: Convolvulaceae

Grin Nomen Number: 20142

Native: NORTHERN AMERICA – *Southern Mexico*: Mexico – Veracruz.

Naturalized: Widely naturalized in tropics.

Cultivated: Cultivated worldwide.

Origin: Neotropics.

Listing Only: +EcoPort 2008 (listed as sweet potato).

Synonyms: *Convolvulus batatas* L., *Ipomoea apiculata* M. Martens and Galeotti, *Ipomoea batatas* var. *apiculata*, *Ipomoea batatas* var. *batatas*

Jatropha sp.

Family: Euphorbiaceae

Grin Nomen Number: 312392

Interception Data:

PestID 2016:

Mali

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Jatropha* sp. fruit(s), originating in Mali, at an airport in Texas (Houston) on one occasion in 2008. Recovery was 20 live larvae.

Juglans californica var. *hindsii* Jeps., see *Juglans hindsii* Jeps. ex R. E. Sm.

Juglans duclouxiana Dode, see *Juglans regia* L.

Juglans fallax Dode, see *Juglans regia* L.

Juglans hindsii Jeps. ex R. E. Sm.

Family: Juglandaceae

Grin Nomen Number: 20747

Common Names: Hinds’s black walnut (English), Hinds’s walnut (English), kalifornische Walnuß (German), northern California black walnut (English), northern California walnut (English).

Native: NORTHERN AMERICA – *Southwestern U.S.A.*: United States – California.

Cultivated: also cultivated.

Field Infestation:

Maehler 1951:

Kula, Island of Maui, Hawaii, U.S.A.

K. L. Maehler reported recovering three different species of fruit flies from *Juglans hindsii* fruit(s) collected in November (1949?) at an elevation of 1,067 m at Kula, on the Island of Maui: *Bactrocera cucurbitae* (listed as *Dacus cucurbitae*), *B. dorsalis* (listed as *D. dorsalis*), and *C. capitata*. Out of 10 puparia obtained, 1 *B. cucurbitae*, 2 male *B. dorsalis*, and 3 *C. capitata* were recovered.

Listing Only: Holbrook 1967; Hollingsworth et al. 1996; USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); White and Elson-Harris 1992.

Synonyms: *Juglans californica* var. *hindsii* Jeps.

Juglans kamaonica (C. DC.) Dode, see *Juglans regia* L.

Juglans orientis Dode, see *Juglans regia* L.

Juglans regia L.

Family: Juglandaceae

Grin Nomen Number: 20772

Common Names: Carpathian walnut (English), echte Walnuß (German), English walnut (English), hu tao (transcribed Chinese), nogal común (Spanish), nogal europeo (Spanish), nogal inglés (Spanish), nogueira-comum (Portuguese), nogueira-européia (Portuguese-Brazil), Madeira walnut (English), noyer commun (French), Persian walnut (English), valnöt (Swedish), walnut (English).

Native: ASIA-TEMPERATE – *Western Asia*: Afghanistan, Iran, Iraq, Turkey; *Caucasus*: Azerbaijan; *Middle Asia*: Tajikistan, Turkmenistan; ASIA-TROPICAL – *Indian Subcontinent*: Pakistan; EUROPE – *Middle Europe*: Czech Republic, Slovakia; *Southeastern Europe*: Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Macedonia, Montenegro, Serbia, Slovenia.

Naturalized: Widely naturalized elsewhere in temperate regions.

Cultivated: also cultivated.

Listing Only: USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation).

Synonyms: *Juglans duclouxiana* Dode, *Juglans fallax* Dode, *Juglans kamaonica* (C. DC.) Dode, *Juglans orientis* Dode, *Juglans regia* subsp. *kamaonica* (C. DC.) Mansf., *Juglans regia* var. *orientis* (Dode) Kitam., *Juglans regia* var. *sinensis* C. DC., *Juglans sinensis* (C. DC.) Dode

Juglans regia subsp. *kamaonica* (C. DC.) Mansf., see *Juglans regia* L.

Juglans regia var. *orientis* (Dode) Kitam., see *Juglans regia* L.

Juglans regia var. *sinensis* C. DC., see *Juglans regia* L.

Juglans sinensis (C. DC.) Dode, see *Juglans regia* L.

Juglans spp.

Family: Juglandaceae

Grin Nomen Number: 300288

Listing Only: Holbrook 1967; +Margosian et al. 2009 (“possibly”; listed as walnut).

Kedrostis hirtella (Naudin) Cogn., see *Kedrostis leloja* (Forssk.) C. Jeffrey

Kedrostis leloja (Forssk.) C. Jeffrey

Family: Cucurbitaceae

Grin Nomen Number: 459864

Native: AFRICA – *Northeast Tropical Africa*: Ethiopia; Somalia; *East Tropical Africa*: Kenya; Tanzania; Uganda; *West-Central Tropical Africa*: Cameroon; Zaire; *West Tropical Africa*: Nigeria; Senegal; *South Tropical Africa*: Angola; Malawi; Zambia; Zimbabwe; *Southern Africa*: Botswana, South Africa – Eastern Cape, Gauteng, KwaZulu-Natal, Mpumalanga, North West, Northern Cape; Swaziland; ASIA-TEMPERATE – *Arabian Peninsula*: Yemen.

Listing Only: Copeland et al. 2009; De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Ndiaye et al. 2012 (listed as *Kedrostis hirtella*).

Synonyms: *Kedrostis hirtella* (Naudin) Cogn., *Kedrostis natalensis* (Hook. f.) A. Meeuse, *Rhynchocharpa hirtella* Naudin, *Toxanthera natalensis* Hook. f., *Turia leloja* Forssk.

Kedrostis Medik. sp.

Family: Cucurbitaceae

Grin Genus Number: 6280

Listing Only: Isnadi 1991 (listed as *Dacus cucurbitae*; listed as *Bryonopsis* sp.; could otherwise be a reference to *Diplocyclos* spp.).

Synonyms: *Aechmandra* Arn.; *Bryonopsis* Arn.; *Cedrostis* Post and Kuntze, orth. var.; *Cerasiocarpum* Hook. f.; *Coniandra* Schrad.; *Cyrtonema* Schrad.; *Gijefa* (M. Roem.) Post and Kuntze; *Pisosperma* Sond.; *Rhynchocharpa* Schrad. ex Endl.; *Toxanthera* Hook. f.

Kedrostis natalensis (Hook. f.) A. Meeuse, see *Kedrostis leloja* (Forssk.) C. Jeffrey

Lablab leucocarpos Savi, see *Lablab purpureus* (L.) Sweet subsp. *purpureus*

Lablab niger Medik., see *Lablab purpureus* (L.) Sweet subsp. *purpureus*

Lablab purpureus (L.) Sweet

Family: Fabaceae

Grin Nomen Number: 104887

Common Names: bian dou (transcribed Chinese), fagiolo d'Egitto (Italian), hjälmböna (Swedish), hyacinth-bean (English), lablab-bean (English).

Native: AFRICA – *Northeast Tropical Africa:* Chad, Ethiopia, Sudan; *East Tropical Africa:* Kenya, Tanzania, Uganda; *West-Central Tropical Africa:* Cameroon, Gabon, Rwanda; *West Tropical Africa:* Côte d'Ivoire, Ghana, Niger, Nigeria, Senegal, Sierra Leone, Togo; *South Tropical Africa:* Angola, Malawi, Mozambique, Zambia, Zimbabwe; *Southern Africa:* Botswana, Namibia, South Africa – Eastern Cape, Free State, Gauteng, KwaZulu – Natal, Limpopo, Mpumalanga, North West, Western Cape, Swaziland; *Western Indian Ocean:* Madagascar.

Cultivated: Widely cultivated.

Listing Only: Cantrell et al. 1999; White and Elson-Harris 1992 (authors state “requires confirmation”).

Lablab purpureus (L.) Sweet subsp. *purpureus*

Family: Fabaceae

Grin Nomen Number: 314607

Common Names: bonavist-bean (English), dolique (French), dolique d'Egypte (French), Faselbohne (German), Helmbohne (German), hyacinth-bean (English), kkachikong (transcribed Korean), lablab-bean (English), Lablab-Bohne (German).

Cultivated: Only cultivated.

Field Infestation:

Lucas 1941:

Hawaii, U.S.A.

On 21 April 1940, 11 *L. purpureus* subsp. *purpureus* fruits (pods) (listed as *Dolichos lablab* L.) were collected from one site (U.H. Nutrition plot) in Hawaii. Pods were held until adult emergence. *Bactrocera cucurbitae* (listed as melon fly) (60 adults) and the braconid parasitoid, *Psyttalia fletcheri* (listed as *Opius fletcheri*) (39 adults), were recovered. All 11 of 11 (100%) *L. purpureus* subsp. *purpureus* pods were infested with an overall infestation rate of 9.0 *B. cucurbitae* per pod.

Listing Only: California Department of Food and Agriculture 2001 (listed as *Dolichos lablab*); Chawla 1966 (listed as *Dacus cucurbitae*; listed as *Dolichos lablab* L.); Dhillon et al. 2005a (listed as *Dolichos lablab*); Holbrook 1967 (listed as *Dolichos lablab*; listed as “occasionally infested”); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Dolichos lablab*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as *Dolichos lablab* L.; listed as occasionally injured); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as *Dolichos lablab*); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *Dolichos lablab*); Syed 1971 (listed as *Dacus cucurbitae*; listed as *Dolichos lablab*); USDA 1986 (listed as *Dacus cucurbitae*; listed as *Dolichos lablab*); USDA-APHIS 2000 (listed as *Dolichos lablab*); USDA-APHIS 2008 (listed as *Dolichos lablab*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*; listed as *Dolichos lablab*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Dolichos lablab*; listed as a preferred host).

Synonyms: *Dolichos lablab* L., *Dolichos purpureus* L., *Lablab leucocarpos* Savi, *Lablab niger* Medik., *Lablab vulgaris* Savi

Lablab vulgaris Savi, see *Lablab purpureus* (L.) Sweet subsp. *purpureus*

Lagenaria amebicana

Family: Cucurbitaceae

Grin Nomen Number: No taxonomic reference found which supports this name.

Listing Only: Dhillon et al. 2005a.

Lagenaria hispida Ser.

Family: Cucurbitaceae

Grin Nomen Number: No listing in GRIN for this sp.; naming authority taken from The Plant List, which indicates that this is an unresolved name.

Listing Only: Cantrell et al. 1999.

Lagenaria lagenaria (L.) Cockerell nom. inval., see *Lagenaria siceraria* (Molina) Standl.

Lagenaria leucantha Rusby, see *Lagenaria siceraria* (Molina) Standl.

Lagenaria leucaritha (Dush) Pusby, see *Lagenaria siceraria* (Molina) Standl.

Lagenaria siceraria (Molina) Standl.

Family: Cucurbitaceae

Grin Nomen Number: 21385

Common Names: acocote (Spanish), bag (transcribed Korean), bottle gourd (English), cabaco (Portuguese), cajombre (Spanish), calabash (English), calabash gourd (English), calabaza (Spanish), calebassier (French), dudhi (India), Flaschenkürbis (German), gewöhnlicher Flaschenkürbis (German), flaskkurbits (Swedish), gourde bouteille (French), guiro amargo (Spanish), hu lu (transcribed Chinese), hyōtan (Japanese Rōmaji), Kalebasse (German), lauki (Pakistan), upo (Tagalog), white-flower gourd (English).

Native: AFRICA – *South Tropical Africa*: Zimbabwe.

Naturalized: Widely naturalized in tropics.

Origin: Paleotropics.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 2 samples of *L. siceraria*. Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Badii et al. 2015:

Northern Ghana

Lagenaria siceraria fruits were collected from Northern, Upper West and Upper East regions of Ghana. Fruits were brought to a laboratory in Nyankpala, Ghana, and held over a layer of sterilized sand. Pupae recovered from the sand were held on moistened filter paper in Petri plates until adult emergence. Adults were killed and identified after being fed for 3 days. Taxonomic keys were used for species identification, with final species confirmation provided by Dr. Maxwell Billah. Adult *B. cucurbitae* were recovered from *L. siceraria* fruits. Also recovered were adult *B. dorsalis* (listed as *Bactrocera invadens*) and *Dacus ciliatus*.

Clausen et al. 1965:

Malaysia (Sabah) (referred to as North Borneo; place names listed are in present day Sabah, Malaysia)

From collections of *L. siceraria* (listed as *Lagenaria leucantha*) from April to July 1951 in Sabah, Malaysia (referred to as North Borneo), 540 puparia were recovered, a mix of two predominant species: *Bactrocera cucurbitae* (listed as *Dacus cucurbitae* Coq.) and *Bactrocera tau* (listed as *Dacus hageni* Meij) (*B. cucurbitae* was the dominant species).

+*Gupta and Verma 1978:*

Hisar (listed as Hissar), State of Haryana, India

Lagenaria siceraria (listed as bottle gourd, var. 'Pusa Summer') was grown from seed planted both 28 February and 31 July 1975, in randomized complete block designs with ten other cucurbit crops in Hisar, Haryana State, India. Fallen and marketable sized fruits were collected/picked every 3 days and assessed for infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). Infestation results were summarized weekly. *Bactrocera cucurbitae* infestation was found in 16 of 22 weekly summaries (72.7%). Overall, 191 (128.1 kg) fruits were collected, of which 41 were infested, for an average of 8.7 fruits collected per week with an average infestation rate of 19.5%.

+*Gupta and Verma 1992:*

State of Himachal Pradesh, India

The average total number of maggots within *L. siceraria* fruits (listed as bottle gourd) in the field was determined from examination of 10 fruits randomly selected on a weekly basis from May to August 1986, and May to October 1987. Maggots included both *B. cucurbitae* (listed as *Dacus*

cucurbitae) and *B. tau* (listed as *D. tau*), with no indication given as to the relative proportion of the two species. Mean maggot population per fruit reached a maximum of 14.07 and 13.63 in 1986 and 1987, respectively.

Jacquard et al. 2013:

Réunion Island, France

Bactrocera cucurbitae-infested *L. siceraria* fruits (listed as *L. leucaritha*) were collected from “Location 5” on Réunion Island from June–September 2009, and held over sand. Puparia, recovered by sifting the sand, were held for adult emergence. Twenty-one (21) adult *B. cucurbitae* were recovered.

+*Jakhar and Pareek 2005:*

Jobner, State of Rajasthan, India

Seeds of nine cucurbit species were sown in a randomized block design with four replications at the Horticultural Farm of S.K.N. College of Agriculture in Jobner, India during the kharif season in 2000. The infestation rate of *L. siceraria* fruits (listed as bottle gourd) by *B. cucurbitae* averaged 16.23% (range: 13.39–20.40%) over the course of 6 collection dates, each 3 days apart, in September–October 2000.

Khan et al. 1993:

Faisalabad, Pakistan

Lagenaria siceraria fruits (listed as *Lagenaria vulgaris* Ser.) (1 fruit at a time) were placed in a cage with adult *B. cucurbitae* flies (listed as *Dacus cucurbitae*) for 24 hours, then, 1 week later, were dissected to count the number of 2nd and 3rd instar larvae. Over five replications, an average of 35.4 and 19.6, 2nd and 3rd instar larvae, respectively, was recovered.

Khandelwal and Nath 1979:

Jobner, State of Rajasthan, India

A trap crop of *L. siceraria* was planted around a field used for screening the relative resistance or susceptibility of *C. lanatus* cultivars to infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). The planting was done to maintain a sufficient *B. cucurbitae* population in the field.

+*Lee 1972:*

Taiwan

Two varieties of *L. siceraria* plants (listed as calabash gourd, variety 1 and variety 2) were grown in the field year-round from 2 June 1969 to 10 June 1970, and from March to August 1971. Fruits, picked 5, 10, and 15 days after flowering, were placed over sand in holding boxes. The sand was screened weekly to recover *B. cucurbitae* pupae (listed as *Dacus cucurbitae*). Pupal recovery per fruit was averaged quarterly for 1969 to 1970 harvests. Pupal recovery per kg fruit was averaged monthly for 1971 harvests. *Bactrocera cucurbitae* pupal recovery averaged 3.9, 7.6, and 15.3 [variety 1] and 3.5, 9.4, and 3.4 [variety 2] pupae/fruit (1969–1970) and 2.8, 12.6, and 12.5 [variety 1] and 45.3, 11.9, and 27.7 [variety 2] pupae/kg fruit (1971) overall, for fruits picked 5, 10, and 15 days after flowering, respectively.

Liquido et al. 1994:

Island of Hawaii, Hawaii, U.S.A.

From July 1990 to October 1992, 3 (1.99 kg) ripe “on vine” or ground *L. siceraria* fruits were collected (through collections made once or twice a month) from several sites on Hawaii Island, Hawaii. Fruits were weighed, counted, and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* larvae and pupae were recovered from infested *L. siceraria* fruits with an overall infestation rate of 184.67 larvae and pupae per fruit (278.39 larvae and pupae/kg fruit).

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 6 *L. siceraria* fruits (listed as *L. siceraria* cv. *Gourda*) were collected (1 collection overall) from one island/island group (Yaeyama) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 1 fruit, giving an average percentage infestation rate (weighted by the number of collections in the island/island group) of 16.7%.

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 39 *L. siceraria* fruits (listed as *L. siceraria* cv. *Hispida*) were collected (6 collections overall) from three islands/island groups (Amami, Okinawa, Yaeyama) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 2 fruits, giving an average percentage infestation rate (weighted by the number of collections in the islands/island groups) of 3.7%.

Mwatawala et al. 2010:

Morogoro Region, Central Tanzania

Fifty-seven (57) immature *L. siceraria* fruits (1.895 kg) were collected at irregular intervals between October 2004 and April 2008, from the Morogoro Region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupariation of infesting tephritid fruit flies. Emerged adults were removed and identified. *Bactrocera cucurbitae* flies were recovered from 1 of 8 collections (12.5%), with an overall infestation rate of 0.53 flies/kg fruit and 200.0 flies/kg infested fruit.

Nath and Bhushan 2006:

Varanasi, State of Uttar Pradesh, India

Lagenaria siceraria was sown, with three replications, in Varanasi, India, the last week of March (summer season) and again the last week of June (rainy season) in both 2001 and 2002. Percentage infestation by *B. cucurbitae* averaged 14.4% (range: 10.7–18.0%) in the summer season and 30.2% (range: 29.9–30.5%) in the rainy season.

+*Nath 1964:*

New Delhi, India

Five experiments with completely randomized design, with three replications, were conducted in New Delhi, India, in the spring, summer, and rainy season of 1963 to test the relative resistance of different cultivars of *L. siceraria* (listed as bottlegourd) to infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). The assessment of resistance or susceptibility was based entirely on the percentage of fruits damaged by *B. cucurbitae* in the field. There was a significant difference among 15 varieties in regards to the degree of resistance to infestation, with infestation ranging from 40–95% (except for one cultivar where infestation averaged only 26%). Total number of fruits collected and infestation rate data were not given.

Nath 1966:

New Delhi, India

A completely randomized design experiment, with three replicates, was conducted at each of three times in 1963 (spring [28 February planting], summer [15 May planting] and rainy season/late Fall [15 July planting]) in New Delhi, India to compare the relative resistance to infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) of 13 different varieties of *L. siceraria*. Fruits were examined twice a week and damaged fruits showing fruit fly punctures were harvested while undamaged fruits were left on the vine. The percentage of total fruits damaged throughout the season was calculated for each variety. Percentage of fruits infested averaged (across varieties) 16.3% (range: 0.0–52.3%), 34.6% (range: 0.0–50.0%) and 65.1% (range: 25.0–100%) in the three planting seasons, respectively.

+*Pareek and Kavadia 1994:*

Jobner and Udaipur, state of Rajasthan, India

Lagenaria siceraria fruits (listed as bottle gourd, variety 'PSP long') were raised in a randomized block design with nine other cucurbit crops (with three replicated plots) for assessment of preference of *B. cucurbitae* (listed as *Dacus cucurbitae*). The trials were conducted from February to June in 1979, and again in 1981, in Udaipur (semi-humid agroclimatic conditions) and in 1980 and 1981 in Jobner (semi-arid agroclimatic condition). Fruits were examined on 10 plants per replicate twice a week, and then percentage of fruits infested by *B. cucurbitae* calculated. Percentage infestation averaged 17.0% (range: 16.5–17.5%) in Udaipur and 13.2% (range: 13.1–13.4%) in Jobner.

Prabhakar et al. 2012

State of Himachal Pradesh, India

Infested *L. siceraria* fruits were collected from the Kangra District of the State of Himachal Pradesh in India on 9 August 2009. Fruits were held in rearing cages under laboratory condi-

tions in Palampur. Emerging tephritid fruit flies were identified following adult emergence. Adult *B. cucurbitae* were recovered from *L. siceraria* fruits collected in the Kangra District.

Pradhan 1977:

Nepal

Lagenaria siceraria was planted by seed in Nepal in four separate plots (four replicates) during the first week of April in 1974 and again in 1975. Daily counts were made of infestation of flowers and then of fruits by *B. cucurbitae* (listed as *Dacus cucurbitae*). Infested flowers and fruits were detached and thrown to the ground after observations were completed. Infestation rate of flowers averaged 62.24% (range: 31.81–96.80%) in 1974 and 39.16% (range: 31.10–44.48%) in 1975. Infestation rate of fruits averaged 31.07% (range: 24.7–40.0%) in 1974 and 20.10% (range: 15.8–26.5%) in 1975.

+*Singh et al. 2000:*

Kanpur, State of Uttar Pradesh, India

Lagenaria siceraria fruits (listed as bottle gourd) were collected weekly at growers' fields at the bank of the river Ganga in Kanpur beginning in February 1997. Percentage infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) was determined (by observation) at each picking. The overall average *B. cucurbitae* infestation rate was 25.3%.

+*Sookar and Khayratee 2000:*

Plaine Sophie, Mauritius

Control of infestation of *L. siceraria* fruits (listed as calabash; the Sookar et al. 2004 publication associates "calabash" as a common name for *L. siceraria*) by *B. cucurbitae* through the use of only cover sprays (year one) was compared with control by cover sprays plus spot sprays of protein bait + toxicant and cuelure + toxicant traps (year two). Every 2 weeks, *L. siceraria* fruits with fruit fly punctures were randomly sampled and placed in a plastic tray over dry sand. The sand was sifted after 10 days for *B. cucurbitae* pupal recovery. Pupae were held in insect cages until adult emergence. From January to December 1999, when the cover spray only control method was used, average infestation of *L. siceraria* fruits over 2-week intervals ranged from 67 to 137 pupae/kg infested fruit.

Syed 1971:

Multan and Rawalpindi, Province of Punjab; Karachi, Sindh Province, Pakistan

In Multan (1963–1964), 33% of *L. siceraria* fruits (listed as *L. vulgaris*) were infested by *B. cucurbitae* (listed as *Dacus cucurbitae*) in November; in Rawalpindi (1962–1963), some *L. siceraria* fruits were infested in July; in Karachi (1962–1966), 3–4% of *L. siceraria* fruits were infested in September by a mix of *B. cucurbitae* and *Dacus ciliatus*. Total number of fruits collected were not given.

Tsuruta et al. 1997:

Sri Lanka

Twenty-two (22) adult *B. cucurbitae* were recovered from an unspecified number of *L. siceraria* fruits collected in the Madabavita area of Sri Lanka. No infestation rate data were given.

Vayssières and Carel 1999:

Réunion Island, France

Lagenaria siceraria fruits of a local variety were collected over the course of a year from up to 70 localities on Réunion Island. Fruits with evidence of fruit fly infestation were held in individual containers, with recovered pupae held for adult emergence. *Bactrocera cucurbitae* recovery averaged 96 (standard deviation = 167) adults per kg infested fruit.

Vayssières et al. 2007:

Benin, Burkina Faso, Cameroon, Côte d'Ivoire, Guinea, Mali, Niger and Senegal, West Africa

Tephritid fruit fly-infested *Lagenaria siceraria* fruits were collected from untreated orchards in eight countries in West Africa. Fruits were placed on mesh supports over sand. Tephritid fruit fly pupae, recovered through weekly sieving of the sand, were transferred to small hatching boxes lined with wet blotting paper and held for adult emergence. The average *B. cucurbitae* infestation level in *L. siceraria* fruits in West Africa fell in the range of 1–25 pupae/kg fruit. For comparison, the authors indicated that the infestation level of *L. siceraria* fruits averaged 76–100 pupae/kg fruit on Réunion Island.

+*Wen 1985:*

Taiwan

Lagenaria siceraria fruits (listed as calabash gourd) were collected in southern Taiwan from January to June 1984. Infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) averaged 1.55% (bimonthly averages ranged from 1.33–1.87%).

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Lagenaria siceraria* fruits, originating in Hawaii, at airports in Hawaii (Honolulu-2; Kahului-1) on three occasions between 1991 and 2003. Average recovery was 11.7 live larvae.

Lab Infestation:

Agarwal and Yazdani 1991:

One hundred (100) eggs, collected from adult *B. cucurbitae* flies (listed as *Dacus cucurbitae*) which emerged from field-infested *Luffa aegyptiaca* Mill. fruits (listed as *Luffa cylindrica*), were inserted in a triangular cut in a *Lagenaria siceraria* fruit (four replications) and held at 29.85±8.33°C and 61.72±22.05% RH. An average of 55% survived from larval stage to adult emergence.

+*Bhagat et al. 1998:*

Slices of *L. siceraria* (listed as bottle gourd) were used “as larval food for feeding and breeding of” *B. cucurbitae* (listed as *Dacus cucurbitae*). Recovered pupae were held on moist sand until adult emergence.

+*Lall and Singh 1959:*

Infestation of *L. siceraria* fruits (listed as bottle-gourd) by *B. cucurbitae* (listed as *Dacus cucurbitae*) in the State of Bihar was observed to be 20.20%.

Khan et al. 2011:

In a choice test, 50.0 g of *L. siceraria* fruits, along with 50.0 g of each of eight other natural hosts, were exposed for 20 minutes to 50 pairs of 15–20-day-old *B. cucurbitae* and 50 pairs of 15–20-day-old *B. tau* inside a small cage, after which fruit samples were removed and placed separately on sawdust inside a cloth-covered plastic bowl for pupation. The sawdust was sieved after 6 to 8 days to recover pupae (of both fly species) which were held for adult emergence. Out of a mean infestation of 115±0.66 pupae recovered (mixed infestation of *B. cucurbitae* and *B. tau*), 86.95% (100.0) of the recovered pupae emerged as adult *B. cucurbitae*.

In a no-choice test, 50.0 g of *L. siceraria* fruits, as well as 50.0 g of each of eight other natural hosts, were exposed for 20 minutes to 5 pairs of 15–20-day-old *B. cucurbitae* and 5 pairs of 15–20-day-old *B. tau* inside separate small cages, after which fruit samples were removed and placed separately on sawdust inside a cloth-covered plastic bowl for pupation. The sawdust was sieved after 6 to 8 days to recover pupae (of both fly species) which were held for adult emergence. Out of a mean infestation of 112±2.33 pupae recovered (mixed infestation of *B. cucurbitae* and *B. tau*), 57.14% (64.0) of the recovered pupae emerged as adult *B. cucurbitae*.

Koul and Bhagat 1994a:

Newly emerged *B. cucurbitae* larvae from 10 eggs were transferred to fresh *L. siceraria* slices placed in glass tubes for 2 to 3 days and then held over sand (4 cm thick) until pupation. Pupae were sieved daily and individually transferred to glass tubes with a 3-cm sand layer moistened with water and held until adult emergence. Newly emerged flies were held in glass tubes after pairing, provided with a slice of *L. siceraria* and a cotton plug soaked in 10% honey solution and protein hydrolysate (Casein). The process was repeated for nine generations of *B. cucurbitae* on *L. siceraria* slices. Larval duration averaged 7.36 days (range: 4.22–16.28 days), while adult emergence averaged 74.3% (range: 60.0–90.0%). No temperature or relative humidity data were provided.

Koul and Bhagat 1994b:

Bottle gourd (*Lagenaria siceraria*) was used to rear *B. cucurbitae* (listed as *Dacus cucurbitae*) in the lab. Eggs obtained from flies maintained on bottle gourd were placed on a thin slice of tender and fresh *L. siceraria* fruit. Newly emerged *B. cucurbitae* larvae were transferred to freshly cut *L. siceraria* slices placed in glass tubes for 2–5 days and then held over sand (4 cm thick) until pupation. Pupae were sieved daily and individually transferred to glass tubes with a 3 cm sand layer moistened with water and held until adult emergence. Newly emerged flies were held in glass tubes after pairing, provided with a slice of *L. siceraria* fruit and a cotton plug soaked in 10% honey solution.

Larval duration averaged 4.2 days, compared to 3.5, 4.7, 4.7, and 5.7 days, when reared on *Momordica charantia*, *Cucumis sativus*, *Benincasa fistulosa*, and *Cucurbita pepo*, respectively. No temperature or relative humidity data were provided.

Nishida 1963:

All larval rearing to maintain a laboratory colony of *B. cucurbitae* (listed as *Dacus cucurbitae*) was carried out using coarsely grated fresh *L. siceraria* fruit (listed as *L. vulgaris*).

Ponce 1937:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was reared in the laboratory on *L. siceraria* (listed as *Lagenaria leucantha*) fruit. At a mean temperature of 30.36°C, the overall larval period lasted 6.0 days, based on “six cultures” (replications).

Rajamannar 1962:

Using *B. cucurbitae* (listed as *Dacus cucurbitae*) 1st instar larvae obtained from eggs oviposited on bottle gourd (*Lagenaria siceraria*; listed as *L. vulgaris*), 81 of 100 (81%), 1st instar larvae raised on *L. siceraria* (listed as bottle gourd) pupated, with an average time to pupation of 4.5 days. In a separate test, 94 of 100 (94%) 1st instar larvae were found to feed on pieces of fruit of *L. siceraria* (an average of 18.8 out of 20 larvae, based on five replicated trials).

+*Shivashankar et al. 2015:*

One 1st instar *B. cucurbitae* larva, emerged from an egg oviposited on a tender *Sechium edule* fruit, was inserted into a 5 mm diameter by 2 mm deep hole punched into the surface of a freshly harvested tender *L. siceraria* fruit (listed as bottle gourd). Fruits were held, in large plastic containers having a thin layer of sand, at the mean ambient temperature and relative humidity of 28.2±1.0°C and 58.7±1.0%, respectively. Pupae recovered were transferred to a different container with a thin layer of moist sand for adult emergence. There were ten replications with 10 fruits per replication. An average of 8.73 adult *B. cucurbitae* emerged per replication.

+*Vijay and Bhagat 2000:*

For use in a study on depth of pupation, mature *B. cucurbitae* 3rd instar larvae (listed as *Dacus cucurbitae* Coquillet) were obtained from a culture maintained on *Lagenaria siceraria* (listed as bottle gourd).

Listing Only: +Agrawal and Mathur 1991 (listed as *Dacus cucurbitae*; listed as bottle gourd); Botha et al. 2004 (listed as a secondary host); CABI 2016 (listed as a secondary host); California Department of Food and Agriculture 2001; Cantrell et al. 1999; Chaturvedi 1947 (listed as *Dacus cucurbitae*; listed as *Lagenaria vulgaris*); Chawla 1966 (listed as *Dacus cucurbitae*); De Meyer et al. 2014 (listed as both *Lagenaria leucaritha* and as *L. siceraria*); De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*; listed as both *Lagenaria leucaritha* and as *L. siceraria*); Dhillon et al. 2005a (listed as both *Lagenaria siceraria* and as *L. vulgaris*); Government of Western Australia Department of Agriculture and Food 2015; Holbrook 1967 (listed as “heavily or generally infested”); Kandybina 1987 (listed as *Dacus cucurbitae*); Kapoor 1970 (listed as *Dacus cucurbitae*; listed both as *Lagenaria siceraria* and as *L. vulgaris*); Kapoor 1991 (listed as *Dacus cucurbitae*; listed as *Lagenaria vulgaris* Ser.); +Kapoor 2005–2006 (listed as bottle gourd); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*; listed as *Lagenaria vulgaris*); Kazi 1976 (listed as *Dacus cucurbitae*; listed as *Lagenaria vulgaris* Serr.); +Lall 1964 (listed as *Dacus cucurbitae*; listed as bottlegourd); +Lall and Singh 1969 (listed as *Dacus cucurbitae*; listed as bottle gourd); +Leblanc et al. 2013b (listed as calabash); +Lee et al. 1992 (listed as *Dacus cucurbitae*; listed as bottle gourd); Mamet and Williams 1993 (listed as *Dacus cucurbitae*; listed as *Lagenaria siceraria* [Molina] Stand.); +Mau et al. 2007 (listed as hyotan); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as frequently injured); Moiz et al. 1967 (listed as *Dacus cucurbitae*; listed as *Lagenaria vulgaris* Ser.); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed both as *Lagenaria siceraria* and as *L. vulgaris*); Nishida 1963 (listed as *Dacus cucurbitae*; listed as both lauki and as *Lagenaria vulgaris* Ser.); Oakley 1950 (listed as *Dacus cucurbitae*); Orian and Moutia 1960 (listed as *Dacus cucurbitae*; listed as *Lagenaria vulgaris* Serv.); Phillips 1946 (listed as *Lagenaria leucantha*); Plantwise Knowledge Bank 2015; Ponce 1937 (listed as *Dacus cucurbitae*; listed as *Lagenaria leucantha*); Quilici and Jeuffrault 2001 (listed as *Lagenaria leucaritha* [Dush] Pusby; listed as being a very favorable host on Mauritius and a favorable host on Réunion Island); Ramsamy 1989 (listed as *Dacus cucurbitae*; listed as *Lagenaria vulgaris* Serv.); Rejesus et al. 1991 (listed as *Dacus cucurbitae*; listed both as *Lagenaria siceraria* L. and as upo); Singh et al. 2004; Sookar et al. 2004; USDA 1986 (listed as *Dacus cucurbitae*);

USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Lagenaria leucantha* and *L. vulgaris* as well as *L. siceraria*; listed as a preferred host); White and Elson-Harris 1992.

Synonyms: *Cucurbita lagenaria* L., *Cucurbita leucantha* Duchesne, *Cucurbita longa* hort., *Cucurbita siceraria* Molina, *Lagenaria lagenaria* (L.) Cockerell nom. inval., *Lagenaria leucantha* Rusby, *Lagenaria vulgaris* Ser.

Lagenaria sphaerica (Sond.) Naudin

Family: Cucurbitaceae

Grin Nomen Number: 104888

Common Names: Kanonkulpumpa (Swedish).

Native: AFRICA – *Northeast Tropical Africa:* Somalia; *East Tropical Africa:* Kenya, Tanzania, Uganda; *West-Central Tropical Africa:* Burundi, Rwanda, Zaire; *South Tropical Africa:* Malawi, Mozambique, Zambia, Zimbabwe; *Southern Africa:* Botswana; South Africa – Cape Province, KwaZulu-Natal, Transvaal; *Western Indian Ocean:* Comoros, Madagascar.

Field Infestation:

Jacquard et al. 2013:

Réunion Island, France

Bactrocera cucurbitae-infested *L. sphaerica* fruits were collected from “Location 10” on Réunion Island from June-September 2009, and held over sand. Puparia, recovered by sifting the sand, were held for adult emergence. Two (2) adult *B. cucurbitae* were recovered.

Vayssières and Carel 1999:

Réunion Island, France

Wild *L. sphaerica* fruits were collected over the course of a year from up to 70 localities on Réunion Island. Fruits with evidence of fruit fly infestation were held in individual containers, with recovered pupae held for adult emergence. *Bactrocera cucurbitae* recovery averaged 556 (standard deviation = 408) adults per kg infested fruit.

Listing Only: De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Quilici and Jeuffrault 2001 (listed as being a very favorable host); Ryckewaert et al. 2010.

Synonyms: *Luffa sphaerica* Sond.

Lagenaria spp.

Family: Cucurbitaceae

Grin Nomen Number: 300296

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Lagenaria* sp. fruits, originating in Hawaii, at an airport in Hawaii (Honolulu) on two occasions in 2005. Average recovery was 5.5 live larvae.

Listing Only: California Department of Food and Agriculture 2001; USDA-APHIS 2000; USDA-APHIS 2008.

Lagenaria vulgaris Ser., see *Lagenaria siceraria* (Molina) Standl.

Landolphia senegalensis (A. DC.) Kotschy and Peyr., see *Saba senegalensis* (A. DC.) Pichon

Landolphia sp.

Family: Apocynaceae

Grin Nomen Number: 317814

Interception Data:

PestID 2016:

Nigeria

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Landolphia* sp. fruit(s), originating in Nigeria, at an airport in Virginia (Dulles) on one occasion in 2012. Recovery was one live larva.

Laurus persea L., see *Persea americana* Mill.

Leguminosae Juss., nom. cons., see *Fabaceae* Lindl., nom. cons.

Limonia trifolia Burm. f., see *Triphasia trifolia* (Burm. f.) P. Wilson

Limonia trifoliata L., see *Triphasia trifolia* (Burm. f.) P. Wilson

Litchi chinensis Sonn.

Family: Sapindaceae

Grin Nomen Number: 22399

Common Names: cerisier de Chine (French), leechee (English), lichia (Portuguese-Brazil), lici (Italian), litchi (English), Litchi (German), litchi (Swedish), litchi de Chine (French), litchia (Portuguese), Litchibaum (German), Litchipflanze (German), lychee (English).

Native: ASIA-TROPICAL – *Indo-China*: Cambodia, Vietnam; *Malesia*: Philippines.

Cultivated: also cultivated.

Listing Only: Dhillon et al. 2005a.

Synonyms: *Nephelium litchi* Cambess.

Lucuma campechiana Kunth, see *Pouteria campechiana* (Kunth) Baehni

Lucuma mammosa C. F. Gaertn., see *Manilkara zapota* (L.) P. Royen

Lucuma mammosa auct., see *Pouteria sapota* (Jacq.) H.E. Moore and Stearn

Lucuma nervosa A. DC., see *Pouteria campechiana* (Kunth) Baehni

Lucuma rivicoa var. *angustifolia* Miq., see *Pouteria campechiana* (Kunth) Baehni

Lucuma salicifolia Kunth, see *Pouteria campechiana* (Kunth) Baehni

Lucuma spp., see *Pouteria* sp.

Luffa acutangula (L.) Roxb.

Family: Cucurbitaceae

Grin Nomen Number: 22787

Common Names: angled loofah (English), Chinese-okra (English), dishcloth gourd (English), gerippte Schwammgurke (German), guang dong si gua (transcribed Chinese), kantgurka (Swedish), ljufa (transliterated Russian), ribbed gourd (English), ribbed loofah (English), ridge gourd (English), ridged gourd (English), silky gourd (English), strainervine (English), tokado-hechima (Japanese Rōmaji), tori (India).

Native: ASIA-TROPICAL – *Indian Subcontinent*: India, Pakistan.

Naturalized: Naturalized throughout tropics and subtropics.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 49 samples of *L. acutangula*. Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Amin et al. 2011:

Dinajpur, Bangladesh

From April through July 2009, *L. acutangula* was grown in a randomized complete design with four other cucurbit species (four replicates) at the Entomology Farm Laboratory, Hajee Mohammad Danesh Science and Technology University, Dinajpur, Bangladesh. Fruits were observed for infestation by *B. cucurbitae*, and harvested at maturity stage. An average of $21.0 \pm 2.4\%$ of *L. acutangula* fruits were infested by *B. cucurbitae*. Adult *B. cucurbitae* were also recovered from field-infested *L. acutangula* fruits brought to the laboratory.

+Birah et al. 2015:

Port Blair, South Andaman Island, India

In order to test for the effectiveness of different management techniques to minimize infestation by *B. cucurbitae*, *L. acutangula* (listed as ridge gourd), var. 'Pusa Nasdar,' was planted out in a randomized block design with four replicates during the 2010 to 2011 and 2011 to 2012 growing seasons at Garacharma farm in Port Blair, South Andaman Island. Percentage infestation of *L. acutangula* fruits was determined at each of 15 fruit harvests. In the control treatment, the average percentage infestation, averaged over both production years, was 33.2% (range over the 15 harvests: 10.5–46.9%).

Chinajariyawong et al. 2000:

Thailand

Bactrocera cucurbitae was reared from 3 samples of *L. acutangula* collected in Thailand.

No infestation rate data given.

Chinajariyawong et al. 2003:

Thailand

Out of 5,456 *L. acutangula* fruits sampled from a control field in a bait spray trial in Thailand, 1,711 (31.4%) were infested by *B. cucurbitae* and/or *B. tau* (*B. cucurbitae* was the dominant species).

Clarke et al. 2001:

Thailand

Eight hundred seventy (870) (51.1 kg) infested *L. acutangula* fruits were collected in Thailand from 1986 to 1994. Three regions of Thailand (Chiang Rai, Bangkok, Songkhla) recorded infestation rates of 1.9, 6.2 and 1.4 *B. cucurbitae* per infested fruit and 30.4, 76.7 and 27.7 *B. cucurbitae* per kg infested fruits, respectively. *Bactrocera cucurbitae* individuals were identified by either R.A.I. Drew or D. L. Hancock.

Clausen et al. 1965:

Island of Mindanao, Philippines

From *L. acutangula* collections from February to March 1950, on the island of Mindanao in the Philippines, 1,778 *B. cucurbitae* puparia (listed as *Dacus cucurbitae*) were recovered.

Sabah, Malaysia (referred to as North Borneo; place names listed are in present day Sabah, Malaysia)

From collections of *L. acutangula* from January to July 1951, in Sabah, Malaysia (referred to as North Borneo), 220,618 puparia were recovered, a mix of two predominant species: *Bactrocera cucurbitae* (listed as *Dacus cucurbitae* Coq.) and *Bactrocera tau* (listed as *Dacus hageni* Meij) (*B. cucurbitae* was the dominant species). It was reported by the authors that patola (*L. acutangula*) was quite heavily infested by *B. cucurbitae*.

South India

From *L. acutangula* collections from January to May 1951 in South India, 1,806 *B. cucurbitae* (listed as *Dacus cucurbitae* Coq.) puparia were recovered.

Sri Lanka (referred to as Ceylon)

Bactrocera cucurbitae puparia (listed as *Dacus cucurbitae*) recovered from *L. acutangula* collections in Sri Lanka were shipped to Hawaii during August and September 1951.

+Duradundi et al. 2015:

Bagalkot, State of Karnataka, India

Eighteen (18) genotypes of *L. acutangula* (listed as ridge gourd) were planted out, in a randomized complete block design with two replications, in Bagalkot, India. Marketable size fruits were picked weekly. At each picking, infestation of fruits by *B. cucurbitae* was determined based on visual

inspection and the percentage of infested fruits calculated. Average percentage infestation was reported for 45, 60 and 75 days after sowing. Infestation averaged 40.6% overall (range: 9.90 [‘KRCCH-1’]–78.3% [‘Vijayawad local’]).

Ghule et al. 2015:

Nadia, State of West Bengal, India

Percentage infestation of *L. acutangula* var. ‘Seven star’ fruits by *B. cucurbitae*, and average number of maggots per fruit, were recorded at 7-day intervals over 2011 and 2012 cropping seasons at Incheck farm, C Block, BCKV, Kalyani, Nadia, West Benegal, India. In 2011, *B. cucurbitae* infestation was observed from the fourth week in January through the second week in March, averaging 39.2% infestation (range: 9.2–62.5%) and averaging 7.1 *B. cucurbitae* maggots per fruit (range: 1.8–11.1). In 2012, *B. cucurbitae* infestation was observed from the second week of April through the first week of June, averaging 39.2% infestation (range: 8.7–71.6%) and averaging 8.9 *B. cucurbitae* (range: 2.7–14.4) maggots per fruit.

+*Gupta and Verma 1978:*

Hisar (listed as Hissar), State of Haryana, India

Luffa acutangula (listed as ridge gourd) was grown from seed planted both 28 February and 31 July 1975, in randomized complete block designs with ten other cucurbit crops in Hisar, Haryana State, India. Fallen and marketable sized fruits were collected/picked every 3 days and assessed for infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). Infestation results were summarized weekly. *Bactrocera cucurbitae* infestation was found in 20 of 21 weekly summaries (95.2%). Overall, 242 (16.0 kg) fruits were collected, of which 56 were infested, for an average of 11.5 fruits collected per week with an average infestation rate of 23.2%.

Haldhar et al. 2015a:

Bikaner, State of Rajasthan, India

Twenty-nine (29) varieties/genotypes of *L. acutangula* were sown in the rainy season in 2011 in a randomized complete block design with three replications at the experimental farm of the Central Institute for Arid Horticulture in Bikaner, India. Fruits randomly selected at three pickings over the course of the growing season were used to calculate percentage infestation and to count the number of *B. cucurbitae* larvae in infested fruits. Percentage fruit infestation averaged 49.91% (range: 16.47–80.47%) while *B. cucurbitae* larval density averaged 21.56 larvae/fruit (range: 13.6–29.27 larvae/fruit) across all 29 varieties/genotypes.

Fifteen (15) varieties/genotypes of *L. acutangula*, selected from those used in the 2011 trial, were sown, both in summer 2012 and in summer 2013, in a randomized complete block design with three replications at the experimental farm of the Central Institute for Arid Horticulture in Bikaner, India. Fruits randomly selected at three pickings over the course of the growing seasons were used to calculate percentage infestation and to count the number of *B. cucurbitae* larvae in infested fruits. Percentage fruit infestation, averaged across both growing seasons, was 43.65% (range: 15.92–79.72%) while *B. cucurbitae* larval density averaged 19.79 larvae/fruit (range: 13.23–28.5 larvae/fruit) across all 15 varieties/genotypes.

+*Inayatullah et al. 1993:*

Faisalabad, Pakistan

Based on observation, the average rate of infestation of *L. acutangula* fruits (listed as tori) by *B. cucurbitae* (listed as *Dacus cucurbitae*) in the vicinity of the University of Agriculture in Faisalabad was about 98%.

Jacquard et al. 2013:

Réunion Island, France

Bactrocera cucurbitae-infested *L. acutangula* fruits were collected from “Location 1” on Réunion Island from January to April 2009 and held over sand. Puparia, recovered by sifting the sand, were held for adult emergence. Twenty-six (26) adult *B. cucurbitae* were recovered.

+*Jakhar and Pareek 2005:*

Jobner, State of Rajasthan, India

Seeds of nine cucurbit species were sown in a randomized block design with four replications at the Horticultural Farm of S.K.N. College of Agriculture in Jobner, India during the kharif season in 2000. The infestation rate of *L. acutangula* fruits (listed as ridge gourd) by *B. cucurbitae*

averaged 32.54% (range: 16.90–44.29%) over the course of nine collection dates, each 3 days apart, between August and September, 2000.

Kittayapong et al. 2000:

Thailand

Luffa acutangula fruits were collected throughout Thailand within the time period of October 1995 to December 1998. Collections were placed over sawdust in a ventilated plastic container and brought back to the laboratory at Mahidol University in Bangkok. *Bactrocera cucurbitae* was recovered from *L. acutangula* fruits. Total number of fruits collected and infestation rate data were not given.

Kumar et al. 2008:

Bangalore, South India

Luffa acutangula fruits were harvested monthly at the Indian Institute of Horticultural Research, Bangalore, South India from July 2002 to October 2003 (a total of 67 harvests). At each harvest, damaged and healthy fruits were sorted and weighed separately, with damaged fruits placed in separate cages on a thin layer of sand to facilitate pupation and adult emergence. *Bactrocera cucurbitae* and *D. ciliatus* adults that emerged were counted. Infestation of *L. acutangula* (by month of collection) by *B. cucurbitae* averaged 30.0% (range: 0.0–75.65%), with an average infestation rate of 90.37 individuals (range: 0.0–210.74) per kg fruit.

Mwatawala et al. 2009a:

Morogoro Region, Central Tanzania

Tender-skinned immature *L. acutangula* fruits were randomly collected at regular intervals between October 2004 and October 2006 from areas within the Sokoine University of Agriculture campus in Morogoro and from Nyandira, Mikese, Mkindo in the Morogoro region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupation of infesting tephritid fruit flies. Emerged adults were removed and identified. Two (2) of 2 (100.0%) *L. acutangula* samples (0.2 kg) were infested by *B. cucurbitae*.

Mwatawala et al. 2009b:

Morogoro Region, Central Tanzania

Luffa acutangula fruits were randomly collected weekly between October 2004 through October 2006, and from August through December 2007, from areas within the Sokoine University of Agriculture campus in Morogoro and from Nyandira, Mikese, Mkindo in the Morogoro region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupation of infesting tephritid fruit flies. Emerged adults were removed and identified. Out of 83 collected fruits (5.954 kg), infestation by *B. cucurbitae* averaged 47.20 emerged adults per kg fruit.

Mwatawala et al. 2010:

Morogoro Region, Central Tanzania

One hundred twenty (120) immature *L. acutangula* fruits (8.302 kg) were collected at irregular intervals between October 2004 and April 2008, from the Morogoro Region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupariation of infesting tephritid fruit flies. Emerged adults were removed and identified. *Bactrocera cucurbitae* flies were recovered from 16 of 26 collections (61.54%), with an overall infestation rate of 60.59 flies/kg fruit and 92.41 flies/kg infested fruit.

+*Nath 1964:*

New Delhi, India

Five experiments with completely randomized design, with three replications, were conducted in New Delhi, India, in the spring, summer and rainy season of 1963 to test the relative resistance of different cultivars of *L. acutangula* (listed as ridge gourd) to infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). The assessment of resistance or susceptibility was based entirely on the percentage of fruits damaged by *B. cucurbitae* in the field. There was a significant difference among 15 varieties in regards to the degree of resistance to infestation, with infestation ranging from 40–95%. Total number of fruits collected and infestation rate data were not given.

Nath 1966:

New Delhi, India

A completely randomized design experiment, with three replicates, was conducted at each of two times in 1963 (spring [28 February planting] and summer [15 May planting]) in New Delhi, India to compare the relative resistance to infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) of seven different varieties of *L. acutangula*. Fruits were examined twice a week and damaged fruits showing fruit fly punctures were harvested while undamaged fruits were left on the vine. The percentage of total fruits damaged throughout the season was calculated for each variety. Percentage of fruits infested averaged (across varieties) 57.6% (range: 32.3–73.5%) and 43.9% (range: 36.2–54.3%) in the two planting seasons, respectively.

Nath and Bhushan 2006:

Varanasi, State of Uttar Pradesh, India

Luffa acutangula was sown, with three replications, in Varanasi, India, the last week of March (summer season) and again the last week of June (rainy season) in both 2001 and 2002. Percentage infestation by *B. cucurbitae* averaged 15.8% (range: 11.5–20.0%) in the summer season and 32.2% (range: 31.3–33.2%) in the rainy season.

+*Pareek and Kavadia 1994:*

Jobner and Udaipur, state of Rajasthan, India

Luffa acutangula fruits (listed as ridge gourd, variety 'Pusa nasdar') were raised in a randomized block design with nine other cucurbit crops (each with three replicated plots) for assessment of preference of *B. cucurbitae* (listed as *Dacus cucurbitae*). The trials were conducted from February to June in 1979, and again in 1981, in Udaipur (semi-humid agroclimatic conditions) and in 1980 and 1981 in Jobner (semi-arid agroclimatic condition). Fruits were harvested twice a week, examined for fruit fly damage, and then percentage of fruits infested by *B. cucurbitae* calculated. Percentage infestation averaged 7.9% (range: 7.9–8.0%) in Udaipur and 3.1% (range: 2.8–3.3%) in Jobner.

Ramadan and Messing 2003:

Thailand

Two (2) collections of immature *L. acutangula* fruits with oviposition scars or signs of larval infestation were made in 1996 from two localities in Thailand (Hatyai, Betong). Fruits were held over sawdust, which was subsequently sifted for recovery of tephritid fruit fly puparia. Four (4) adult *B. cucurbitae* were recovered.

+*Ranganath et al. 1997:*

Andaman Island, India

In a test, from June to August 1996, of the effectiveness of "safer insecticides" for control of *B. cucurbitae*, two unsprayed control plots were included: (1) Control: two rows of *C. sativus* (listed as cucumber, variety 'white long') were planted in between rows of *Luffa acutangula* (listed as ridge gourd, local variety), with two rows of marigold plants in between them; and (2) Absolute Control: two rows of *C. sativus* (listed as cucumber, variety 'white long') were planted in between rows of *Luffa acutangula* (listed as ridge gourd, local variety) with no marigold plants. Each treatment was replicated four times. Percentage damage of fruits was determined at each of 12 harvests. Damage of *L. acutangula* fruits by *B. cucurbitae* averaged 30.8% and 35.0% in the control and absolute control plots, respectively.

Sambandam and Chelliah 1969:

India

Bactrocera cucurbitae flies (listed as *Dacus cucurbitae*), recovered from a single infested *L. acutangula* fruit, were the basis of a *B. cucurbitae* laboratory colony which was used to test host status of fruits.

Sookar et al. 2004:

Pamplemousses, Mauritius

In a trial testing the effectiveness of protein bait spot sprays to reduce infestation of *L. acutangula* fruits (listed as *L. acutangulata*) by *B. cucurbitae*, samples of 15 fruits (75–150 g each) were taken from each plot at weekly intervals. Fruits were examined for fruit fly punctures and placed over a layer of sand in separate plastic containers. Sand was sieved to recover tephritid fruit fly pupae which were placed in a small cage for adult emergence. In the untreated control plot, infestation by *B. cucurbitae* averaged 94.7% (range: 60–100%) over 12 weekly collections. *Bactrocera cucurbitae* was the only fruit fly species recovered from *L. acutangula* fruits.

Syed 1971:

Harnai and Quetta, Province of Balochistan; Hyderabad, Sindh Province; Peshawar Valley, Khyber Pakhtunkhwa Province, Pakistan

In Harnai and Quetta (1964–1965), 24% of *L. acutangula* fruits were infested in August, which changed to 5–40% in October, by a mix of *B. cucurbitae* (listed as *Dacus cucurbitae*) and *Dacus ciliatus*, mostly by *D. ciliatus*; in Hyderabad (1964–1965), 4–6% of *L. acutangula* fruits were infested in August and September, with some infested in October and 5–6% infested in November, by a mix of *B. cucurbitae* and *D. ciliatus* (40:60%); in Peshawar Valley (1962–1963), some *L. acutangula* fruits were infested by *B. cucurbitae* when it started fruiting in July, with infestation rate increasing to 40% in August and 50% in September. Total number of fruits collected was not given.

Tsuruta et al. 1997:

Sri Lanka

At least 104 *B. cucurbitae* adults were recovered from *L. acutangula* fruits collected in Sri Lanka. *Bactrocera cucurbitae* adults were recovered from fruits collected from Wariyapola (22), Dankotuwa (13), Pilimalatawa (22), Nalanda (24), Pelwehera (18), Madavavita (5) and Thodu (number not indicated). No infestation rate data were given.

Tuason 1917:

Philippines

Luffa acutangula seeds from the University of the Philippines College of Agriculture (College number 1389 F2) were planted in a flat in the College nursery then later transplanted to the field. Resulting fruits, while young, were attacked by *B. cucurbitae* (listed as *Dacus cucurbitae* Coq.) and by *Leptoglossus australis* (Fabricius) (listed as *Leptoglossus membranaceus* Fabr.), causing a loss of about 30–40% of the yield.

Vayssières and Carel 1999:

Réunion Island, France

Luffa acutangula fruits of a local variety were collected over the course of a year from up to 70 localities on Réunion Island. Fruits with evidence of fruit fly infestation were held in individual containers, with recovered pupae held for adult emergence. *Bactrocera cucurbitae* recovery averaged 337 (standard deviation = 480) adults per kg infested fruit.

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Luffa acutangula* fruits, originating in Hawaii, at airports in Hawaii (Honolulu-11; Kahului-1) on 12 occasions between 1988 and 2005. Average recovery was 3.8 live larvae. Also recovered were one live pupa (1990) and four live adults (1999).

Lab Infestation:

Amin et al. 2011:

Bactrocera cucurbitae larvae and *B. cucurbitae*-infested *L. acutangula* fruits were collected from a field at the Entomology Farm Laboratory, Hajee Mohammad Danesh Science and Technology University, in Dinajpur, Bangladesh and held in jars in a laboratory at 25±2°C, 60±5% RH and a 12:12 (L:D) h photoperiod. Adult male and female *B. cucurbitae* that emerged were kept in the same jar and provided fresh *L. acutangula* fruit for oviposition. Larvae, pupae and adults that emerged from these stock cultures were used for observation of *B. cucurbitae* life history parameters.

Chelliah 1970:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was successfully reared from egg to adult emergence in the laboratory on fruits of *L. acutangula*. Larval survival, based on 200 individuals reared in 20 replications, averaged 94.0%, with an average larval duration of 4.68 days.

Chelliah and Sambandam 1974c:

Luffa acutangula fruits were used as a larval host for a laboratory colony of *B. cucurbitae* (listed as *Dacus cucurbitae*).

Saha et al. 2007:

The relative quality of seven different *B. cucurbitae* fruit hosts was assessed by comparing pupal recovery (in F₁ and F₂ generations) following exposure of 500 g of each fruit to 200 gravid *B. cucurbitae* adults (from laboratory-adapted stock culture) for 30 minutes. For *L. acutangula*, 242 and

324 pupae (484 and 648 pupae/kg fruit) and 179 and 242 adults (358 and 483 adults per kg fruit) were recovered in the F₁ and F₂ generations.

+Shivashankar *et al.* 2015:

One 1st instar *B. cucurbitae* larva, newly emerged from an egg oviposited on a tender *Sechium edule* fruit, was inserted into a 5 mm diameter by 2 mm deep hole punched into the surface of a freshly harvested tender *L. acutangula* fruit (listed as ridge gourd). Fruits were held, in large plastic containers having a thin layer of sand, at the mean ambient temperature and relative humidity of 28.2±1.0°C and 58.7±1.0%, respectively. Pupae recovered were transferred to a different container with a thin layer of moist sand for adult emergence. There were ten replications with 10 fruits per replication. An average of 8.83 adult *B. cucurbitae* emerged per replication.

Listing Only: +Agrawal and Mathur 1991 (listed as *Dacus cucurbitae*; listed as ribbed gourd); Beller and Bhenchitr 1936 (listed as *Dacus cucurbitae*); Botha *et al.* 2004 (listed as a secondary host); CABI 2016 (listed as a secondary host); California Department of Food and Agriculture 2001; Cantelo and Pholboon 1965 (listed as *Dacus cucurbitae*); Cantrell *et al.* 1999; De Meyer *et al.* 2014; De Meyer *et al.* 2015 (listed as *Zeugodacus cucurbitae*); Dhillon *et al.* 2005a; Etienne 1967 (listed as *Dacus cucurbitae*); Etienne 1972 (listed as *Dacus cucurbitae*; adults obtained very frequently); Government of Western Australia Department of Agriculture and Food 2015; Holbrook 1967 (listed as “heavily or generally infested”); Kandybina 1987 (listed as *Dacus cucurbitae*); Kapoor 1970 (listed as *Dacus cucurbitae*); Kapoor 1991 (listed as *Dacus cucurbitae*); +Kapoor 2005–2006 (listed as ribbed gourd); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*); Kazi 1976 (listed as *Dacus cucurbitae*); Leblanc *et al.* 2013b; Mamet and Williams 1993 (listed as *Dacus cucurbitae*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as frequently injured); Moiz *et al.* 1967 (listed as *Dacus cucurbitae*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Nishida 1963 (listed as *Dacus cucurbitae*; listed as both arro torai and as *Luffa acutangula* Roxb.); Oakley 1950 (listed as *Dacus cucurbitae*); Pacific Fruit Fly Web 2002; Phillips 1946; Plantwise Knowledge Bank 2015; Quilici and Jeuffrault 2001 (listed as being a very favorable host); Qureshi *et al.* 1974 (listed as *Dacus cucurbitae*); +Rajamannar 1962 (listed as *Dacus cucurbitae*; listed as ribbed gourd); Rejesus *et al.* 1991 (listed as *Dacus cucurbitae*); Singh *et al.* 2004; Sookar and Khayratee 2000; USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host); Vijaysegaran 1991 (listed as *Dacus cucurbitae*); +Walker 2005 (listed as angled luffa); White and Elson-Harris 1992; Yunus and Hua 1980 (listed as *Dacus cucurbitae*).

Synonyms: *Cucumis acutangulus* L.

Luffa aegyptiaca Mill.

Family: Cucurbitaceae

Grin Nomen Number: 22788

Common Names: courge torchon (French), dishrag gourd (English), esponja-vegetal (Portuguese), estropajo (Spanish), ghia tori (Urdu-Pakistan), hechima (Japanese Rōmaji), loofah (English), paste (Spanish), pétrole (French), rag gourd (English), Schwammgurke (German), si gua (transcribed Chinese), smooth loofah (English), sponge gourd (English), susemioi (transcribed Korean), torai (India), vegetable-sponge (English).

Cultivated: Cultivated throughout tropics.

Origin: Asia or possibly Africa.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 27 samples of both fruits and flowers of *L. aegyptiaca*. Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Agarwal and Yazdani 1991:

North Bihar, India

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) -infested fruits of *L. aegyptiaca* (listed as *Luffa cylindrica*) were collected in the field and brought to the lab for adult emergence from which eggs were obtained for laboratory experiments.

Bains and Sidhu 1984:

State of Punjab, India

Field observations of infestation of *L. aegyptiaca* fruits (listed as *Luffa cylindrica*) by *B. cucurbitae* (listed as *Dacus cucurbitae*) were made at 10-day intervals in Punjab, India, between May and October. Infested fruits were found in 16 of 16 observations (100%) with an average infestation rate of 22.9 (± 5.6 [standard error])%.

Chinajariyawong et al. 2000:

Thailand

Bactrocera cucurbitae was reared from 2 samples of *L. aegyptiaca* (listed as *L. cylindrica*) collected in Thailand. No infestation rate data were given.

Clarke et al. 2001:

Thailand

Two hundred ninety-three (293) (27.3 kg) infested *L. aegyptiaca* fruits (listed as *L. cylindrica*) were collected in Thailand from 1986 to 1994. Three regions of Thailand (Chiang Rai, Chiang Mai, Songkhla) recorded infestation rates of 1.9, 0.96 and 3.3 *B. cucurbitae* per infested fruit and 12.2, 11.9, and 32.5 *B. cucurbitae* per kg infested fruits, respectively. *Bactrocera cucurbitae* individuals were identified by either R.A.I. Drew or D. L. Hancock.

Clausen et al. 1965:

Malaysia (listed as Malaya, but locations listed are in present day Malaysia)

From *L. aegyptiaca* collections (listed as *Luffa cylindrica*) in December 1948 in Malaysia (listed as Malaya, but locations listed are in present day Malaysia) 359 puparia were recovered, a mix of two predominant species: *Bactrocera cucurbitae* (listed as *Dacus cucurbitae* Coq.) and *Bactrocera tau* (listed as *Dacus hageni* Meij) (ratio not stated).

+Desai et al. 2014:

Sardarkrushinagar, State of Gujarat, India

In a test of the effectiveness of different insecticides in reducing infestation of *L. aegyptiaca* fruits (listed as sponge gourd) by *B. cucurbitae*, *L. aegyptiaca* plants were grown at the horticultural farm of C. P. College of Agriculture in Sardarkrushinagar, India, in a randomized block design with seven treatments, including a water-sprayed control, and three replications. Treatment sprays were made at 50% of fruit crop set and 15 days after that. *Luffa aegyptiaca* fruits, harvested before the first spray and at 3, 7, and 14 days after each spray, were visually assessed for infestation by *B. cucurbitae* and the percentage infestation was calculated for each fruit collection. Percentage infestation steadily increased in each fruit collection from the first collection (21.6%) up until the fifth collection (39.8%; 3 days after the second spray). Overall, infestation averaged 33.4% (range: 21.6–39.8%).

+Fang 1989:

Taiwan

In tests of the effectiveness of different bagging materials on infestation of *L. aegyptiaca* fruits (listed as sponge gourd) by *B. cucurbitae* (listed as *Dacus cucurbitae*), 192 out of 400 control fruits (48.0%) were infested by *B. cucurbitae*.

+Gupta and Verma 1978:

Hisar (listed as Hissar), State of Haryana, India

Luffa aegyptiaca (listed as smooth gourd, var. 'Hisar Selection-3') was grown from seed planted both 28 February and 31 July 1975, in randomized complete block designs with ten other cucurbit crops in Hisar, Haryana State, India. Fallen and marketable sized fruits were collected/picked every 3 days and assessed for infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). Infestation results were summarized weekly. *Bactrocera cucurbitae* infestation was found in 20 of 22 weekly summaries (90.9%). Overall, 250 (14.4 kg) fruits were collected, of which 58 were infested, for an average of 11.4 fruits collected per week with an average infestation rate of 22.5%.

+Gupta and Verma 1992:

State of Himachal Pradesh, India

The average total number of maggots within *L. aegyptiaca* fruits (listed as sponge gourd) in the field was determined from examination of 10 fruits randomly selected on a weekly basis from May to August 1986, and May to October 1987. Maggots included both *B. cucurbitae* (listed as *Dacus cucurbitae*) and *B. tau* (listed as *D. tau*), with no indication given as to the relative proportion of the

two species. Mean maggot population per fruit reached a maximum of 8.80 and 12.70 in 1986 and 1987, respectively.

+*Jakhar and Pareek 2005:*

Jobner, State of Rajasthan, India

Seeds of nine cucurbit species were sown in a randomized block design with four replications at the Horticultural Farm of S.K.N. College of Agriculture in Jobner, India during the kharif season in 2000. The infestation rate of *L. aegyptiaca* fruits (listed as sponge gourd) by *B. cucurbitae* averaged 27.89% (range: 15.47–39.46%) over the course of ten collection dates, each 3 days apart, between August and September, 2000.

+*Khan et al. 1993:*

Faisalabad, Pakistan

In a test of ovipositional preference of *B. cucurbitae* adult females in the field (listed as *Dacus cucurbitae*), small, medium and large *L. aegyptiaca* fruits (listed as spongegourd) and *Cucumis melo* subsp. *melo* var. *flexuosus* fruits (listed as *Cucumis flexuosus*), each grown in separate fields of about 1 ha each, were inspected for infestation between 1985 and 1986, based on the presence of oviposition punctures, 20 samples for each host. *Luffa aegyptiaca* fruit infestation averaged 43.0%, 40.0% and 17.0% in small, medium and large fruits, respectively.

One hundred (100) *L. aegyptiaca* fruits (when available) were randomly observed in the field monthly from 1985 to 1986 and percentage infestation by *B. cucurbitae* calculated. High *L. aegyptiaca* infestation (76–100%) was observed from May to December.

+*Kittayapong et al. 2000:*

Thailand

Luffa aegyptiaca fruits (listed as *Luffa cylindrica*) were collected throughout Thailand within the time period of October 1995 to December 1998. Collections were placed over sawdust in a ventilated plastic container and brought back to the laboratory at Mahidol University in Bangkok. *Bactrocera cucurbitae* was recovered from *L. aegyptiaca* fruits. Total number of fruits collected and infestation rate data were not given.

+*Leblanc et al. 2012:*

Papua New Guinea (PNG)

Luffa aegyptiaca (listed as *Luffa cylindrica*) fruits were collected during 1997 to 2000 in PNG and held in plastic containers over finely sieved sawdust that had been sterilized in an oven or frozen overnight to kill mites. The sawdust was sieved to recover tephritid fruit fly puparia. Puparia were kept in moist sawdust until adult emergence. Adults were fed for 5 days, then killed by freezing to allow colors and markings, necessary for correct species identification, to fully develop. *Bactrocera cucurbitae* was recovered in 1 of 7 (14.3%) samples in PNG.

+*Leblanc et al. 2013a:*

Papua New Guinea (PNG)

Luffa aegyptiaca (listed as *Luffa cylindrica*) fruits (55 fruits; 1.79 kg) were collected during 1997 to 2000 in PNG and held in plastic containers over finely sieved sawdust that had been sterilized in an oven or frozen overnight to kill mites. The sawdust was sieved to recover tephritid fruit fly puparia. Puparia were kept in moist sawdust until adult emergence. Adults were fed for 5 days, then killed by freezing to allow colors and markings, necessary for correct species identification, to fully develop. *Bactrocera cucurbitae* was recovered in 1 of 7 (14.3%) samples in PNG with an overall infestation rate of 22.35 flies/kg fruit and 667.0 flies/kg infested fruit.

+*Lee et al. 1992:*

Taiwan

From June 1989 to September 1991, rotten and ripening *Luffa aegyptiaca* fruits (listed as sponge gourd) were collected every 2 weeks from one site (Ta-Hu agricultural plantation) in Taiwan. Fruits were transferred to the laboratory and held until adult emergence. *Bactrocera cucurbitae* (listed as *Dacus cucurbitae*) was recovered from infested 'sponge gourd' fruits with an infestation rate of 0.5% at Ta-Hu.

+*Lee 1972:*

Taiwan

Luffa aegyptiaca plants (listed as vegetable sponge) were grown in the field year-round from 2 June 1969 to 10 June 1970, and from March–August 1971. Fruits, picked 5, 10, and 15 days after flowering, were placed over sand in holding boxes. The sand was screened weekly to recover *B. cucurbitae* pupae (listed as *Dacus cucurbitae*). Pupal recovery per fruit was averaged quarterly for 1969 to 1970 harvests. Pupal recovery per kg fruit was averaged monthly for 1971 harvests. *Bactrocera cucurbitae* pupal recovery averaged 1.9, 5.9, and 0.32 pupae/fruit (1969–1970) and 28.9, 16.1, and 1.2 pupae/kg fruit (1971) overall, for fruits picked 5, 10, and 15 days after flowering, respectively.

Matsuyama and Kuba 2002:

Taiwan

Adult *B. cucurbitae* flies were obtained (for use as a wild strain in a mating compatibility test) from larvae recovered from naturally infested *L. aegyptiaca* fruits (listed as *L. cylindrica* Roem).

Matsuyama and Kuba 2009:

Taiwan (Chayi, Tainan and Yunlin Prefectures)

A Taiwanese wild strain of *B. cucurbitae* (T strain) was developed from 1,108 larvae collected from naturally infested *L. aegyptiaca* fruits (listed as *L. cylindrica* Roem) in 2000. No fruit weight was given.

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 4,844 *L. aegyptiaca* fruits were collected (97 collections overall) from five islands/island groups (Amami, Kume, Miyako, Okinawa, Yaeyama) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 707 fruits, giving an average percentage infestation rate (weighted by the number of collections in the islands/island groups) of 15.3%.

+*Nath 1964:*

New Delhi, India

Five experiments with completely randomized design, with three replications, were conducted in New Delhi, India, in the spring, summer and rainy season of 1963 to test the relative resistance of different cultivars of *L. aegyptiaca* (listed as sponge gourd) to infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). The assessment of resistance or susceptibility was based entirely on the percentage of fruits damaged by *B. cucurbitae* in the field. There was a significant difference among 15 varieties in regards to the degree of resistance to infestation, with infestation ranging from 40–95%. Total number of fruits collected and infestation rate data were not given.

Nath 1966:

New Delhi, India

A completely randomized design experiment, with three replicates, was conducted at each of three times in 1963 (spring [28 February planting], summer [15 May planting] and rainy season/late fall [15 July planting]) in New Delhi, India to compare the relative resistance to infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) of 11 different varieties of *L. aegyptiaca* (listed as *L. cylindrica* Roem). Fruits were examined twice a week and damaged fruits showing fruit fly punctures were harvested while undamaged fruits were left on the vine. The percentage of total fruits damaged throughout the season was calculated for each variety. Percentage of fruits infested averaged (across varieties) 28.1% (range: 7.1–55.3%), 59.8% (range: 47.4–75.2%) and 54.9% (range: 44.4–64.7%) in the three planting seasons, respectively.

Nath and Bhushan 2006:

Varanasi, State of Uttar Pradesh, India

Luffa aegyptiaca was sown, with three replications, in Varanasi, India, the last week of March (summer season) and again the last week of June (rainy season) in both 2001 and 2002. Percentage infestation by *B. cucurbitae* averaged 25.0% (range: 21.4–28.7%) in the summer season and 39.3% (range: 37.6–41.0%) in the rainy season.

Nath and Bhushan 2006:

Varanasi, State of Uttar Pradesh, India

Luffa aegyptiaca (listed as *Luffa cylindrica*) was sown, with three replications, in Varanasi, India, the last week of March (summer season) and again the last week of June (rainy season) in both 2001 and 2002. Percentage infestation by *B. cucurbitae* averaged 18.1% (range: 13.8–22.4%) in the summer season and 35.4% (range: 33.4–37.5%) in the rainy season.

+Nishida 1953:

Island of Oahu, Hawaii, U.S.A.

Infested *L. aegyptiaca* fruits (listed as dish cloth gourd) were collected at cultivated areas in Waianae on the Island of Oahu, Hawaii between 1950 to 1951. Seventy-three (73) *B. cucurbitae* larvae (listed as *Dacus cucurbitae*) were recovered from the fruits at the site. Number of fruits and infestation rate data were not given.

+Pareek and Kavadia 1994:

Jobner and Udaipur, state of Rajasthan, India

Luffa aegyptiaca fruits (listed as sponge gourd, variety 'Pusa chikni') were raised in a randomized block design with nine other cucurbit crops (each with three replicated plots) for assessment of preference of *B. cucurbitae* (listed as *Dacus cucurbitae*). The trials were conducted from February to June 1979, and again in 1981, in Udaipur (semi-humid agroclimatic conditions) and in 1980 and 1981 in Jobner (semi-arid agroclimatic condition). Fruits were harvested twice a week, examined for fruit fly damage, and then percentage of fruits infested by *B. cucurbitae* calculated. Percentage infestation averaged 9.1% (range: 7.8–10.5%) in Udaipur and 12.3% (range: 11.2–13.4%) in Jobner.

Pradhan 1977:

Nepal

Luffa aegyptiaca (listed as *L. cylindrica*) was planted by seed in Nepal in four separate plots (four replicates) during the first week of April in 1974 and again in 1975. Daily counts were made of infestation of flowers and then of fruits by *B. cucurbitae* (listed as *Dacus cucurbitae*). Infested flowers and fruits were detached and thrown to the ground after observations were completed. Infestation rate of fruits averaged 15.67% (range: 0.0–26.6%) in 1974 and 3.8% (range: 0.0–14.2%) in 1975.

Qureshi et al. 1974:

Hyderabad, Sindh Province, Pakistan

In order to document the relative abundance of *B. cucurbitae* (listed as *Dacus cucurbitae*) and *Dacus ciliatus*, random samples of *Luffa aegyptiaca* fruits were collected from various vegetable growing areas near Hyderabad, Pakistan from 1970 to 1972. Fruits were held separately in wooden boxes with wire-gauze screen at the bottom, and placed over another box containing sterilized sand. The sand was sieved daily and recovered pupae were held in Petri plates until adult emergence. Two hundred eighty-six (286) *B. cucurbitae* adults were recovered from 60.4 kg of *L. aegyptiaca* fruits overall. *Bactrocera cucurbitae* adults were recovered from 8 of 12 collections (66.7%), with a collection average of 4.77 adults recovered per kg fruit.

Ramadan and Messing 2003:

Thailand

Four (4) collections of immature *L. aegyptiaca* fruits (listed as *L. cylindrica* [L.] Roem) with oviposition scars or signs of larval infestation were made in 1996 from two localities in Thailand (Betong, Yala). Fruits were held over sawdust, which was subsequently sifted for recovery of tephritid fruit fly puparia. Thirty-five (35) *B. cucurbitae* puparia were recovered, from which 32 adults emerged (91.4% emergence).

Syed 1971:

Faisalabad and Gujranwala, Province of Punjab; Karachi, Sindh Province; Peshawar Valley, Khyber Pakhtunkhwa Province, Pakistan

In Faisalabad and Gujranwala (1962–1963), 7% of *L. aegyptiaca* fruits (listed as *Luffa cylindrica*) were infested by *B. cucurbitae* (listed as *Dacus cucurbitae*) in August, with infestation rate increasing to 60% in September and October; In Karachi (1962–1966), 3–4% of *L. aegyptiaca* fruits were attacked by a mix of *B. cucurbitae* and *Dacus ciliatus*, with rate of infestation increasing to 6–13% in October and November; in the Peshawar Valley (1962–1963), *L. aegyptiaca* fruits were infested by *B. cucurbitae* from August through December. Total number of fruits collected was not given.

Vayssières and Carel 1999:

Réunion Island, France

Luffa aegyptiaca fruits (listed as *Luffa cylindrica*) of a local variety were collected over the course of a year from up to 70 localities on Réunion Island. Fruits with evidence of fruit fly infestation were held in individual containers, with recovered pupae held for adult emergence. *Bactrocera cucurbitae* recovery averaged 924.3 (standard deviation = 1,040) adults per kg infested fruit.

Vayssières et al. 2007:

Côte d'Ivoire, Guinea and Mali, West Africa

Tephritid fruit fly-infested *Luffa aegyptiaca* fruits (listed as *L. cylindrica* [L.] Roen) were collected from untreated orchards in West Africa. Fruits were placed on mesh supports over sand. Tephritid fruit fly pupae, recovered through weekly sieving of the sand, were transferred to small hatching boxes lined with wet blotting paper and held for adult emergence. The average *B. cucurbitae* infestation level in *L. aegyptiaca* fruits in West Africa fell in the range of 26–50 pupae/kg fruit. For comparison, the authors indicated that the infestation level of *L. aegyptiaca* fruits averaged over 100 pupae/kg fruit on Réunion Island.

Wen 1985:

Taiwan

Luffa aegyptiaca fruits (listed as vegetable sponge) were collected in southern Taiwan from July to December 1983 and May to June 1984. Infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) averaged 15.65% (bimonthly averages ranged from 5.75–24.33%).

Lab Infestation:

Agarwal and Yazdani 1991:

One hundred (100) eggs, collected from adult *B. cucurbitae* flies (listed as *Dacus cucurbitae*) which emerged from field-infested *L. aegyptiaca* fruits (listed as *Luffa cylindrica*), were inserted in a triangular cut in a *Luffa aegyptiaca* fruit (four replications) and held at $29.85 \pm 8.33^\circ\text{C}$ and $61.72 \pm 22.05\%$ RH. An average of 63% survived from larval stage to adult emergence.

Bains and Sidhu 1984:

Newly emerged *B. cucurbitae* larvae (listed as *Dacus cucurbitae*) were placed on cut pieces of *L. aegyptiaca* (listed as *Luffa cylindrica*) and held in Petri plates having moist blotting paper on the bottom. Larval survival to pupation was 74.2%.

+Gupta and Verma 1995:

A cohort of 50 *B. cucurbitae* (listed as *Dacus cucurbitae*) newly emerged maggots was placed on a small slice of *L. aegyptiaca* fruit (listed as sponge gourd) kept in a Petri dish. Maggots were shifted daily to a new slice and mortality was recorded. Mature larvae were allowed to burrow into sand for pupation and, after 6 days, pupae were recovered and placed in plastic tubes until eclosion. Average adult survivorship from newly emerged larvae placed on sponge gourd was 44%, which was less than on cucumber (*Cucumis sativus*) (54%) or on bitter melon (*Momordica charantia*) (60%).

Khan et al. 2011:

In a choice test, 50.0 g of *L. aegyptiaca* fruits (listed as *Luffa cylindrica* [L]), along with 50.0 g of each of eight other natural hosts, were exposed for 20 minutes to 50 pairs of 15–20-day-old *B. cucurbitae* and 50 pairs of 15–20-day-old *B. tau* inside a small cage, after which fruit samples were removed and placed separately on sawdust inside a cloth-covered plastic bowl for pupation. The sawdust was sieved after 6 to 8 days to recover pupae (of both fly species) which were held for adult emergence. Out of a mean infestation of 179 ± 7.21 pupae recovered (mixed infestation of *B. cucurbitae* and *B. tau*), 54.74% (98.0) of the recovered pupae emerged as adult *B. cucurbitae*.

In a no-choice test, 50.0 g of *L. aegyptiaca* fruits, as well as 50.0 g of each of eight other natural hosts, were exposed for 20 minutes to 5 pairs of 15–20-day-old *B. cucurbitae* and 5 pairs of 15–20-day-old *B. tau* inside separate small cages, after which fruit samples were removed and placed separately on sawdust inside a cloth-covered plastic bowl for pupation. The sawdust was sieved after 6 to 8 days to recover pupae (of both fly species) which were held for adult emergence. Out of a mean infestation of 131 ± 3.48 pupae recovered (mixed infestation of *B. cucurbitae* and *B. tau*), 9.16% (12.0) of the recovered pupae emerged as adult *B. cucurbitae*.

Ponce 1937:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was reared in the laboratory on *L. aegyptiaca* (listed as *L. cylindrica*) fruit. At a mean temperature of 30.34°C , the overall larval period lasted 6.49 days, based on “31 cultures” (replications).

Renjhen 1949:

Duration of egg, larval and pupal periods of *Bactrocera cucurbitae* (listed as *Dacus cucurbitae*) were recorded under laboratory conditions following oviposition in pieces of immature *L. aegyptiaca* fruits. The larval period ranged between 5 and 9 days in the hotter months (with temperatures ranging between 26.1 and 37.2°C), though lasted as long as 22 days in the colder months (temperature as low as 14.4°C).

Saha et al. 2007:

The relative quality of seven different *B. cucurbitae* fruit hosts was assessed by comparing pupal recovery (in F₁ and F₂ generations) following exposure of 500 g of each fruit to 200 gravid *B. cucurbitae* adults (from laboratory-adapted stock culture) for 30 minutes. For *L. aegyptiaca* (listed as *L. cylindrica* [L.]), 219 and 287 pupae (438 and 574 pupae/kg fruit) and 118 and 185 adults (237 and 369 adults per kg fruit) were recovered in the F₁ and F₂ generations, respectively, the fewest number of pupae among the seven host plant species tested.

Listing Only: +Agarwal et al. 1987 (listed as *Dacus cucurbitae*; listed as smooth gourd); +Akhtaruz-zaman et al. 1999 (listed as sponge gourd); Beller and Bhenchitr 1936 (listed as *Dacus cucurbitae*); Botha et al. 2004 (listed as a secondary host); CABI 2016 (listed as a secondary host); California Department of Food and Agriculture 2001; Cantelo and Pholboon 1965 (listed as *Dacus cucurbitae*; listed as *Luffa cylindrica* Roem.); Cantrell et al. 1999; Chaturvedi 1947 (listed as *Dacus cucurbitae*); De Meyer et al. 2014 (listed as both *Luffa aegyptiaca* and as *L. cylindrica*); De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*; listed as *Luffa cylindrica* M. Roem.); Dhillon et al. 2005a (listed as *Luffa cylindrica*); Government of Western Australia Department of Agriculture and Food 2015; Holbrook 1967 (listed as *Luffa cylindrica*; listed as “heavily or generally infested”); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Luffa cylindrica*); Kapoor 1991 (listed as *Dacus cucurbitae*; listed both as *Luffa cylindrica* (L.) and as *L. aegyptica* [L.]); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*; listed both as *Luffa cylindrica* and as *L. aegyptica*); Kazi 1976 (listed as *Dacus cucurbitae*); +Khan et al. 1989 (listed as *Dacus cucurbitae*; listed as sponge gourd); +Lall and Singh 1969 (listed as *Dacus cucurbitae*; listed as sponge gourd); +Leblanc et al. 2013b (listed as smooth luffa); +Liu 1993 (listed as *Dacus cucurbitae*; listed as sponge gourd); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as *Luffa cylindrica* Roem.; listed as frequently injured); Moiz et al. 1967 (listed as *Dacus cucurbitae*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as *Luffa cylindrica*); Nishida 1963 (listed as *Dacus cucurbitae*; listed as chia torai, torai, *Luffa aegyptiaca* Mill. and as *L. cylindrica* L.); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *Luffa cylindrica*); Pacific Fruit Fly Web 2002 (listed as *Luffa cylindrica*); Phillips 1946 (listed as both *Luffa aegyptiaca* and *L. cylindrica*); Plantwise Knowledge Bank 2015; Quilici and Jeuffrault 2001 (listed as *Luffa cylindrica* M. Roem.; listed as being a very favorable host); Singh et al. 2004; +Symonds et al. 2009 (listed as vegetable sponge); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host); White and Elson-Harris 1992; Yang 1991 (listed as *Dacus cucurbitae*; listed as *Luffa cylindrica*).

Synonyms: *Cucurbita luffa* hort., *Luffa cylindrica* M. Roem., *Luffa pentandra* Roxb., *Momordica cylindrica* L., *Momordica luffa* L.

Luffa cylindrica M. Roem., see *Luffa aegyptiaca* Mill.

Luffa pentandra Roxb., see *Luffa aegyptiaca* Mill.

Luffa sphaerica Sond., see *Lagenaria sphaerica* (Sond.) Naudin

Luffa spp.

Family: Cucurbitaceae

Grin Nomen Number: 300322

Field Infestation:

Clancy 1952:

Bareilly, State of Uttar Pradesh, India

In November 1949, 21,883 fruit fly puparia, reared from *Luffa* sp., were received in Hawaii from Bareilly, India. The flies from these pupae were identified by Dr. Elmo Hardy as *B. cucurbitae* (listed as *Dacus cucurbitae* Coquillett) and *B. caudatus* (listed as *Dacus caudatus* F.), the majority being the former.

Clausen et al. 1965:

South China

From *Luffa* spp. collections in July 1950 in South China, 625 *Bactrocera cucurbitae* (listed as *Dacus cucurbitae* Coq.) puparia were recovered.

Taiwan (referred to as Formosa)

From *Luffa* spp. collections in August 1950 in Taiwan, 1,700 puparia were recovered, a mix of two predominant species: *Bactrocera cucurbitae* (listed as *Dacus cucurbitae* Coq.) and *Bactrocera tau* (listed as *Dacus nubilus* Hendel) (the fruits yielded mainly *B. cucurbitae*, with a small number of *B. tau*).

North India

From collections of *Luffa* spp. from October 1949 to October 1950 in Northern India, 172,958 puparia were recovered, a mix of three dominant species: *Bactrocera cucurbitae* (listed as *Dacus cucurbitae* Coq.), *Bactrocera tau* (listed as *Dacus nubilus* Hendel), and *Dacus ciliatus* Loew (*B. cucurbitae* was the dominant species).

+Fullaway 1916:

Singapore

Bactrocera cucurbitae adults (listed as *Dacus cucurbitae*) were reared out of *Luffa* sp. fruits (listed as luffas). No infestation rate data were given.

Ramadan and Messing 2003:

Thailand

One (1) collection of immature *Luffa* sp. fruits with oviposition scars or signs of larval infestation was made in 1996 from one locality in Thailand (Narathiwat). Fruits were held over sawdust, which was subsequently sifted for recovery of tephritid fruit fly puparia. Four (4) *B. cucurbitae* puparia were recovered, from which 2 adults emerged (50.0% emergence).

Syed 1971:

Multan and Rawalpindi, Province of Punjab, Pakistan

In Multan (1963-1964), some *Luffa* spp. fruits were infested by *B. cucurbitae* (listed as *Dacus cucurbitae*) in August, near the time of first fruiting, with infestation rate increasing to 53% by November; in Rawalpindi (1962-1963), infestation of *Luffa* spp. by *B. cucurbitae* began in August, increased to 10% in September, and continued at about this rate until late in November. Total number of fruits collected was not given.

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Luffa* sp. fruits, originating in Hawaii, at an airport in Hawaii (Honolulu) on two occasions: in 1999 and in 2007. Recovery was five live larvae on each occasion.

Listing Only: +Ayyar 1935 (listed as *Chaetodacus cucurbitae*; listed as luffa); California Department of Food and Agriculture 2001; Chawla 1966 (listed as *Dacus cucurbitae*); Hawaii Department of Agriculture 2009; Holbrook 1967; Isnadi 1991 (listed as *Dacus cucurbitae*); Kandybina 1987 (listed as *Dacus cucurbitae*); Margosian et al. 2009; +Mau et al. 2007 (listed as luffa); McBride and Tanada 1949 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); Okinawa Prefectural Fruit Fly Eradication Project 1987 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); Vijayasegaran 1985 (listed as *Dacus cucurbitae*); +Walker 2005 (listed as luffa); +Yong 1992 (listed as *Dacus cucurbitae*; listed as luffa).

Lycopersicon esculentum Mill., see *Solanum lycopersicum* L. var. *lycopersicum*

Lycopersicon esculentum Mill. forma *pyriforme* (Alef.) C. H. Müll., see *Solanum lycopersicum* L. var. *lycopersicum*

Lycopersicon esculentum Mill. var. *cerasiforme* Alef., see *Solanum lycopersicum* L. var. *cerasiforme* (Alef.) Fosberg

Lycopersicon esculentum Mill. var. *commune* L. H. Bailey, see *Solanum lycopersicum* L. var. *lycopersicum*

Lycopersicon esculentum Mill. var. *esculentum*, see *Solanum lycopersicum* L. var. *lycopersicum*

Lycopersicon esculentum Mill. var. *grandifolium* L. H. Bailey, see *Solanum lycopersicum* L. var. *lycopersicum*

Lycopersicon esculentum Mill. var. *pyriforme* (Dunal) Alef., see *Solanum lycopersicum* L. var. *lycopersicum*

Lycopersicon esculentum Mill. var. *validum* L. H. Bailey, see *Solanum lycopersicum* L. var. *lycopersicum*

Lycopersicon lycopersicum (L.) H. Karst., see *Solanum lycopersicum* L. var. *lycopersicum*

Lycopersicon lycopersicum (L.) H. Karst. var. *cerasiforme* (Alef.) M. R. Almeida, see *Solanum lycopersicum* L. var. *cerasiforme* (Alef.) Fosberg

Lycopersicon lycopersicum (L.) H. Karst. var. *pyriforme* auct., see *Solanum lycopersicum* L. var. *lycopersicum*

Lycopersicon lycopersicum (L.) Kaarst. ex. Farw. see *Solanum lycopersicum* L.

Lycopersicon esculentum see *Solanum lycopersicum* L.

Lycopersicon pyriforme Dunal, see *Solanum lycopersicum* L. var. *lycopersicum*

Lycopersicon spp. see *Solanum* subsect. *lycopersicon* sp.

Lycopersicum esculeatissimum Miller see *Solanum lycopersicum* L.

Maerua siamensis (Kurz) Pax

Family: Capparaceae

Grin Nomen Number: No listing in GRIN for this species; naming authority taken from The Plant List. This scientific name, however, is listed as an “unresolved name” by The Plant List.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 1 sample of *M. siamensis*.

Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Chinajariyawong et al. 2000:

Thailand

Bactrocera cucurbitae was reared from 2 samples of *M. siamensis* collected in Thailand.

No infestation rate data were given.

Listing Only: CABI 2016 (listed as a wild host); Cantrell et al. 1999; De Meyer et al. 2014; Plant-wise Knowledge Bank 2015.

Malpighia biflora Poir., see *Malpighia glabra* L.

Malpighia glabra L.

Family: Malpighiaceae

Grin Nomen Number: 23206

Common Names: acerola (Spanish), escobillo (Spanish).

Native: NORTHERN AMERICA – *South-Central U.S.A.*: United States – Texas; *Northern Mexico*: Mexico – Nuevo Leon, San Luis Potosi, Tamaulipas; *Southern Mexico*: Mexico – Campeche, Chiapas, Guerrero, Hidalgo, Oaxaca, Quintana Roo, Tabasco, Veracruz, Yucatan; SOUTHERN AMERICA – *Caribbean*: Cuba, Haiti, Hispaniola, Jamaica, Netherlands Antilles; *Central America*: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama; *Northern South America*: French Guiana, Venezuela; *Brazil*: Brazil – Bahia; *Western South America*: Colombia, Peru.

Cultivated: also cultivated.

Lab Infestation:

Iwaizumi et al. 1994:

Intact, mature *M. glabra* fruits (listed as *Malpighia grabra*) were exposed to 10 gravid female *B. cucurbitae* for 24 hours in a screen-net cage. An average (over three replications) of 97.0±38.9 adults was recovered. Fruits punctured several times with insect pins were similarly exposed to 10 gravid females, with an average recovery of 136.0±25.8 adult flies.

Synonyms: *Malpighia biflora* Poir., *Malpighia puniceifolia* L.

Malpighia puniceifolia L., see *Malpighia glabra* L.

Malus dasyphylla Borkh., see *Malus pumila* Mill.

Malus domestica Borkh.

Family: Rosaceae

Grin Nomen Number: 104681

Common Names: Apfel (German), Apfelbaum (German), apple (English), äpple (Swedish), jabloko (transliterated Russian), jablonja (transliterated Russian), Kultur-Apfel (German), macieira (Portuguese), manzana (Spanish), manzano (Spanish), ping guo (transcribed Chinese), pommier commun (French), ringo (Japanese Rōmaji), sagwanamu (transcribed Korean).

Naturalized: Sometimes naturalized.

Cultivated: Cultivated.

Lab Infestation:

+*Back and Pemberton 1917:*

Hawaii, U.S.A.

The authors stated that “Larvae hatching from eggs deposited by females in confinement in apples succeeded in the fruits of softer texture in reaching maturity.” *Bactrocera cucurbitae* larvae emerging in *M. domestica* fruits (listed as apples) of firmer texture failed to penetrate the pulp and died.

+*Back and Pemberton 1918:*

Hawaii, U.S.A.

The authors stated that adult *B. cucurbitae* have been reared from *M. domestica* (listed as apple), but that apple does not serve regularly as a host; that it is attacked by melon fly only in rare instances, and then only slightly.

Listing Only: Chawla 1966 (listed as *Dacus cucurbitae*; listed as *Pyrus malus* L.); Dhillon et al. 2005a (listed as *Pyrus malus*); Kandybina 1987 (listed as *Dacus cucurbitae*); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Pyrus malus*); +Margosian et al. 2009 (listed as apple); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as *Pyrus malus*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as *Pyrus malus*); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *Malus sylvestris*); Phillips 1946 (listed as *Pyrus malus*); +Rajamannar 1962 (listed as *Dacus cucurbitae*; listed as soft apple); Syed 1971 (listed as *Dacus cucurbitae*; listed as *Pyrus malus*); USDA 1986 (listed as *Dacus cucurbitae*; listed as *Pyrus sylvestris*, but also indicated that is the same species as *Pyrus malus*, which is a synonym of *Malus domestica*); White and Elson-Harris 1992 (authors state “requires confirmation”).

Synonyms: *Malus communis*, *Malus malus* (L.) Britton, nom. inval., *Malus pumila* auct., *Malus pumila* var. *domestica* (Borkh.) C. K. Schneid., *Malus sylvestris* auct., *Malus sylvestris* var. *domestica* (Borkh.) Mansf., *Pyrus malus* L.

Malus frutescens Medik., see *Malus* spp.

Malus malus (L.) Britton, nom. inval., see *Malus domestica* Borkh.

Malus niedzwetzkyana Dieck, see *Malus pumila* Mill.

Malus paradisiaca (L.) Medik., see *Malus pumila* Mill.

Malus praecox Borkh., see *Malus pumila* Mill.

Malus pumila auct., see *Malus domestica* Borkh.

Malus pumila var. *domestica* (Borkh.) C. K. Schneid., see *Malus domestica* Borkh.

Malus pumila var. *niedzwetzkyana* (Dieck) C. K. Schneid., see *Malus pumila* Mill.

Malus pumila var. *paradisiaca* (L.) C. K. Schneid., see *Malus pumila* Mill.

Malus pumila Mill.

Family: Rosaceae

Grin Nomen Number: 23261

Common Names: Paradies-Apfel (German), paradise apple (English), pommier paradis (French).

Native: EUROPE – *Middle Europe*: Austria, Czech Republic, Hungary, Slovakia; *East Europe*: Russian Federation – European part; *Southeastern Europe*: Albania, Bulgaria, Croatia, Greece, Macedonia, Romania, Serbia, Slovenia.

Cultivated: also cultivated.

Listing Only: USDA 1986 (listed as *Dacus cucurbitae*; indicated as being the same species as *Malus sylvestris* and *Pyrus malus*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as both *Malus sylvestris* var. *paradisiaca* and as Paradise apple; insufficient data to justify regulation).

Synonyms: *Malus dasyphylla* Borkh., *Malus niedzwetzkyana* Dieck, *Malus paradisiaca* (L.) Medik., *Malus praecox* Borkh., *Malus pumila* var. *niedzwetzkyana* (Dieck) C. K. Schneid., *Malus pumila* var. *paradisiaca* (L.) C. K. Schneid., *Malus sylvestris* var. *dasyphylla* (Borkh.) Ponomar., *Malus sylvestris* var. *niedzwetskyana* (Dieck) L. H. Bailey, *Malus sylvestris* var. *praecox* Ponomar., *Pyrus malus* subsp. *paradisiaca* (L.) Schübl. and G. Martens, *Pyrus malus* var. *paradisiaca* L., *Pyrus niedzwetzkyana* (Dieck) Hemsl., *Pyrus praecox* Pall.

Malus spp.

Family: Rosaceae

Grin Nomen Number: 300350

Listing Only: Kandybina 1987 (listed as *Dacus cucurbitae*).

Synonyms: *Malus frutescens* Medik.

Malus sylvestris (L.) Mill.

Family: Rosaceae

Grin Nomen Number: 23279

Common Names: crab apple (English), European crab apple (English), Holz-Apfel (German), jablonja lesnaja (transliterated Russian), pommier sauvage (French), Wild-Apfel (German).

Native: EUROPE – *Northern Europe*: Denmark, Finland, Ireland, Norway, Sweden, United Kingdom; *Middle Europe*: Austria, Belgium, Czech Republic, Germany, Hungary, Netherlands, Poland, Slovakia, Switzerland; *East Europe*: Belarus, Estonia, Latvia, Lithuania, Moldova, Russian Federation

– European part; Ukraine, Krym; *Southeastern Europe*: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Italy, Sicily, Macedonia, Montenegro, Romania, Serbia, Slovenia; *Southwestern Europe*: France, Corsica, Portugal, Spain.

Cultivated: also cultivated.

Listing Only: California Department of Food and Agriculture 2001; Cantrell et al. 1999; Holbrook 1967; USDA 1986 (listed as *Dacus cucurbitae*; indicated as being the same species as *Malus pumila* and *Pyrus malus*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*).

Malus sylvestris auct., see *Malus domestica* Borkh.

Malus sylvestris var. *dasyphylla* (Borkh.) Ponomar., see *Malus pumila* Mill.

Malus sylvestris var. *domestica* (Borkh.) Mansf., see *Malus domestica* Borkh.

Malus sylvestris var. *niedzwetskyana* (Dieck) L. H. Bailey, see *Malus pumila* Mill.

Malus sylvestris var. *praecox* Ponomar., see *Malus pumila* Mill.

Mammea africana Sabine

Family: Calophyllaceae

Grin Nomen Number: 311301

Common Names: abricotier d'Afrique (French), African mammee-apple (English), African-apple (English), African-apricot (English), bastard-mahogany (English), obota (French).

Native: AFRICA – *East Tropical Africa*: Uganda; *West-Central Tropical Africa*: Cameroon, Gabon, Zaire; *West Tropical Africa*: Côte d'Ivoire, Ghana, Liberia, Nigeria, Sierra Leone; *South Tropical Africa*: Angola.

Interception Data:

PestID 2016:

Nigeria

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Mammea africana*, originating in Nigeria, at an airport in Colorado (Denver) on one occasion in 2008. Recovery was seven live larvae.

Synonyms: *Ochrocarpos africanus* (Sabine) Oliv.

Mangifera indica L.

Family: Anacardiaceae

Grin Nomen Number: 23351

Common Names: amba (transliterated Arabic), common mango (English), Indian mango (English), manga (Portuguese), manga (Spanish), mango (English), Mango (German), mango (Swedish), Mangobaum (German), Mangopalme (German), mangue (French), mangueira (Portuguese), manguier (French).

Native: ASIA-TROPICAL – *Indian Subcontinent*: India – Assam; *Indo-China*: Myanmar.

Cultivated: Widely cultivated in tropics.

Field Infestation:

Ali et al. 2014a:

Abugubeiha Province, South Kordofan State, Sudan

A field assessment was conducted during the 2005 to 2006 and 2006 to 2007 growing seasons in Abugubeiha Province, South Kordofan State, Sudan, of tephritid fruit fly infestation in *M. indica*, *Citrus paradisi* (listed as grapefruit) and *Psidium guajava* (listed as guava). One hundred (100) fruits of each fruit species were randomly collected in each of two fruiting seasons and held over sand in fine mesh-covered plastic containers. Pupae were recovered from the sand and held in small cages until adult emergence. *Bactrocera cucurbitae* and *Ceratitis cosyra* were recovered from *M. indica* fruits (cv. *Abusamaka*) during the first season. Both species, along with *B. dorsalis* (listed as *B. invadens*),

were recovered from *M. indica* fruits in the second season, where *C. cosyra* was more common than the other two species.

Ali et al. 2014b:

Abugubeiha Province, South Kordofan State, Sudan

Mangifera indica fruits were collected during the 2005 through 2006 growing season in Abugubeiha Province, South Kordofan State, Sudan, and held for recovery of infesting tephritid fruit flies. Out of 6.0 kg of *M. indica* fruits, 45 *B. cucurbitae* adults were recovered for an infestation rate of 7.5 *B. cucurbitae* per kg fruit. *Bactrocera dorsalis* (listed as *B. invadens*) and *C. cosyra* were also recovered.

+*Back and Pemberton 1917:*

Hawaii, U.S.A.

Mangifera indica (listed as mango) is listed as “occasionally infested” by *B. cucurbitae*. The authors reported that F.W. Terry reared adult melon flies from ripe mangoes in August 1907. The authors, though, further noted that this is one of several fruits that has “never been known to serve regularly” as a melon fly host and that this record of infestation “must be considered as exceptional.”

+*Back and Pemberton 1918:*

Hawaii, U.S.A.

Mangifera indica (listed as mango) is listed as “occasionally infested” by *B. cucurbitae*. The authors stated that adult melon flies have been reared from mango, but that mango does not serve regularly as a host; that it is attacked by melon fly only in rare instances, and then only slightly.

Clausen et al. 1965:

Malaysia (Sabah) (referred to as North Borneo; place names listed are in present day Sabah, Malaysia)

From collections of *M. indica* from April to July 1951 in Sabah, Malaysia (referred to as North Borneo), 23,570 puparia were recovered, a mix of two predominant species: *B. cucurbitae* (listed as *Dacus cucurbitae* Coq.) and *B. dorsalis* (listed as *Dacus dorsalis* Hendel) (ratio not stated). *Bactrocera cucurbitae* was recovered in smaller numbers than it had been in cucurbitaceous hosts.

+*Hala et al. 2008:*

Korhogo, Côte d'Ivoire

Three varieties of *M. indica* ('Amelie,' 'Kent', and 'Keitt'; listed as mango) were collected in June in 2005 and 2006 at the Korhogo research station in Korhogo, Côte d'Ivoire. Similar collections were made in May to June in Yamoussoukro and in May in Abidjan. Fruits were held in “rearing devices” in a laboratory for recovery of infesting tephritid fruit flies. Recovered flies were sent to the Royal Museum of Central Africa for identification. Overall, ten species of tephritid fruit flies were recovered. *Bactrocera cucurbitae* accounted for 1.0% of the tephritid fruit flies recovered from Korhogo in 2005, but was not recovered in 2006 and was not recovered in either Yamoussoukro or in Abidjan in either 2005 or 2006.

McBride and Tanada 1949:

Hawaii, U.S.A.

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was reared from *M. indica* fruits (by O.C. McBride). Fruits of the mango varieties, 'Common' or 'Manini', 'French,' 'Fairchild,' and 'Pirie' were found infested. From 31 fruits of the 'Common' variety, 10 *B. cucurbitae* flies emerged; from 20 fruits of the 'French' variety, 2 flies emerged; from 20 fruits of the 'Fairchild' variety, 10 flies emerged; and from 22 fruits of the 'Pirie' variety, 1 fly emerged. The authors listed *M. indica* as a rarely injured plant.

Mwatawala et al. 2009a:

Morogoro Region, Central Tanzania

Mature *M. indica* fruits were randomly collected at regular intervals between October 2004 and October 2006 from areas within the Sokoine University of Agriculture campus in Morogoro and from Nyandira, Mikese, Mkindo in the Morogoro region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupation of infesting tephritid fruit flies. Emerged adults were removed and identified. Four (4) of 122 (3.28%) *M. indica* samples (101.33 kg) were infested by *B. cucurbitae*.

Mwatawala et al. 2010:

Morogoro Region, Central Tanzania

One thousand three hundred forty-eight (1,348) mature *M. indica* fruits (313.84 kg) were collected at irregular intervals between October 2004 and April 2008, from the Morogoro Region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupariation of infesting tephritid fruit flies. Emerged adults were removed and identified. *Bactrocera cucurbitae* flies were recovered from 5 of 221 collections (2.26%), with an overall infestation rate of 0.015 flies/kg fruit and 1.16 flies/kg infested fruit.

Vayssières et al. 2007:

Benin and Mali, West Africa

Tephritid fruit fly-infested *Mangifera indica* fruits were collected from untreated orchards in Benin and Mali. Fruits were placed on mesh supports over sand. Tephritid fruit fly pupae, recovered through weekly sieving of the sand, were transferred to small hatching boxes lined with wet blotting paper and held for adult emergence. In Benin, in 2006 and 2007, *B. cucurbitae* was recovered from *M. indica* fruits (cultivars ‘Gouverneur,’ ‘Eldon,’ ‘Alphonse de Goa,’ and ‘Keitt’). Infestation levels were low (2 pupae/kg fruit) and localized. The authors suggest that average *M. indica* infestation levels in West Africa fall within the range of 1 to 25 pupae/kg fruit.

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Mangifera indica* fruits, originating in Hawaii, at airports in Hawaii on 20 occasions (Honolulu–18; Kahului–1; Kailua-Kona–1) between 2003 and 2005. Live larvae were recovered in 18 of these interceptions, with an average of 3.9 live larvae (range: 2–8) per interception. In an interception in February 2004 (Kailua-Kona), eight live adults were recovered; and in an interception in August 2005 (Honolulu), four (4) live pupae and one (1) live adult were recovered.

Nigeria

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Mangifera indica* fruit(s), originating in Nigeria, at an airport in Texas (Houston) on one occasion in 2012. Recovery was two live larvae.

Listing Only: Botha et al. 2004 (listed as a secondary host); CABI 2016; California Department of Food and Agriculture 2001; Cantrell et al. 1999; Chawla 1966 (listed as *Dacus cucurbitae*); +Commonwealth Institute of Entomology 1978 (listed as mango); De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Dhillon et al. 2005a; European and Mediterranean Plant Protection Organization 2015 (listed as a minor host); Government of Western Australia Department of Agriculture and Food 2015; +Hawaii Department of Agriculture 2009 (listed as mango); +Heppner 1989 (listed as *Dacus cucurbitae*; listed as mango); Holbrook 1967 (listed as “occasionally infested”); Hollingsworth et al. 1996; +Kakinohana et al. 1997 (listed as mango); Kandybina 1987 (listed as *Dacus cucurbitae*); Kapoor 1970 (listed as *Dacus cucurbitae*); +Keck 1951 (listed as *Dacus cucurbitae*; listed as mango); +Lall 1975 (listed as *Dacus cucurbitae*; listed as mango); +Liu 1993 (listed as *Dacus cucurbitae*; listed as mango); Mamet and Williams 1993 (listed as *Dacus cucurbitae*); +Margosian et al. 2009 (listed as mango); +NAPPO, PAS 2015 (listed as mango); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); +Okinawa Prefectural Fruit Fly Eradication Project 1987 (listed as *Dacus cucurbitae*; listed as mango); Orian and Moutia 1960 (listed as *Dacus cucurbitae*); Phillips 1946; Plantwise Knowledge Bank 2015; Ponce 1937 (listed as *Dacus cucurbitae*); Quilici and Jeuffrault 2001; +Rajamannar 1962 (listed as *Dacus cucurbitae*; listed as mango); +Severin et al. 1914 (listed as *Dacus cucurbitae*; listed as mango); Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host); +USDA-ARS 1959 (listed as mango); +Van Dine 1906 (listed as *Dacus cucurbitae*; listed as mango); +Weems 1964 (listed as *Dacus cucurbitae*; listed as mango; listed as an occasional host); +Weems 1967 (listed as *Dacus cucurbitae*; listed as mango; listed as an occasional host); +Weems et al. 2001 (listed as mango; listed as an occasional host); White and Elson-Harris 1992.

Synonyms: *Mangifera mekongensis* anon.

Mangifera mekongensis anon., see *Mangifera indica* L.

Mangifera spp.

Family: Anacardiaceae

Grin Nomen Number: 312406

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Mangifera* sp. fruit(s), originating in Hawaii, at an airport in Hawaii (Honolulu) in 2005. Recovery was nine live larvae.

Manilkara achras (Mill.) Fosberg, see *Manilkara zapota* (L.) P. Royen

Manilkara zapotilla (Jacq.) Gilly, see *Manilkara zapota* (L.) P. Royen

Manilkara spp.

Family: Sapotaceae

Grin Nomen Number: 318439

Interception Data:

PestID 2016:

Nigeria

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Manilkara* sp. fruit(s), originating in Nigeria, at an airport in California (Los Angeles) on one occasion in 2003. Recovery was eight live larvae.

Synonyms: *Achras* spp.

Manilkara zapota (L.) P. Royen

Family: Sapotaceae

Grin Nomen Number: 102614

Common Names: Breiapfelbaum (German), chicle (English), chico sapote (Spanish), Kaugumibaum (German), naseberry (English), nispero (Spanish), sapodilla (English), Sapodillbaum (German), sapote (English), Sapote (German), sapotier (French), sapotillier (French), sapotillplommon (Swedish), zapote (Spanish), zapotillo (Spanish).

Native: NORTHERN AMERICA – Mexico; SOUTHERN AMERICA – *Central America*: Belize, Guatemala, Nicaragua.

Uncertain: SOUTHERN AMERICA – *Central America*: Belize, Guatemala, Nicaragua.

Cultivated: Widely cultivated in tropics.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 1 sample of *M. zapota*. Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Interception Data:

PestID 2016:

Ghana

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Manilkara zapota* fruits, originating in Ghana, at airports in Illinois (Chicago; on one occasion in 2005) and New York (JFK; on one occasion in 2014). Recovery were two live larvae (Chicago) and one live larva (JFK).

Nigeria

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Manilkara zapota* fruits, originating in Nigeria, at airports in Illinois (Chicago–1), New York (JFK–4) and

Texas (Dallas/Ft. Worth–1) on six occasions from 2005 to 2014. Average recovery was 1.5 live larvae (range: 1–3).

Unknown

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Manilkara zapota* fruit(s), originating from an unknown location (data insufficient), at an airport in Massachusetts (Boston) on one occasion in 2008. Recovery was six live larvae.

Listing Only: CABI 2016 (listed as a secondary host); Cantrell et al. 1999; De Meyer et al. 2014; Plantwise Knowledge Bank 2015.

Synonyms: *Achradelpha mammosa* O. F. Cook, *Achras mammosa* L., *Achras zapota* L., *Achras zapota* var. *zapotilla* Jacq., *Achras zapotilla* (Jacq.) Nutt., *Calocarpum mammosum* Pierre, *Lucuma mammosa* C. F. Gaertn., *Manilkara achras* (Mill.) Fosberg, *Manilkara zapotilla* (Jacq.) Gilly, *Pouteria mammosa* Cronquist, *Sapota zapotilla* (Jacq.) Coville

Melanolepis diadema Miq., see *Endospermum diadenum* (Miq.) Airy Shaw

Melia koetjape Burm. f., see *Sandoricum koetjape* (Burm. f.) Merr.

Melothria heterophylla (Lour.) Cogn., see *Solena heterophylla* Lour.

Melothria liukiensis Nakai, see *Zehneria mucronata* (Blume) Miq.

Melothria maderaspatana (L.) Cogn., see *Cucumis maderaspatanus* L.

Melothria sphaerocarpa (Cogn.) H. Schaef. and S.S. Renner

Family: Cucurbitaceae

Grin Nomen Number: 463029

Common Names: dark egusi (English), égousi (French), egousi-itoo (French), egusi-itoo (English), gousi (French), lipupu (Portuguese), white-seed-melon (English).

Native: AFRICA – *Northeast Tropical Africa:* Sudan; *West-Central Tropical Africa:* Cameroon, Central African Republic, Equatorial Guinea, Zaire; *West Tropical Africa:* Côte d’Ivoire, Ghana, Guinea-Bissau, Liberia, Nigeria, Sierra Leone; *South Tropical Africa:* Angola; SOUTHERN AMERICA – *Caribbean:* Dominican Republic, Trinidad and Tobago – Trinidad; *Northern South America:* Guyana, Venezuela – Amazonas, Barinas, Carabobo, Cojedes, Delta Amacuro, Lara, Merida, Portuguesa, Sucre, Yaracuy; *Brazil:* Brazil – Amazonas, Para; *Western South America:* Bolivia, Colombia, Ecuador.

Cultivated: AFRICA – *West-Central Tropical Africa:* Cameroon, Central African Republic; *West Tropical Africa:* Côte d’Ivoire, Nigeria.

Field Infestation:

Vayssières et al. 2007:

Benin, West Africa

Tephritid fruit fly-infested *M. sphaerocarpa* fruits (listed as *Cucumeropsis manni* Naud.) were collected from untreated orchards in West Africa. Fruits were placed on mesh supports over sand. Tephritid fruit fly pupae, recovered through weekly sieving of the sand, were transferred to small hatching boxes lined with wet blotting paper and held for adult emergence. The average *B. cucurbitae* infestation level in *M. sphaerocarpa* fruits in West Africa fell in the range of 26–50 pupae/kg fruit.

Listing Only: De Meyer et al. 2014 (listed as *Cucumeropsis manni*); De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*; listed as *Cucumeropsis manni* Naud.).

Synonyms: *Cladosicyos edulis* Hook. f., *Cucumeropsis edulis* (Hook. f.) Cogn., *Cucumeropsis manni* Naudin, *Posadaea sphaerocarpa* Cogn.

Melothria wallichii C. B. Clarke, see *Zehneria wallichii* (C.B. Clarke) C. Jeffrey

Mespilus japonica Thunb., see *Eriobotrya japonica* (Thunb.) Lindl.

Mimosaceae R. Br., nom. cons., see *Fabaceae* Lindl., nom. cons.

Modecca bracteata Lam., see *Trichosanthes tricuspidata* Lour.

Modecca palmata Lam., see *Adenia hondala* (Gaertn.) W. J. de Wilde

Momordica balsamina L.

Family: Cucurbitaceae

Grin Nomen Number: 24519

Common Names: Balsamapfel (German), balsam-apple (English), balsamgurka (Swedish), balsamina (Spanish), balsâmina-de purga (Portuguese), jangli karela (Urdu-Pakistan), pomme de merveille (French).

Native: AFRICA – *Northeast Tropical Africa:* Yemen – Socotra; *East Tropical Africa:* Tanzania; *West Tropical Africa:* Mali, Nigeria, Senegal; *South Tropical Africa:* Angola, Mozambique, Zambia, Zimbabwe; *Southern Africa:* Botswana, Namibia, South Africa – Cape Province, Free State, KwaZulu – Natal, Transvaal; Swaziland; ASIA-TEMPERATE – *Arabian Peninsula:* Yemen; ASIA-TROPICAL – *Indian Subcontinent:* India – Maharashtra, Punjab, Rajasthan, Uttar Pradesh; Nepal, Pakistan; AUSTRALASIA – *Australia:* Australia – New South Wales, Northern Territory, Queensland, South Australia, Western Australia.

Naturalized: NORTHERN AMERICA – *Southeastern U.S.A.:* United States – Florida, Louisiana; *South-Central U.S.A.:* United States – Texas; SOUTHERN AMERICA – *Caribbean:* Cuba, Dominican Republic, Haiti, Jamaica; *Western South America:* Peru.

Cultivated: SOUTHERN AMERICA – *Caribbean:* Guadeloupe; Martinique.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from samples of *M. balsamina*. Number of fruit samples and infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Marucci 1951:

Hawaii, U.S.A.

During November to December 1949, 51 *M. balsamina* fruits were collected and held over sand to rear out any infesting tephritid fruit flies. One hundred and nine (109) adult *B. cucurbitae* (listed as *Dacus cucurbitae*) were recovered.

Marucci 1951:

Hawaii, U.S.A.

On 24 September 1950, 46 *M. balsamina* fruits were harvested and placed in a rearing jar. Three hundred and two (302) *B. cucurbitae* puparia (listed as *Dacus cucurbitae*) were recovered.

Ndiaye et al. 2012:

Niayes and Thiès plateau zones, Senegal

Momordica balsamina fruits were collected from April-December 2008, and held over sieved coarse sand in cloth-covered pots. Recovered tephritid fruit fly pupae were transferred to Petri dishes for adult emergence and species identification. *Bactrocera cucurbitae* was recovered from the 1.6 kg of *M. balsamina* fruits sampled, with an infestation rate of ≤ 100 individuals per kg fruit.

Newell et al. 1952:

Island of Oahu, Hawaii, U.S.A.

Momordica balsamina fruits were collected monthly from multiple stations at three localities on the Island of Oahu, Hawaii (Makaha Valley, Kahuku and Waimanalo) from February 1950 to January 1951. Where possible, mature orange or yellow fruits were gathered, but some green-yellow or even green-white fruits were included. In the laboratory, larvae were removed from the fruits and reared on diced pumpkin. Average *B. cucurbitae* (listed as *Dacus cucurbitae*) infestation rates were 3.1, 3.4, and 4.1 larvae per fruit out of 1,686, 1,803, and 2,517 *M. balsamina* fruits held from Makaha Valley, Kahuku and Waimanalo, respectively.

Nishida 1955:

Island of Oahu, Hawaii, U.S.A.

Infested *M. balsamina* fruits, with nearly full grown *B. cucurbitae* (listed as *Dacus cucurbitae*) larvae, were collected at cultivated areas in two locations on the Island of Oahu, Hawaii from 1950 to 1951: Waianae and Waimanalo. Larvae were extracted from fruits and placed in small wax paper cups containing pumpkin pulp. The cups were placed on sand in jars in which a high humidity was maintained. One hundred forty-eight (148) and 180 *B. cucurbitae* larvae were recovered from the fruits at the two sites, respectively. Number of fruits and infestation rate data were not given.

Syed 1971:

Karachi, Sindh Province, Pakistan

In Karachi (1962–1966), *M. balsamina*, available almost throughout the year, was infested by both *B. cucurbitae* (listed as *Dacus cucurbitae*) and *Dacus ciliatus*, with total infestation rates of 4% in January up to 100% in February, 35% in March, 6% in April, 20% in August, 5% in September, almost 100% in November and subsiding to 3% in December.

Listing Only: Botha et al. 2004 (listed as a secondary host); CABI 2016 (listed as a secondary host); California Department of Food and Agriculture 2001; Cantrell et al. 1999; De Meyer et al. 2014; Government of Western Australia Department of Agriculture and Food 2015; Holbrook 1967; Kapoor 1970 (listed as *Dacus cucurbitae*); Leblanc et al. 2013b; McBride and Tanada 1949 (listed as *Dacus cucurbitae*); +NAPPO, PAS 2015 (listed as balsam apple); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Nishida 1953 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *M. balsamina*); Plantwise Knowledge Bank 2015; USDA 1986 (listed as *Dacus cucurbitae*; listed as *Momordica balsamina*); USDA-APHIS 2000 (listed as *Momordica balsamina*); USDA-APHIS 2008 (listed as *Momordica balsamina*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host); White and Elson-Harris 1992; Williamson et al. 1985.

Momordica charantia L.

Family: Cucurbitaceae

Grin Nomen Number: 24520

Common Names: amerikanische Bittergurke (German), balsam-apple (English), balsam-pear (English), Balsambirne (German), balsamito (Spanish), bálsamo (Spanish), bitter-cucumber (English), bitter gourd (English), bitter-melon (English), bittergurka (Swedish), Bittergurke (German), carilla gourd (English), concombre africain (French), cundeamor (Spanish), karela (India), ku gua (transcribed Chinese), margose (French), momordique (French), paria (Indonesian), paroka (French), peria (Malay), yeoju (transcribed Korean).

Native: AFRICA – *East Tropical Africa:* Kenya, Tanzania, Uganda; *West-Central Tropical Africa:* Burundi, Cameroon, Gabon, Rwanda, Zaire; *West Tropical Africa:* Benin, Côte d'Ivoire, Gambia, Ghana, Liberia, Mali, Nigeria, Senegal, Sierra Leone; *South Tropical Africa:* Angola, Malawi, Mozambique, Zambia, Zimbabwe; *Western Indian Ocean:* Madagascar; ASIA-TROPICAL – *Indian Subcontinent:* India, Nepal, Pakistan, Sri Lanka; *Indo-China:* Cambodia, Thailand, Vietnam; *Malesia:* Indonesia, Malaysia, Papua New Guinea, Philippines; AUSTRALASIA – *Australia:* Australia – Queensland; PACIFIC – *South-Central Pacific:* French Polynesia; *Southwestern Pacific:* Fiji.

Naturalized: NORTHERN AMERICA – *Southeastern U.S.A.:* United States – Florida, Louisiana; *South-Central U.S.A.:* United States – Texas, Mexico; PACIFIC – *North-Central Pacific:* United States – Hawaii; SOUTHERN AMERICA – *Caribbean:* Bahamas, Barbados, Cayman Islands, Cuba, Dominica, Dominican Republic, Grenada, Guadeloupe, Haiti, Jamaica, Martinique, Montserrat, Netherlands Antilles, Puerto Rico, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Virgin Islands (British), Virgin Islands (U.S.); *Central America:* Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama; *Northern South America:* French Guiana, Guyana, Suriname, Venezuela; *Brazil:* Brazil; *Western South America:* Bolivia, Ecuador, Peru; *Southern South America:* Argentina, Paraguay.

Cultivated: Widely cultivated.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 124 samples of *M. charantia*. Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Amin et al. 2011:

Dinajpur, Bangladesh

From April through July 2009, *M. charantia* was grown in a randomized complete design with four other cucurbit species (four replicates) at the Entomology Farm Laboratory, Hajee Mohammad Danesh Science and Technology University, Dinajpur, Bangladesh. Fruits were observed for infestation by *B. cucurbitae*, and harvested at maturity stage. An average of about 66% of *M. charantia* fruits was infested by *B. cucurbitae*. Adult *B. cucurbitae* were also recovered from field-infested *M. charantia* fruits brought back to the laboratory.

Bains and Sidhu 1984:

State of Punjab, India

Field observations of infestation of *M. charantia* fruits by *B. cucurbitae* (listed as *Dacus cucurbitae*) were made at 10-day intervals in Punjab, India, between May and September. Infested fruits were found in 11 of 13 observations (84.6%) with an average infestation rate of 20.5 (± 6.1 [standard error])%.

Banerji et al. 2005:

Kalyani, Nadia, West Bengal, India

Momordica charantia var. 'Meghna' was planted in Kalyani, Nadia, West Bengal, India in November 2000 ('rabi' season), February 2001 ('summer' season), and June 2001 ('kharif' season). The percentage infestation by *B. cucurbitae* among 30 tagged fruits was recorded weekly (based on visual observation) from initial fruiting stage until the end of the crop. After each week's observation, 30 new fruits were tagged for subsequent observation. Infestation of *M. charantia* by *B. cucurbitae* averaged 18.0 \pm 5.4 [standard error] (range: 3.33–33.33%), 26.7 \pm 3.9 (range: 6.67–43.33%), and 34.2 \pm 4.4 (range: 3.3–63.33%) during the rabi, summer and kharif seasons, respectively.

Bhowmik et al. 2014:

Nadia District, State of West Bengal, India

Momordica charantia plants were grown, without pesticide application, at three sites in the Nadia District of West Bengal, India. Percentage infestation of *M. charantia* fruits by *B. cucurbitae* was determined weekly, by observation, in 2012 (April–June) and in 2013 (March–May) (eight sampling times each year). Infestation averaged 28.8% (range: 12.7–40.1%) and 37.1% (range: 27.5–54.7%) in 2012 and 2013, respectively.

+*Birah et al. 2015:*

Port Blair, South Andaman Island, India

To test the effectiveness of different management techniques to minimize infestation by *B. cucurbitae*, *M. charantia* (listed as bitter gourd), variety 'Coimbatore Long,' was planted out in a randomized block design with 4 replicates during the 2010 to 2011 and 2011 to 2012 growing seasons at Garacharma farm in Port Blair, South Andaman Island. Percentage infestation of *M. charantia* fruits was determined at each of ten fruit harvests. In the control treatment, the average percentage infestation, averaged over both production years, was 39.3% (range over the ten fruit harvests: 20.3–75.4%).

Chinajariyawong et al. 2000:

Thailand

Bactrocera cucurbitae was reared from 1 sample of *M. charantia* collected in Thailand. No infestation rate data were given.

Chinajariyawong et al. 2003:

Thailand

Out of 1,309 *M. charantia* fruits sampled from a control field in a bait spray trial in Thailand, 526 (40.2%) were infested by *B. cucurbitae* and/or *B. tau* (*B. cucurbitae* was the dominant species).

Clarke et al. 2001:

Thailand

Five thousand five hundred and two (5,502) (81.4 kg) infested *M. charantia* fruits were collected in Thailand from 1986 to 1994. Five regions of Thailand (Chiang Rai, Chiang Mai, Bangkok,

Surat Thani, Songhkla) recorded infestation rates of 0.65, 0.99, 1.8, 2.4 and 2.3 *B. cucurbitae* per infested fruit and 91.5, 229.9, 73.0, 117.6 and 58.2 *B. cucurbitae* per kg infested fruits, respectively. *Bactrocera cucurbitae* was identified by either R.A.I. Drew or D. L. Hancock.

Clausen et al. 1965:

Island of Mindanao, Philippines

From *M. charantia* collections from February to September 1950, on the island of Mindanao in the Philippines, 1,554 puparia were recovered, a mix of two predominant species: *Dacus* n. sp. near *Bactrocera tau* (listed as *D. hageni* Meij) and *B. cucurbitae* (listed as *Dacus cucurbitae* Coq.) (ratio not stated, but it was stated that “[*B. cucurbitae*] was the dominant species infesting ampalaya”).

South China

From *M. charantia* collections from July to September 1950 in South China, 435 puparia were recovered, a mix of two predominant species: *Bactrocera cucurbitae* (listed as *Dacus cucurbitae* Coq.) and *Bactrocera tau* (listed as *Dacus nubilus* Hendel) (ratio not stated).

Thailand

From collections of *M. charantia* in July 1950 in Thailand, 1,720 *Bactrocera cucurbitae* (listed as *Dacus cucurbitae*) puparia were recovered.

Sabah, Malaysia (referred to as North Borneo; place names listed are in present day Sabah, Malaysia)

From collections of *M. charantia* from January to May 1951 in Sabah, Malaysia (referred to as North Borneo), 1,742 puparia were recovered, a mix of two predominant species: *Bactrocera cucurbitae* (listed as *Dacus cucurbitae* Coq.) and *Bactrocera tau* (listed as *Dacus hageni* Meij) (*B. cucurbitae* was the dominant species).

Sri Lanka (referred to as Ceylon)

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) puparia recovered from *M. charantia* collections in Sri Lanka were shipped to Hawaii during August and September 1951.

Cunningham and Steiner 1972:

Hawaii Island, Hawaii, U.S.A.

Ripe *M. charantia* fruits (14,220) were collected from scattered patches in a young macadamia nut orchard on the western slopes of the Island of Hawaii throughout the course of a male annihilation trial against *B. cucurbitae* (listed as *Dacus cucurbitae*). Fruits were held over sand until all infesting larvae had left the fruits and entered the sand for pupation. Fruit infestation averaged 2.7 *B. cucurbitae*/fruit and did not show any meaningful decrease in infestation rate over the course of the male annihilation trial.

Dhillon et al. 2005b:

Hisar, State of Haryana, India

During July 2001 to June 2002, 6 varieties (“wild genotypes) of *Momordica charantia* var. *muricata* (Note: this is not listed in GRIN; The Plant List reports this as a synonym of *Momordica charantia*) were naturally infested by melon fly over two growing seasons (rainy and summer) for an overall average of 4.5 larvae per fruit (ranging from 3.8–5.1 larvae per fruit) and an infestation rate of 10.6% (ranging from 8.3–12.6%). Total number of fruits collected was not given.

During July 2001 to March 2002, 11 varieties of *Momordica charantia* (cultivated genotypes) were naturally infested by melon fly over two growing seasons (rainy and summer) for an overall average of 6.09 larvae per fruit (ranging from 4.1–8.0 larvae per fruit) and an infestation rate of 38.25% (ranging from 18.9–69.5%). Percentage infestation and larval density per fruit were positively and significantly correlated with rib depth, flesh thickness, fruit diameter and fruit length, but negatively correlated with fruit toughness. Percentage infestation was also negatively correlated with the number of ribs/cm². Total number of fruits collected was not given.

Fernando and Udurawana 1941:

Sri Lanka

Five (5) varieties of *Momordica charantia*, four from the Central Division (CD) and one from the North-Western Division (NWD), were tested for resistance to *B. cucurbitae* (listed as *Dacus cucurbitae*) at the Vegetable Seed Station in Matale, Sri Lanka (referred to as Ceylon) over two maha and one yala seasons from 1938 to 1940.

Total number of fruits, total fruit weight (kg), number of damaged, and percentage damage by variety were as follows:

- 'CD green rough': (8,411 fruits, 473.32 kg, 758 infested fruits, 9.01% infested);
- 'CD green smooth': (5,608 fruits, 336.11 kg, 715 infested fruits, 12.75% infested),
- 'CD white rough': (6,577 fruits, 355.16 kg, 811 infested fruits, 12.33% infested),
- 'CD white smooth': (3,381 fruits, 192.32 kg, 624 infested fruits, 18.46% infested),
- 'NWD white smooth': (1,860 fruits, 184.39 kg, 680 infested fruits, 36.56% infested).

+Froggatt 1909:

Central or North-Western India

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from maggot-infested *M. charantia* fruits (listed as bitter gourds) from gardens in Central or North-Western India. No infestation rate data were given.

Gogi et al. 2009:

Harappa and Faisalabad, Punjab, Pakistan

Thirteen (13) varieties of *Momordica charantia* ('Col-II,' 'FSD-long,' 'Col-Nankana sahib,' 'Col-I,' 'GS-51,' 'Col-III,' 'Col-Multan,' 'Col-Vehari,' 'Chaman,' 'Sunder-F1,' 'Janpuri,' 'F1-484' and 'F1-485') were sown by seed in April 2005, in a randomized complete block design (3 replications per variety) in fields at Harappa and at Faisalabad in Punjab, Pakistan. Fruits were picked five times at each location, starting in June 2005. Ten (10) fruits from each variety from each location at each picking were randomly selected and observed to determine which were infested by *B. cucurbitae* and the number of larvae present in each infested fruit. Fruit infestation averaged 55.9% (range: 18.7–75.3%) and 54.6% (range: 16.7–73.3%) while mean larval density averaged 6.6 (range: 2.4–9.3) and 6.8 (range: 2.4–9.4) at Harappa and Faisalabad, respectively. 'Col-II' and 'FSD-long' were the most resistant genotypes to infestation by *B. cucurbitae* while 'Janpuri,' 'F1-484' and 'F1-485' were the most susceptible.

Gogi et al. 2010a:

Harappa and Faisalabad, Punjab, Pakistan

Six varieties of *Momordica charantia*, selected from the trial reported in Gogi et al. (2009; and reported again in this paper) ('Col-II,' 'FSD-long,' 'Col-Nankana sahib,' 'Col-I,' 'Col-Vehari,' and 'Chaman') were sown by seed in 2006, in a randomized complete block design (three replications per variety) in fields at Harappa and at Faisalabad in Punjab, Pakistan. Fruits were picked five times at each location. Ten (10) fruits from each variety from each location at each picking were randomly selected and observed to determine which were infested by *B. cucurbitae* and the number of larvae present in each infested fruit. Biophysical features that might confer resistance to infestation by *B. cucurbitae* were also measured for each variety. Fruit infestation averaged 48.1% (range: 17.9–77.9%) and 48.4% (range: 17.5–78.5%) while mean larval density per fruit averaged 5.5 (range: 1.3–9.8) and 5.0 (range: 1.5–8.4) at Harappa and Faisalabad, respectively. Biophysical fruit traits associated with lower infestation rates and lower larval density per fruit were (in decreasing order of importance): fruit toughness, fruit diameter, and number of longitudinal ribs.

Gogi et al. 2010b:

Faisalabad and Harappa, State of Punjab, Pakistan

Biochemical fruit traits were also measured for the *M. charantia* fruits in the study reported in Gogi 2010a. The authors reported that total chlorophyll and pH of fruits had a significant positive correlation, while tannin, flavanol, phenol, ash and silica contents had a significant negative correlation with % fruit infestation by *B. cucurbitae* and larval *B. cucurbitae* density per fruit.

Gogi et al. 2014:

Faisalabad and Harappa, State of Punjab, Pakistan

Momordica charantia cultivar 'green long' was sown at the campus research area of the University of Agriculture at Faisalabad in 2005 and at Harappa in 2006 to test the effect of sowing time, plant-to-plant distance, sowing method and sanitation on infestation by *B. cucurbitae*. Five pickings were done in each planting and fruits were observed to determine which were infested by *B. cucurbitae* and the number of larvae present in each infested fruit. All four tested factors had significant effects on the percentage infestation by *B. cucurbitae*. Across all treatments, the average percentage infestation ranged from about 10.0 to 72.0%.

Gopalan et al. 1977:

Coimbatore, State of Tamil Nadu, India

In a randomized complete block designed field trial, with four replicates, at the Agricultural College and Research Institute in Coimbatore, of the relative effectiveness of different insecticides in reducing infestation of *M. charantia* (listed as *Memordica charantia*) variety 'Green Long' by *B. cucurbitae* (listed as *Dacus cucurbitae*), control fruit infestation averaged 24.9%. Total number of fruits examined was not presented.

+Gupta and Verma 1977:

Hisar (listed as Hissar), State of Haryana, India

Adult *B. cucurbitae* (listed as *Dacus cucurbitae*) fruit flies, used in a study assessing the effectiveness of insecticidal dusts applied to soil in killing individuals before adult emergence, were initially obtained from a few infested *M. charantia* fruits (listed as bitter gourd) collected from a local market. Number of fruits collected and infestation rate data were not given.

+Gupta and Verma 1978:

Hisar (listed as Hissar), State of Haryana, India

Momordica charantia (listed as bitter gourd, var. 'Hissar Selection') was grown from seed planted both 28 February and 31 July 1975, in randomized complete block designs with ten other cucurbit crops in Hisar, Haryana State, India. Fallen and marketable sized fruits were collected/picked every 3 days and assessed for infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). Infestation results were summarized weekly. *Bactrocera cucurbitae* infestation was found in 20 of 21 weekly summaries (95.2%). Overall, 370 fruits (8.7 kg) were collected, of which 146 were infested, for averages of 17.6 fruits collected per week with an average infestation rate of 38.4%.

+Gupta and Verma 1979:

Hisar (listed as Hissar), State of Haryana, India

Adult *B. cucurbitae* (listed as *Dacus cucurbitae*) fruit flies, used in a study assessing the effectiveness of insecticides as contact poisons to kill adult *B. cucurbitae*, were initially obtained from a few infested *M. charantia* fruits (listed as bitter gourd) collected from a local market. Number of fruits collected and infestation rate data were not given.

+Gupta and Verma 1982:

Hisar (listed as Hissar), State of Haryana, India

In a field trial to assess the effectiveness of bait sprays against *B. cucurbitae* (listed as *Dacus cucurbitae*) in *M. charantia* (listed as bitter gourd), treatments (including an unsprayed control) were set out in a randomized block design with three replications. Assessment of infestation was determined 9 days after each of two sprays made 10 days apart, and was based on the examination of 25 randomly selected fruits from each plot. Based on combined data taken following both of the sprays, bitter gourd fruits in the control treatment had a mean infestation percentage of 43.3%.

+Gupta and Verma 1992:

State of Himachal Pradesh, India

The average total number of maggots within *M. charantia* fruits (listed as bitter gourd) in the field was determined from examination of 10 fruits randomly selected on a weekly basis from May to August 1986, and May to October 1987. Maggots included both *B. cucurbitae* (listed as *Dacus cucurbitae*) and *B. tau* (listed as *D. tau*), with no indication given as to the relative proportion of the two species. Mean maggot population per fruit reached a maximum of 9.18 and 8.08 in 1986 and 1987, respectively.

Harris et al. 1986:

Island of Kauai, Hawaii, U.S.A.

Fifty-six (56) collections of *M. charantia* fruits (7.725 kg) (incorrectly listed as *M. balsamina*) were made on the Island of Kauai, Hawaii, between July 1980 and September 1982, with fruits held over moist sand for assessment of infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). Two thousand eight hundred fifty-six (2,856) *B. cucurbitae* flies were recovered (369.7 flies/kg fruit).

Harris and Lee 1989:

Island of Molokai, Hawaii, U.S.A.

Between August 1978 and January 1980, 7,045, 839, 471, and 90 *M. charantia* fruits were collected from Maunaloa Village, the Airport area, Kaluakoi and Hoolehua, respectively, on the Island of Molokai, Hawaii and held over sand in fruit holding buckets or boxes. *Bactrocera cucurbitae*

(listed as *Dacus cucurbitae*) pupal recovery totaled 2,042, 78, 151, and 161, from which 1,637, 73, 123, and 91 adults emerged, respectively. Overall infestation rates were 0.29, 0.093, 0.32, and 1.79 *B. cucurbitae* pupae per fruit and 81.0, 4.0, 2.6, and 0.8 *B. cucurbitae* per kg fruit, respectively.

Harris et al. 2003:

Kalaupapa Peninsula, Island of Molokai, Hawaii, U.S.A.

During 1991 to 1992, 65 *M. charantia* fruits (1.79 kg) and in 1995, 2 *M. charantia* fruits (0.3 kg) were collected from the Kalaupapa peninsula and placed on sand in fruit holding boxes. The sand was screened weekly for recovery of tephritid fruit fly puparia. Recovered puparia were placed in glass jars and held until adult emergence. Forty-eight (48) adult *B. cucurbitae* were recovered from the 1991 to 1992 collections and 1 adult was recovered from the 1995 collection, for infestation rates of 0.74 melon flies per fruit (26.8 melon flies/kg fruit) and 0.5 flies per fruit (3.33 flies/kg fruit), respectively.

Inayatullah et al. 1993:

Faisalabad, Pakistan

Based on observation, the average rate of infestation of *M. charantia* fruits (listed as *Memordica charantia*) by *B. cucurbitae* (listed as *Dacus cucurbitae*) in the vicinity of the University of Agriculture in Faisalabad was about 97%.

Iwaizumi 1993:

Southern Okinawa Island, Japan

Momordica charantia fruits were collected monthly in the southern part of Okinawa Island from May to December 1987, and held on sand in plastic containers until adult fly emergence. Out of 3,332 fruits collected, 125 were infested by *B. cucurbitae* (listed as *Dacus cucurbitae*), with an average monthly infestation rate of 4.91% (range: 0.0–20.0%).

Jacquard et al. 2013:

Réunion Island, France

Bactrocera cucurbitae-infested *M. charantia* fruits were collected from 11 sites on Réunion Island in 2009 and held over sand. Puparia, recovered by sifting the sand, were held for adult emergence. Eight hundred and forty-one (841) adult *B. cucurbitae* were recovered.

+*Jakhar and Pareek 2005:*

Jobner, State of Rajasthan, India

Seeds of nine cucurbit species were sown in a randomized block design with four replications at the Horticultural Farm of S.K.N. College of Agriculture in Jobner, India during the kharif season in 2000. The infestation rate of *M. charantia* fruits (listed as bitter gourd) by *B. cucurbitae* averaged 27.47% (range: 13.98–41.19%) over the course of nine collection dates, each 3 days apart, between August and September, 2000.

Joshi et al. 1995:

Rahuri, State of Maharashtra, India

Momordica charantia seed was planted in February (for summer season), May (for kharif season) and September (for rabi season) in a randomized block design (with five replications) in Rahuri, India, to test the effect of four *M. charantia* training systems (ground, bush, kniffin, and bower) on infestation rate by *B. cucurbitae* (listed as *Dacus cucurbitae*). In all three planting seasons, *M. charantia* infestation decreased in the order of ground > bush > kniffin > bower. Percentage infestation ranged from 10.6 to 19.3% (summer season), 10.0–19.6% (kharif season) and 15.0–27.9% (rabi season).

Katiyar et al. 2014:

Kanpur, State of Uttar Pradesh, India

Thirty-three (33) genotypes of *M. charantia* were planted out in 2006, and again in 2007, in a randomized complete block design with three replications, in Kanpur, India. Beginning one week after fruit initiation stage, percentage of fruits infested by *B. cucurbitae* was determined weekly. Fruit infestation, averaged over both years, averaged 36.3% (range: 8.09% [‘IC 68314’-‘highly resistant’]–81.3% [‘Pusa Do Mausami’-‘highly susceptible’]).

Khan et al. 1993:

Faisalabad, Pakistan

Adult *B. cucurbitae* flies (listed as *Dacus cucurbitae*) used as the initial stock for a laboratory colony were obtained from infested *M. charantia* fruits collected from the vegetable area of the University of Agriculture, Faisalabad.

One hundred (100) *M. charantia* fruits were randomly observed in the field monthly between 1985 to 1986 and percentage infestation by *B. cucurbitae* calculated. High *M. charantia* infestation (76–100%) was observed from April to November.

Kumar et al. 2008:

Bangalore, South India

Momordica charantia fruits were harvested monthly at the Indian Institute of Horticultural Research, Bangalore, South India from July 2002 to October 2003 (a total of 67 harvests). At each harvest, damaged and healthy fruits were sorted and weighed separately, with damaged fruits placed in separate cages on a thin layer of sand to facilitate pupation and adult emergence. *Bactrocera cucurbitae* and *Dacus ciliatus* adults that emerged were counted. Infestation of *M. charantia* (by month of collection) by *B. cucurbitae* (using data from July 2002 through April 2003 only, because the remaining collections in 2003 were co-infested by *D. ciliatus*) averaged 46.39% (range: 0.0–76.65%), with an average infestation rate of 139.6 (range: 0.0–494.64) individuals per kg fruit.

+*Lall and Singh 1969:*

State of Bihar, East India

Seven (7) varieties of *M. charantia* (listed as bitter gourd) were planted in a randomized block design (three replicates) and exposed to naturally occurring populations of *Bactrocera cucurbitae* (listed as *Dacus cucurbitae*). Fruits were harvested weekly, with the number of healthy and infested fruits recorded. Infestation of fruits by *B. cucurbitae* averaged 50.61%, 47.74%, 49.35%, 22.64%, 50.41%, 36.17%, and 55.02%, for varieties 'Long green,' 'Small bittergoured,' 'Long green monsoon,' 'Short green,' 'Verma's wonder,' 'Sutton's Kerela,' and 'Local,' respectively.

Leblanc et al. 2012:

Papua New Guinea (PNG)

Momordica charantia fruits were collected during 1997 to 2000 in PNG and held in plastic containers over finely sieved sawdust that had been sterilized in an oven or frozen overnight to kill mites. The sawdust was sieved to recover tephritid fruit fly puparia. Puparia were kept in moist sawdust until adult emergence. Adults were fed for 5 days, then killed by freezing to allow colors and markings, necessary for correct species identification, to fully develop. *Bactrocera cucurbitae* was recovered in 29 of 49 (59.2%) samples in PNG.

Leblanc et al. 2013a:

Papua New Guinea (PNG)

Momordica charantia fruits (1,319 fruits; 10.56 kg) were collected during 1997 to 2000 in PNG and held in plastic containers over finely sieved sawdust that had been sterilized in an oven or frozen overnight to kill mites. The sawdust was sieved to recover tephritid fruit fly puparia. Puparia were kept in moist sawdust until adult emergence. Adults were fed for 5 days, then killed by freezing to allow colors and markings, necessary for correct species identification, to fully develop. *Bactrocera cucurbitae* was recovered in 29 of 49 (59.2%) samples in PNG with an overall infestation rate of 189.58 flies/kg fruit and 249.0 flies/kg infested fruit.

+*Lee 1972:*

Taiwan

Momordica charantia plants (listed as bitter cucumber) were grown in the field year-round from 2 June 1969 to 10 June 1970, and from March to August 1971. Fruits, picked 5, 10, and 15 days after flowering, were placed over sand in holding boxes. The sand was screened weekly to recover *B. cucurbitae* pupae (listed as *Dacus cucurbitae*). Pupal recovery per fruit was averaged quarterly for 1969 to 1970 harvests. Pupal recovery per kg fruit was averaged monthly for 1971 harvests. *Bactrocera cucurbitae* pupal recovery averaged 4.5, 7.5 and 9.5 pupae/fruit (1969–1970) and 185.2, 277.3, and 300.8 pupae/kg fruit (1971) overall, for fruits picked 5, 10, and 15 days after flowering, respectively.

+*Lee et al. 1992:*

Taiwan

From June 1989 to September 1991, rotten and ripening ground *M. charantia* fruits (listed as bitter melon) were collected every 2 weeks from two sites (Chun-Wai and Wu-Chieh agricultural plantations) in Taiwan. Fruits were transferred to the laboratory and held until adult emergence. *Bactrocera cucurbitae* (listed as *Dacus cucurbitae*) was recovered from infested 'bitter melon' fruits with infestation rates of 2.3% and 1.8% in Chun-Wai and Wu-Chieh, respectively.

Liquido et al. 1990:

Hawaii Island, Hawaii, U.S.A.

During 1949 to 1985, *B. cucurbitae* (listed as *Dacus cucurbitae*) was recovered from 7 of 7 collections (100%) of the cultivated form of *M. charantia*, spread out over 7 different locations on the island of Hawaii, 1 collection per location. One hundred ninety (190) fruits were collected, ranging from 8 to 50 fruits per site. The mean infestation rate from each location ranged from 1.10 to 9.00 *B. cucurbitae* per fruit, with 4.22 *B. cucurbitae* per fruit as the overall average of the 7 site averages.

Hawaii Island, Hawaii, U.S.A.

During 1949 to 1985, *B. cucurbitae* was recovered from 391 collections of the weedy form of *M. charantia*, spread out over 13 different locations on the island of Hawaii. Thirty-four thousand and two (34,002) fruits were collected, ranging from 45 to 27,662 fruits per site. The mean infestation rate from each location ranged from 0.02 to 3.11 melon flies per fruit, with 1.83 melon flies per fruit as the overall average of the 13 site averages.

Island of Maui, Hawaii, U.S.A.

During 1951 to 1963, *B. cucurbitae* was recovered from 19 collections of the weedy form of *M. charantia*, spread out over 7 different locations on the Island of Maui. Four hundred sixteen (416) fruits were collected, ranging from 19 to 168 fruits per site. The mean infestation rate from each location ranged from 0.0 to 4.86 melon flies per fruit, with 1.83 *B. cucurbitae* per fruit as the overall average of the 7 site averages.

Liquido et al. 1994:

Hawaii Island, Hawaii, U.S.A.

From July 1990 to October 1992, 93 ripe “on vine” or ground *M. charantia* fruits (3.610 kg) were collected (through collections made once or twice a month) from several sites on Hawaii Island, Hawaii. Fruits were weighed, counted, split into groups of 5 or 10, and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* larvae and pupae were recovered from infested *M. charantia* fruits with an overall infestation rate of 2.18 larvae and pupae per fruit (56.23 larvae and pupae/kg fruit). This infestation rate includes both “on vine” and “on ground” fruits.

Hawaii island, Hawaii, U.S.A.

From July 1990 to October 1992, 207 ripe “on vine” or ground *M. charantia* fruits (0.853 kg) (listed as *Momordica charantia* L. var. *abbreviata* Ser. with intent to reference the “weedy” form) were collected once or twice a month from several sites on Hawaii Island, Hawaii. Fruits were weighed, counted, split into groups of 5 or 10, and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* larvae and pupae were recovered from infested *M. charantia* fruits with an overall infestation rate of 1.70 larvae and pupae per fruit (411.49 larvae and pupae/kg fruit).

Island of Maui, Hawaii, U.S.A.

From July 1990 to October 1992, 11 ripe “on vine” or ground *M. charantia abbreviata* fruits (0.034 kg) (listed as *Momordica charantia* L. var. *abbreviata* Ser. with intent to reference the “weedy” form) were collected once or twice a month from several sites on Maui Island, Hawaii. Fruits were weighed, counted, and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* larvae and pupae were recovered from infested *M. charantia* fruits with an overall infestation rate of 2.00 larvae and pupae per fruit (647.06 larvae and pupae/kg fruit).

Mandal et al. 2006:

Pusa, State of Bihar, India

Momordica charantia was sown in six random blocks in February 2000 in the experimental farm of Rajendra Agricultural University, Pusa, Bihar. Twenty-five (25) randomly selected fruits were collected weekly from each block starting on 4 April and continuing to 28 June (13 collections) to determine the percentage of fruits infested by *B. cucurbitae*. Overall, infestation of *M. charantia* fruits by *B. cucurbitae* averaged 35.0% (range: 24.6–46.3%).

+Mathew et al. 1999:

Vellanikkara, State of Kerala, India

Wilted *M. charantia* (listed as bittergourd) vines were observed in the vegetable fields of Kerala Horticulture Development Programme, Kerala Agricultural University, Vellanikkara. Maggots were found in a rotten area of the vine. The maggots were reared and adult *B. cucurbitae* emerged. No infestation rate was reported.

+Mote 1975:

Rahuri, State of Maharashtra, India

Momordica charantia plants (listed as bitter melon) were set out in the kharif season, and again in the summer season, in Rahuri, India, in a randomized block design with three replicates, to test the effectiveness of different insecticides in reducing infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). The percentage of fruits infested by *B. cucurbitae* was calculated after making observations on infested and healthy fruits at each picking. Averages of 44.71% and 49.17% of *M. charantia* fruits (in the untreated control) were infested by *B. cucurbitae* in the kharif and summer seasons, respectively.

Mwatawala et al. 2010:

Morogoro Region, Central Tanzania

Fifty-eight (58) immature *M. charantia* fruits (0.588 kg) were collected at irregular intervals between October 2004 and April 2008, from the Morogoro Region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupariation of infesting tephritid fruit flies. Emerged adults were removed and identified. *Bactrocera cucurbitae* flies were recovered from 2 of 4 collections (50%), with an overall infestation rate of 86.73 flies/kg fruit and 277.17 flies/kg infested fruit.

Nakagawa et al. 1967:

Hawaii, U.S.A.

Wild *M. charantia* fruits were heavily infested by *B. cucurbitae* (listed as *Dacus cucurbitae*). Out of 5,269 mature green to ripe fruits collected in Honomalino, South Kona, Hawaii Island, 7,667 pupae were recovered, most of which were (presumably) *B. cucurbitae*, but some recovery of the parasitoid, *Tetrastichus giffardianus* Silvestri, suggests that some *B. dorsalis* infestation was also present.

Narayana et al. 1957:

Yenamalakuduru, State of Andhra Pradesh, India

Momordica charantia var. 'Nelakakara' was cultivated from 1954 to 1955 and again from 1955 to 1956 in a randomized and replicated block layout in order to test the effectiveness of insecticidal treatments in reducing infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). The percentage of fruits infested by *B. cucurbitae* was assessed in fruits collected after each of two spray treatments spaced 3 weeks apart. Average percentage infestation in the untreated control plot was 26.9% in the 1954 to 1955 trials (range: 21.6–34.2%) and 35.4% in the 1955–1956 trials (range: 34.5–36.2%).

Nath and Bhushan 2006:

Varanasi, State of Uttar Pradesh, India

Momordica charantia was sown, with three replications, in Varanasi, India, the last week of March (summer season) and again the last week of June (rainy season) in both 2001 and 2002. Percentage infestation by *B. cucurbitae* averaged 28.6% (range: 26.1–31.0%) in the summer season and 46.0% (range: 45.3–46.8%) in the rainy season.

Nishida 1955:

Island of Oahu, Hawaii, U.S.A.

Infested *M. charantia* fruits, with nearly full grown *B. cucurbitae* (listed as *Dacus cucurbitae*) larvae, were collected at cultivated areas in the area of Waianae on the Island of Oahu, Hawaii between 1950 and 1951. Larvae were extracted from fruits and placed in small wax paper cups containing pumpkin pulp. The cups were placed on sand in jars in which a high humidity was maintained. Seventy-three (73) *B. cucurbitae* larvae were recovered from the fruits. Number of fruits and infestation rate data were not given.

Pal et al. 1984:

Bangalore, State of Karnataka, India

Multiple cultivars of *M. charantia* were grown from seed collected from six states in India (with one cultivar from the U.S.A.). Three replicates of 10 plants each were grown of each cultivar in Bangalore, India. Fruits from all replicates were combined for the determination of the percentage of fruits infested by *B. cucurbitae* (listed as *Dacus cucurbitae*). Field trials were conducted in four separate seasons (summer, rains and winter 1976, and summer 1977). Cultivars that showed promise in resistance to infestation were tested further in cage studies (see results of these trials under laboratory infestation results below). Average percentage infestation among 17 cultivars tested in summer 1976

was 42.2% (range: 0.0–70.0%). Average percentage infestation among 41 cultivars tested in rains 1976 was 32.6% (range: 0.0–75.0%). Average percentage infestation among 44 cultivars tested in winter 1976 was 31.5% (range: 0.0–72.0%). Average percentage infestation among 45 cultivars tested in summer 1977 was 38.1% (range: 0.0–73.0%).

+Pali 1963:

New Delhi, India (authors state that the trial was conducted in California, U.S.A., but this does not seem possible)

In a test in 1957 of the relative effectiveness of the application of four insecticides (mixed with sugar and protein hydrolysate) to corn borders on reduction of infestation of *M. charantia* fruits (listed as bitter melon) by *B. cucurbitae* (listed as *Dacus cucurbitae*), 500 fruits, at five places in each plot, were assessed for infestation and percentage infestation calculated after each of four sprays. Following each count, the infested fruits from all plots were removed. Recorded percentage infestations in the untreated control plot were 37.5% (15 June), 37.9% (30 June), 59.6% (15 July), and 62.3% (30 July), for an overall average of 49.3%.

+Pareek and Kavadia 1994:

Jobner and Udaipur, State of Rajasthan, India

Momordica charantia fruits (listed as bitter melon, variety 'Pusa domousmi') were grown in a randomized block design with nine other cucurbit crops (each with three replicated plots) for assessment of preference of *B. cucurbitae* (listed as *Dacus cucurbitae*). The trials were conducted from February to June in 1979, and again in 1981, in Udaipur (semi-humid agroclimatic conditions) and in 1980 and 1981 in Jobner (semi-arid agroclimatic condition). Fruits were harvested twice a week, examined for fruit fly damage, and then percentage of fruits infested by *B. cucurbitae* calculated. Percentage infestation averaged 78.4% (range: 78.0–78.8%) in Udaipur and 75.1% (range: 73.5–76.7%) in Jobner.

Prabhakar et al. 2012:

State of Himachal Pradesh, India

Infested *M. charantia* fruits were collected from three districts of the State of Himachal Pradesh in India from 25 May to 3 September 2009. Fruits from each location were held in separate rearing cages under laboratory conditions in Palampur. Emerging tephritid fruit flies were identified following adult emergence. Adult *B. cucurbitae* were recovered from *M. charantia* fruits collected in Hamirpur, Kangra and Mandi Districts.

Pradhan 1977:

Nepal

Momordica charantia (listed as *Mimordica charantia*) was planted by seed in Nepal in four separate plots (four replicates) during the first week of April in 1974 and again in 1975. Daily counts were made of infestation of flowers and then of fruits by *B. cucurbitae* (listed as *Dacus cucurbitae*). Infested flowers and fruits were detached and thrown to the ground after observations were completed. Infestation rate of fruits averaged 34.20% (range: 27.3–49.3%) in 1974 and 24.10% (range: 21.6–28.1%) in 1975.

Quilici et al. 2004:

Réunion Island, France

From 1996 to 2001, 1,068 *M. charantia* fruits were collected on Réunion Island, France, mostly from non-cultivated areas so that fruits could be obtained from pesticide-free areas. Fruits were weighed, counted and held in a laboratory at 25±1°C, 80±10% RH and 12:12 (L:D) h until pupation. Pupae were transferred to small plastic boxes until adult emergence. Two thousand one hundred and nineteen (2,119) tephritid fruit flies were recovered, which included a mixture of *B. cucurbitae* and *Dacus ciliatus* (numbers of each species not specified).

Qureshi et al. 1974:

Hyderabad, Sindh Province, Pakistan

In order to document the relative abundance of *B. cucurbitae* (listed as *Dacus cucurbitae*) and *Dacus ciliatus*, random samples of *Momordica charantia* fruits were collected from various vegetable growing areas near Hyderabad, Pakistan from 1970 to 1972. Fruits were held separately in wooden boxes with wire-gauze screen at the bottom, and placed over another box containing sterilized sand. The sand was sieved daily and recovered pupae were held in Petri plates until adult emergence.

Nineteen (19) *B. cucurbitae* adults were recovered from 15.8 kg of *M. charantia* fruits overall. *Bactrocera cucurbitae* adults were recovered from 1 of 6 collections (16.7%), with a collection average of 2.44 adults recovered per kg fruit.

+Raghuvanshi et al. 2008:

Varanasi, State of Uttar Pradesh, India

In a test of the effectiveness of trapping methods for control of *B. cucurbitae* infestation, *M. charantia* (listed as bitter melon, cv. 'Faizabadi') was sown in randomized block design plots with three replications in Varanasi in "kharif" seasons (June/July–September/October) in 2003 and again in 2004. Fruits were picked weekly and percentage of infested ("damaged") fruits calculated. Weekly percentage infestation averaged 49.87% (range: 30.70–72.73%) and 53.07% (range: 34.50–73.25%) in 2003 and 2004, respectively.

Ramadan and Messing 2003:

Thailand

Three (3) collections of immature wild *M. charantia* fruits (0.75 kg) with oviposition scars or signs of larval infestation were made in 1996 from three localities in Thailand (Rattaphum, Betong, Narathiwat) and 4 collections of immature and mature cultivated *M. charantia* fruits (14.5 kg) with oviposition scars or signs of larval infestation were made in 1996 from four localities in Thailand (Malakino, Nakhon Pathom, Ratchaburi, Chiang Mai [near Mae-Jo]). Fruits were held over sawdust, which was subsequently sifted for recovery of tephritid fruit fly puparia. Fifty-six (56) adult *B. cucurbitae* were recovered from the wild *M. charantia* fruits, for an infestation rate of 74.7 adult *B. cucurbitae* per kg wild *M. charantia* fruits. One thousand and thirteen (1,013) adult *B. cucurbitae* were recovered from the cultivated *M. charantia* fruits, for an infestation rate of 69.9 adult *B. cucurbitae* per kg cultivated *M. charantia* fruits.

Saha et al. 2007:

Bangladesh

In 1993, a *B. cucurbitae* laboratory colony was established from flies recovered from infested *M. charantia* fruits.

Shivayya et al. 2007:

Bangalore, State of Karnataka, India

Infested *M. charantia* fruits were collected from local fields in Bangalore from December 1998 - September 1999 and held in a laboratory over a 5.0 cm layer of moist sand in plastic containers for recovery of *B. cucurbitae* adults. Recovered adults were used to study the duration of immature stages, mating behavior and fecundity. No infestation rate data were given.

Shivayya et al. 2008:

Bangalore, State of Karnataka, India

To test the relative effectiveness of nine different "attractants + dichlorvos" treatments in reducing the infestation of *M. charantia* variety 'Coimbatore Green Long' fruits by *B. cucurbitae*, a field trial was conducted between 1999 and 2000 in Bangalore using a randomized block planting design with three replications for the nine attractant treatments and a water only control. Infested fruits were held in plastic containers and adult *B. cucurbitae* flies were recovered. Percentage infestation was determined for fruits in each plot. The average control fruit infestation, based on seven pickings, was 13.7%.

Shivayya and Kumar 2008a:

Bangalore, State of Karnataka, India

To test the relative effectiveness of six different insecticidal plant product treatments in reducing the infestation of *M. charantia* variety 'Coimbatore Green Long' fruits by *B. cucurbitae*, a field trial was conducted in 2003 through 2004 in Bangalore using a randomized block planting design with three replications for the six insecticidal plant product spray treatments and a water only spray control. Infested fruits were held for recovery of tephritid fruit flies and adult *B. cucurbitae* flies were recovered. Percentage infestation was determined for fruits in each plot. The average control fruit infestation, based on seven pickings, was 43.1%.

Shivayya and Kumar 2008b:

Bangalore, State of Karnataka, India

To assess the seasonal population fluctuation of *B. cucurbitae*, *M. charantia* was sown at Sulivara and Rajanukunte villages at the outskirts of Bangalore starting in March 2003. Sowing was staggered so that fruits would be available for *B. cucurbitae* flies throughout the year. Percentage infestation of fruits by *B. cucurbitae* was determined (by observation) in fruits picked monthly, commencing 72–75 days after sowing. *Bactrocera cucurbitae*-infested fruits from each picking were brought to the laboratory and held over moist sand in plastic trays, for recovery of pupae. At Sulivara, the monthly infestation rate averaged 27.6% (range: 12.0–52.1%) and the average number of pupae per infested fruit averaged 11.4 (range: 10.8–11.8 pupae per infested fruit). At Rajanukunte, the monthly infestation rate averaged 27.9% (range: 14.5–43.4%) and the average number of pupae per infested fruit averaged 11.5 (range: 10.8–12.5 pupae per infested fruit).

+Singh *et al.* 2000:

Kanpur, State of Uttar Pradesh, India

Momordica charantia fruits (listed as bitter melon) were collected weekly at growers' fields at the bank of the river Ganga in Kanpur beginning in February 1997. Percentage infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) was determined (by observation) at each picking. The overall average *B. cucurbitae* infestation rate was 31.3%.

Stonehouse *et al.* 2007:

Anand, State of Gujarat; Thrissur, State of Kerala; Bhubaneswar, State of Odisha, India

In a study comparing the effectiveness of protein bait spray applications for control of tephritid fruit fly infestation in *M. charantia* fruits at the farm level versus the village level (defined to be 1.0 km²) in Anand, Thrissur, and Bhubaneswar, India, between 3 and 12 harvests of *M. charantia* fruits were made in each of 2 years at farms with varying extent of bait spray application. Percentage infestation was determined based either on visual examination of fruit to detect oviposition or by rearing out adult flies in the laboratory. On two farms in each of Anand, Thrissur, and Bhubaneswar where no bait spray was applied, averages of 9.4, 12.4 and 19.4%, respectively, of the fruits were infested. Infestation was primarily by *B. cucurbitae*, but was accompanied in some cases by a minority of other species.

Syed 1971:

Faisalabad, Gujranwala, Multan, Murree, Province of Punjab; Harnai and Quetta, Province of Balochistan; Hyderabad, Sindh Province; Peshawar Valley, Khyber Pakhtunkhwa Province, Pakistan

In Faisalabad and Gujranwala (1962–1963), 14% of *M. charantia* fruits were infested by *B. cucurbitae* (listed as *Dacus cucurbitae*) in May, with infestation increasing to 34% in June and 62% in August; in Multan (1963–1964), 78% of *M. charantia* fruits were infested in June, with infestation rate decreasing to 20% in July; in Murree (1963), *B. cucurbitae* was reared from *M. charantia* in September and October, with 15% of fruits infested in October; in Harnai and Quetta (1964–1965), *B. cucurbitae* was reared from *M. charantia* in September; in Hyderabad (1964–1965), a few *M. charantia* were infested by a mix of *B. cucurbitae* and *Dacus ciliatus* (40%:60%) at the end of April, with infestation rate increasing to 6–10% in May; in Peshawar Valley (1962–1963), 24% of *M. charantia* fruits were infested by *B. cucurbitae*, with infestation rate increasing to 34% in August. Total number of fruits collected was not given.

+Talpur *et al.* 1994:

Tandojam, Sindh Province, Pakistan

To test the relative effectiveness of different concentrations of two insecticides in controlling *B. cucurbitae* (listed as *Dacus cucurbitae*) on *Momordica charantia* (listed as bitter melon), *M. charantia* seeds were planted in March in Tandojam in a randomized complete block design with four replicates. Percentage infestation was determined on fruits that were randomly collected from the control and each treatment at four times following each of three sprays applied at 21-day intervals. In the control, cumulative *M. charantia* infestation averaged 13.69, 17.45, 23.40 and 33.33%, at 3, 7, 14, and 21 days, respectively, after the spray application.

Tan and Lee 1982:

Penang Island, Malaysia

Infested *M. charantia* fruits were randomly collected on Penang Island. Fruits were held over moist sterilized sand in fine wire mesh-covered plastic containers until pupation. Pupae were

transferred and held at 27–29°C and 80±5% RH until adult emergence. *Bactrocera cucurbitae* (listed as *Dacus cucurbitae*) was recovered from infested *M. charantia* fruits. Total number of fruits collected and infestation rate were not given.

Tewatia and Dhankhar 1996:

Hisar, State of Haryana, India

For a study of the inheritance of resistance in *M. charantia* fruits to infestation by *B. cucurbitae*, crosses were made using two resistant varieties ('Faizabad Collection 17' and 'Kerala Collection 1') and two highly susceptible varieties ('Puso do Mausami' and 'Arka Harir'): 'Arka Harit' × 'Kerala Collection 1' and 'Faizabad Collection 17' × 'Puso do Mausami'. The parents, F1, F2 and back-cross generations were all sown in unsprayed fields in Hisar in August 1993 in a compact family-block design with three replications. Marketable stage *M. charantia* fruits were harvested at 4-day intervals and dissected to assess the damage by *B. cucurbitae*. Infestation rates in the parental varieties were 84.39, 14.44, 14.68 and 83.85%, respectively, with the infestation rates in the F1 generation similar to those found in the resistant parents (14.59 and 15.14% in the two crosses, respectively) showing that resistance to *B. cucurbitae* infestation is dominant over susceptibility.

Thakur et al. 1994:

Ludhiana, State of Punjab, India

In a stability analysis study, 10 cultivars of *M. charantia* were sown the second week of March in each of 3 years (1989–1991) in Ludhiana in a randomized block design with three replications. No insecticidal sprays were applied. At each harvest, infested and uninfested fruits were counted and percentage infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) was calculated. Infestation by *B. cucurbitae*, averaged over the 3 years of study, was 13.8% (range: 9.9–17.0%).

Thomas and Jacob 1990:

Thrissur, State of Kerala, India

In a study conducted to measure carbofuran residues (applied at different growth stages of *M. charantia* to protect the crop from infestation by *B. cucurbitae* [listed as *Dacus cucurbitae*]), *M. charantia* var. 'Priya' was planted out in a randomized block design with three replications in October 1987 in Thrissur (listed as Trichur). Percentage infestation of fruits by *B. cucurbitae* was calculated for each fruit harvest. Infestation of *M. charantia* var. 'Priya' fruits averaged 79.94% in the control plots.

Tsuruta et al. 1997:

Sri Lanka

At least 43 *B. cucurbitae* adults were recovered from *M. charantia* fruits collected in Sri Lanka. *Bactrocera cucurbitae* adults were recovered from fruits collected from Dankotuwa (15), Nalanda (10), Katunayake (6), Wariapola (4), Bibile (4), Lunuwila (4), and Ambeppusa (number not indicated). No infestation rate data were given.

Vargas and Carey 1990:

Molokai, Island of Kauai, Hawaii, U.S.A.

Infested *M. charantia* fruits collected from Molokai were used to establish a laboratory colony of *B. cucurbitae* (listed as *Dacus cucurbitae*).

Vayssières et al. 2007:

Benin, Burkina Faso, Cameroon, Côte d'Ivoire, Guinea, Mali, Niger and Senegal, West Africa

Tephritid fruit fly-infested *Momordica charantia* fruits were collected from untreated orchards in eight countries in West Africa. Fruits were placed on mesh supports over sand. Tephritid fruit fly pupae, recovered through weekly sieving of the sand, were transferred to small hatching boxes lined with wet blotting paper and held for adult emergence. The average *B. cucurbitae* infestation level in *M. charantia* fruits in West Africa fell in the range of 76–100 pupae/kg fruit. For comparison, the authors indicated that the infestation level of *M. charantia* fruits averaged over 100 pupae/kg fruit on Réunion Island.

Vayssières et al. 2008:

Réunion Island, France

A laboratory colony of *B. cucurbitae* was developed using adults recovered from 5 collections of infested *Momordica charantia* fruits collected at St. Paul, Réunion Island. No infestation rate data were given.

Vayssières and Carel 1999:

Réunion Island, France

Both wild *Momordica charantia* fruits and fruits of a local *M. charantia* cultivar were collected over the course of a year from up to 70 localities on Réunion Island. Fruits with evidence of fruit fly infestation were held in individual containers, with recovered pupae held for adult emergence. *Bactrocera cucurbitae* recovery averaged 1,257.1 (standard deviation [SD] = 1,217) adults per kg infested fruit (wild fruits) and 435.6 (SD = 452.9) adults per kg infested fruit (local cultivar).

+Wen 1985:

Taiwan

Momordica charantia fruits (listed as balsam pear) were collected in southern Taiwan from November 1983 to June 1984. Infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) averaged 9.78% (bimonthly averages ranged from 3.67–14.32%).

Wong et al. 1986:

Island of Oahu, Hawaii, U.S.A.

A laboratory colony of *B. cucurbitae* (listed as *Dacus cucurbitae*) was developed from *B. cucurbitae*-infested *M. charantia* fruits collected on the Island of Oahu in 1950. No infestation rate data were given.

Wong et al. 1989:

Rota, Commonwealth of the Northern Mariana Islands

On the island of Rota, 6 cultivated *M. charantia* fruits (listed as cultivated bittermelon) (from 1 collection) were collected in 1985 and 10 fruits (from 3 collections) were collected in 1986. Fruits were held over moist sand in plastic containers with screened lids for recovery of *B. cucurbitae* pupae and adult emergence. *Bactrocera cucurbitae* recovery averaged 0.0 pupae/kg fruit (1985) and 16.9 pupae/kg fruit (1986).

In a parallel study, weekly fruit collections of *M. charantia* were made from 1985 to 1987 from 30 collecting sites. Fruits were held over moist sand in plastic containers with screened lids for recovery of *B. cucurbitae* pupae and adult emergence. Fifteen thousand eight hundred fifty-four (15,854) fruits were collected, of which 4,960 (31.3%) were infested by *B. cucurbitae*. Ten thousand six hundred four (10,604) pupae were recovered, from which 10,212 melon flies emerged, giving an average of 0.67 pupae (and 0.64 adult *B. cucurbitae*) per fruit and 2.14 pupae (and 2.06 adult *B. cucurbitae*) per infested fruit.

Yang et al. 1994:

Guangzhou, Guandong Province, China

A *B. cucurbitae* colony was developed from infested *M. charantia* fruits collected in Guangzhou, China. No infestation rate was given.

Yong 1992:

State of Selangor, Malaysia

Adult *B. cucurbitae* flies were recovered from infested *M. charantia* fruits collected from four localities in the state of Selangor in Peninsular Malaysia.

Interception Data:*Defra 2008:*

Thailand

Bactrocera cucurbitae was recovered in North West United Kingdom from 14 boxes of *M. charantia* fruits originating in Thailand, and in the Greater London area of the United Kingdom from 122 boxes of *M. charantia* fruits originating in Thailand. No infestation rate data were given.

PestID 2016:

Asia Unknown

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Momordica charantia* fruit(s), originating in Asia (exact location not known), at an airport in California (San Francisco) on one occasion in 1996. Recovery was nine live larvae.

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Momordica charantia* fruits, originating in Hawaii, at airports in Hawaii on 81 occasions (Honolulu–70; Kahului–4; Kailua–Kona–1; Lihue–6) between 1988 and 2014. Live larvae were found on 76 occasions

with an average of 11.9 live larvae per interception. Live pupae were found on eight occasions with an average of 6.25 live pupae per interception. Live adults were recovered on two occasions, yielding 1 and 3 flies. Six (6) dead pupae were found on one occasion. Two (2) live eggs were found on one occasion.

India

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Momordica charantia* fruits, originating in India, at airports in California (San Francisco–2), Illinois (Chicago–2), Michigan (Detroit–2), New York (JFK–3), and Texas (Houston–1) on ten occasions between 1989 and 2003. Average recovery was 5.0 live larvae. On one occasion in 2002, one live pupa was recovered.

Philippines

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Momordica charantia* fruits, originating in the Philippines, at airports in California (Los Angeles–1 and San Francisco–4), Hawaii (Honolulu–3), Illinois (Chicago–1), and Michigan (Detroit–2) on 11 occasions between 1990 and 2009. Average recovery was 12.6 live larvae.

Thailand

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Momordica charantia* fruit(s), originating in Thailand, at an airport in New York (JFK) on one occasion in 2010. Recovery was two live larvae.

Takeishi 1992:

Thailand

Two (2) *B. cucurbitae*-infested (listed as *Dacus cucurbitae*) *M. charantia* fruits were collected from airline passengers at Narita Airport, Japan, who had arrived on a flight(s) originating in Thailand. At the time of confiscation, all larvae-infested fruits were held in individual containers with sand at 20–28°C until adult emergence. Infestation rate data were not given.

USDA 1948b:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from balsam pear (*M. charantia*) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in consumption host) between 1 July 1946 and 30 June 1947 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1954:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from balsam pear (*M. charantia*) which originated from the Philippines and was intercepted at a port in Guam (1 interception in consumption host) between 1 July 1952 and 30 June 1953 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1959:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from balsam pear (*M. charantia*) which originated in Hawaii and was intercepted at a port in California (1 interception in consumption host) between 1 July 1957 and 30 June 1958 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1964:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from balsam pear (*M. charantia*) which originated in air baggage from the Philippines and was intercepted in Hawaii (1 interception in consumption host) between 1 July 1962 and 30 June 1963 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1966:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from balsam pear (*M. charantia*) which originated in baggage from Hawaii and was intercepted in Oregon (1 interception in consumption host) between 1 July 1964 and 30 June 1965 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

Lab Infestation:

Agarwal and Yazdani 1991:

One hundred (100) eggs, collected from adult *B. cucurbitae* flies (listed as *Dacus cucurbitae*) which emerged from field-infested *Luffa aegyptiaca* Mill. fruits (listed as *Luffa cylindrica*), were inserted in a triangular cut in a *Momordica charantia* fruit (four replications) and held at $29.85 \pm 8.33^\circ\text{C}$ and $61.72 \pm 22.05\%$ RH. An average of 73% survived from larval stage to adult emergence.

Akter et al. 2010:

In a laboratory host preference study conducted in Bangladesh during 2005 to 2006, 250 g *M. charantia*, along with 250 g of each of 5 other vegetables (*Cucumis sativus*, *Cucurbita maxima*, *Solanum lycopersicum* var. *lycopersicum*, *S. melongena*, and *Trichosanthes cucumerina*), were simultaneously exposed to one hundred (100) 15–20-day-old gravid female *B. cucurbitae* flies for 3 hours, then placed over saw dust. The saw dust was sieved to recover pupae which were transferred to Petri dishes and held until adult emergence. The trial was replicated five times. Recovery of *B. cucurbitae* pupae and adults averaged 258 ± 53.66 and 233 ± 44.03 , respectively (1,032 and 932 per kg fruit, respectively). The order of adult recovery (greatest to smallest) was: *S. melongena* > *T. cucumerina* > *C. maxima* > *C. sativus* > *M. charantia* > *S. lycopersicum*.

Amin et al. 2011:

Bactrocera cucurbitae larvae and *B. cucurbitae*-infested *M. charantia* fruits were collected from a field at the Entomology Farm Laboratory, Hajee Mohammad Danesh Science and Technology University, in Dinajpur, Bangladesh and held in jars in a laboratory at $25 \pm 2^\circ\text{C}$, $60 \pm 5\%$ RH and a 12:12 (L:D) h photoperiod. Adult male and female *B. cucurbitae* that emerged were kept in the same jar and provided fresh *M. charantia* fruit for oviposition. Larvae, pupae and adults that emerged from these stock cultures were used for observation of *B. cucurbitae* life history parameters.

Bains and Sidhu 1984:

Newly emerged *B. cucurbitae* larvae (listed as *Dacus cucurbitae*) were placed on cut pieces of *M. charantia* and held in Petri plates having moist blotting paper on the bottom. Larval survival to pupation was 77.5%.

Doharey 1983:

Bactrocera cucurbitae was maintained on bitter melon (*Momordica charantia*). Eggs laid in fruits were removed daily and placed on sterilized sand in glass rearing jars. Freshly formed pupae were transferred to smaller glass jars and held on sterile sand until adult emergence. Holding temperature was $27 \pm 1^\circ\text{C}$. The incubation period on bitter melon averaged 4.0 days, the larval period averaged 3.8 days, and the pupal period averaged 7.0 days, totaling 14.8 days from egg to adult.

+Fang 1989:

In tests of the effectiveness of different bagging materials on infestation of *M. charantia* fruits (listed as bitter melon) by *B. cucurbitae* (listed as *Dacus cucurbitae*), 60 out of 200 control fruits (30.0%) were infested by *B. cucurbitae*.

+Gupta and Verma 1995:

A cohort of 50 *B. cucurbitae* (listed as *Dacus cucurbitae*) newly emerged maggots was placed on a small slice of *M. charantia* fruit (listed as bitter melon) kept in a Petri dish. Maggots were shifted daily to a new slice and mortality was recorded. Mature larvae were allowed to burrow into sand for pupation and, after 6 days, pupae were recovered and placed in plastic tubes until eclosion. Average adult survivorship from newly emerged larvae placed on bitter melon was 60%, which was greater than on cucumber (*C. sativus*) (54%) or on sponge melon (*Luffa aegyptiaca*) (44%).

Iwaizumi et al. 1994:

Intact, mature *M. charantia* fruits were exposed to 10 gravid female *B. cucurbitae* for 24 hours in a screen-net cage. An average (over three replications) of 123.3 ± 34.1 adults was recovered.

Khan et al. 2011:

In a choice test, 50.0 g of *M. charantia* fruits, along with 50.0 g of each of eight other natural hosts, were exposed for 20 minutes to 50 pairs of 15–20-day-old *B. cucurbitae* and 50 pairs of 15–20-day-old *B. tau* inside a small cage, after which fruit samples were removed and placed separately on sawdust inside a cloth-covered plastic bowl for pupation. The sawdust was sieved after 6 to 8 days to recover pupae (of both fly species) which were held for adult emergence. Out of a mean infestation

of 202±16.74 pupae recovered (mixed infestation of *B. cucurbitae* and *B. tau*), 75.24% (152.0) of the recovered pupae emerged as adult *B. cucurbitae*.

In a no-choice test, 50.0 g of *M. charantia* fruits, as well as 50.0 g of each of eight other natural hosts, were exposed for 20 minutes to 5 pairs of 15–20-day-old *B. cucurbitae* and 5 pairs of 15–20-day-old *B. tau* inside separate small cages, after which fruit samples were removed and placed separately on sawdust inside a cloth-covered plastic bowl for pupation. The sawdust was sieved after 6 to 8 days to recover pupae (of both fly species) which were held for adult emergence. Out of a mean infestation of 48±1.15 pupae recovered (mixed infestation of *B. cucurbitae* and *B. tau*), 31.25% (15.0) of the recovered pupae emerged as adult *B. cucurbitae*.

Koul and Bhagat 1994b:

Bottle gourd (*Lagenaria siceraria*) was used to rear *B. cucurbitae* (listed as *Dacus cucurbitae*) in the lab. Eggs obtained from flies maintained on bottle gourd were placed on a thin slice of tender and fresh *M. charantia* fruit. Newly emerged *B. cucurbitae* larvae were transferred to freshly cut *M. charantia* slices placed in glass tubes for 2–5 days and then held over sand (4 cm thick) until pupation. Pupae were sieved daily and individually transferred to glass tubes with a 3-cm sand layer moistened with water and held until adult emergence. Newly emerged flies were held in glass tubes after pairing, provided with a slice of *M. charantia* fruit and a cotton plug soaked in 10% honey solution. Larval duration averaged 3.5 days, compared to 4.2, 4.7, 4.7, and 5.7 days, when reared on *Lagenaria siceraria*, *Cucumis sativus*, *Benincasa fistulosa* and *Cucurbita pepo*, respectively. No temperature or relative humidity data were provided.

+*Lall and Singh 1959:*

Infestation of *M. charantia* fruits (listed as bitter gourd) by *B. cucurbitae* (listed as *Dacus cucurbitae*) in the State of Bihar was observed to be 59.5%.

Pal et al. 1984:

Cultivars of *M. charantia* that showed promise in field trials in resistance to infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*) (see results of these trials under field infestation results above) were tested further in cage studies in each of three seasons (winter, summer, and rains). Twelve (12) plants of each selected cultivar were grown in insect-proof cages. Four (4) sexually mature, mated *B. cucurbitae* flies per plant, reared in the laboratory from field-infested *M. charantia* fruits, were added to the cages when female flowers started to appear. Average percentage infestation among 31 cultivars tested in winter 1977 was 29.7% (range: 3.3–60.0%). Average percentage infestation among 13 cultivars tested in summer 1978 was 32.0% (range: 2.2–63.2%). Average percentage infestation among 6 cultivars tested in rains 1978 was 22.6% (range: 2.6–36.1%).

Ponce 1937:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was reared in the laboratory on *M. charantia* fruit. At a mean temperature of 30.36°C, the overall larval period lasted 6.50 days, based on “14 cultures” (replications).

Rajamannar 1962:

Using *B. cucurbitae* (listed as *Dacus cucurbitae*) 1st instar larvae obtained from eggs oviposited on bottle gourd (*Lagenaria siceraria*; listed as *L. vulgaris*), 81 of 100 (81%) 1st instar larvae raised on *M. charantia* (listed as bitter gourd) pupated, with an average time to pupation of 5.0 days. In a separate test, 68 of 100 (68%) 1st instar larvae were found to feed on pieces of *M. charantia* (an average of 13.6 out of 20 larvae, based on five replicated trials).

Saha et al. 2007:

The relative quality of seven different *B. cucurbitae* fruit hosts was assessed by comparing pupal recovery (in F₁ and F₂ generations) following exposure of 500 g of each fruit to 200 gravid *B. cucurbitae* adults (from laboratory-adapted stock culture) for 30 minutes. For *M. charantia*, 330 and 379 pupae (660 and 758 pupae/kg fruit) and 271 and 330 adults (541 and 659 adults per kg fruit) were recovered in the F₁ and F₂ generations, respectively.

Sarwar et al. 2013:

Healthy, undamaged, mature and ripe *M. charantia* fruits were collected from a local marketplace in Faisalabad, Pakistan. One hundred twenty-five (125) g of fruits were placed in the bottom of a sieve that was suspended from a guava tree (*Psidium guajava*) in a guava orchard that was not bearing fruits (with three replications). Fruits were left exposed to wild *B. cucurbitae* flies for 48

hours. Fruits from each replication were placed over sand in muslin cloth-topped plastic containers and held for 2 to 3 weeks. *Bactrocera cucurbitae* puparia, recovered by sieving the sand, were placed in moist sand in a Petri plate and held for adult emergence. An average of 134.1 *B. cucurbitae* pupae (1,072.6 pupae/kg fruit) was recovered from which an average of 110.8 adult flies (886.6 adult flies/kg fruit) emerged.

Shivashankar et al. 2015:

One 1st instar *B. cucurbitae* larva, newly emerged from an egg oviposited on a tender *Sechium edule* fruit, was inserted into a 5 mm diameter by 2 mm deep hole punched into the surface of a freshly harvested tender *M. charantia* fruit. Fruits were held, in large plastic containers having a thin layer of sand, at the mean ambient temperature and relative humidity of 28.2±1.0°C and 58.7±1.0% RH, respectively. Pupae recovered were transferred to a different container with a thin layer of moist sand for adult emergence. There were ten replications with 10 fruits per replication. An average of 8.47 adult *B. cucurbitae* emerged per replication.

Listing Only: +Agrawal and Mathur 1991 (listed as *Dacus cucurbitae*; listed as bitter gourd); +Akhtaruzzaman et al. 1999 (listed as bitter gourd); Armstrong and Vargas 1982 (listed as *Dacus cucurbitae*); +Ayyar 1935 (listed as *Chaetodacus cucurbitae*; listed as bittergourd); Beller and Bhenchitr 1936 (listed as *Dacus cucurbitae*); Binder et al. 1989 (listed as *Dacus cucurbitae*); Botha et al. 2004 (listed as a secondary host); CABI 2016 (listed as a secondary host); California Department of Food and Agriculture 2001; Cantelo and Pholboon 1965 (listed as *Dacus cucurbitae*); Cantrell et al. 1999; Chaturvedi 1947 (listed as *Dacus cucurbitae*); +Chen 1960 (listed as *Dacus cucurbitae*; listed as balsam pear); Cunningham et al. 1970 (listed as *Dacus cucurbitae*); De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Dhillon et al. 2005a (listed as both *Momordica charantia* and as *Momordica charantia* var. *muricata*); EcoPort 2008; European and Mediterranean Plant Protection Organization 2015 (listed as a major host); Etienne 1967 (listed as *Dacus cucurbitae*); Etienne 1972 (listed as *Dacus cucurbitae*; adults obtained very frequently); Government of Western Australia Department of Agriculture and Food 2015; +Greene 1929 (listed as bitter gourd); Harris et al. 2010; Holbrook 1967 (listed as “heavily or generally infested”); Hollingsworth and Allwood 2000; Hollingsworth et al. 2003; Kandybina 1987 (listed as *Dacus cucurbitae*); Kapoor 1970 (listed as *Dacus cucurbitae*); Kapoor 1991 (listed as *Dacus cucurbitae*); +Kapoor 2005–2006 (listed as bitter gourd); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*); Kazi 1976 (listed as *Dacus cucurbitae*); +Khan et al. 1989 (listed as *Dacus cucurbitae*; listed as bittergourd); +Kumagai et al. 1996 (listed as bitter gourd); +Lall 1964 (listed as *Dacus cucurbitae*; listed as bittergourd); Leblanc 2000; Leblanc et al. 2013b; +Liu 1993 (listed as *Dacus cucurbitae*; listed as bitter melon); Mamet and Williams 1993 (listed as *Dacus cucurbitae*); +Mau et al. 2007 (listed as bittermelon); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as frequently injured); Messing et al. 1995; Metcalf 1990 (listed as *Dacus cucurbitae*; listed as a preferred host); Moiz et al. 1967 (listed as *Dacus cucurbitae*); Plantwise Knowledge Bank 2015; Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Nishida 1963 (listed as *Dacus cucurbitae*; listed as both karela and as *M. charantia* L.); Oakley 1950 (listed as *Dacus cucurbitae*); +Okinawa Prefectural Fruit Fly Eradication Project 1987 (listed as *Dacus cucurbitae*; listed as bitter melon); Pacific Fruit Fly Web 2002; Phillips 1946 (listed as both bitter gourd and as *M. charantia* [separately]); Puttarudriah and Usman 1954 (listed as *Dacus cucurbitae*); Quilici and Jeuffrault 2001 (listed as being a very favorable host); Rejesus et al. 1991 (listed as *Dacus cucurbitae*); +Renjhen 1949 (listed as *Dacus cucurbitae*; listed as bittergourd); Ryckewaert et al. 2010; Singh et al. 2004; Sookar and Khayratee 2000; +Symonds et al. 2009 (listed as bitter melon); Uchida et al. 1990; USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Momordica charantia*; listed as a preferred host); Vargas et al. 1989 (listed as *Dacus cucurbitae*); Vargas et al. 2004; Vargas and Nishida 1991 (listed as *Dacus cucurbitae*); Vargas and Prokopy 2006; Vijaysegaran 1991 (listed as *Dacus cucurbitae*; listed as *Momordica Charantia* L.); +Walker 2005 (listed as bitter gourd); Weems et al. 2001 (listed as balsam apple; listed as a wild host); White and Elson-Harris 1992; Williamson et al. 1985; Wong et al. 1991 (listed as *Dacus cucurbitae*); +Yang 1991 (listed as *Dacus cucurbitae*; listed as bitter melon); Yunus and Hua 1980 (listed as *Dacus cucurbitae*; listed as *Momordica charantia* L.).

Synonyms: *Momordica charantia* var. *abbreviata* Ser., *Momordica muricata* Willd., *Momordica zeylanica* Mill.

Momordica charantia L. subsp. *charantia*, see *Momordica charantia* L.

Momordica charantia var. *abbreviata* Ser., see *Momordica charantia* L.

Momordica charantia var. *muricata*, see *Momordica charantia* L.

Momordica charantia var. *pavel* Crantz

Family: Cucurbitaceae

Grin Nomen Number: There is no listing in GRIN for this var.; taxonomy taken from *Hatushima and Amano (1994)*.

Field Infestation:

Kuba and Koyama 1982:

Okinawa Island, Japan

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) larvae were recovered from infested *M. charantia* var. *pavel* (listed as *pevel*) fruits in 1980 in the southern part of Okinawa Island. The larvae were allowed to pupate under semi-field conditions, then brought to a rearing room maintained at 27±1°C. Progeny of recovered adults were used in mating behavior studies.

Matsuyama and Kuba 2002:

Okinawa, Japan

A laboratory strain of *B. cucurbitae* was established based on the collection of 19,281 larvae recovered in 1985 from *M. charantia* var. *pavel* fruits collected in the southern part of Okinawa Island. No fruit weight was given.

Matsuyama and Kuba 2009:

Okinawa, Japan

A laboratory strain of *B. cucurbitae* was established based on the collection of 19,281 larvae recovered in 1985 from *M. charantia* var. *pavel* fruits collected in the southern part of Okinawa Island. No fruit weight was given.

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 59,972 *M. charantia* var. *pavel* fruits were collected (285 collections overall) from five islands/island groups (Amami, Kume, Miyako, Okinawa, Yaeyama) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 8,813 fruits, giving an average percentage infestation rate (weighted by the number of collections in the islands/island groups) of 21.6%.

Prokopy and Koyama 1982:

Okinawa, Japan

All adult flies used in oviposition experiments with *B. cucurbitae* (listed as *Dacus cucurbitae*) originated from pupae recovered from wild-collected infested fruits of *M. charantia* var. *pavel* Crantz. No infestation rate was given.

Suenaga et al. 1992:

Amami Islands, Japan

A new laboratory strain of *B. cucurbitae* (listed as *Dacus cucurbitae*) was developed from about 2,800 wild *B. cucurbitae* collected as larvae from infested cultivated *M. charantia* var. *pavel* fruits in the Amami Islands in July 1985.

Synonyms: *Momordica charantia* L.

Momordica cochinchinensis (Lour.) Spreng.

Family: Cucurbitaceae

Grin Nomen Number: 24521

Common Names: balsam-pear (English), bhat karela (unknown), Chinese bitter-cucumber (English), Chinese-cucumber (English), cundeamor (Spanish), giant spine gourd (English), indische Bitter-

gurke (German), mu bie zi (transcribed Chinese), muricie (French), spiny bitter-cucumber (English), sweet gourd (English), taggig bittergurka (Swedish).

Native: ASIA-TEMPERATE – *China*: China – Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangsu, Jiangxi, Sichuan, Xizang, Yunnan, Zhejiang; *Eastern Asia*: Taiwan; ASIA-TROPICAL – *Indian Subcontinent*: Bangladesh, India – Assam, Nagaland, Tamil Nadu, Uttar Pradesh, West Bengal; *North Indian Ocean*: India – Andaman and Nicobar; *Indo-China*: Cambodia, Laos, Myanmar, Thailand; Vietnam; *Malesia*: Indonesia, Malaysia, Papua New Guinea, Philippines; AUSTRALASIA – *Australia*: Australia – Queensland.

Cultivated: ASIA-TEMPERATE – *China*: China; *Eastern Asia*: Japan – Ryukyu Islands; ASIA-TROPICAL – *Indian Subcontinent*: India; *Indo-China*: Indochina, Thailand; *Malesia*: Indonesia, Malaysia.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from samples of *M. cochinchinensis*. Number of fruit samples and infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Clausen et al. 1965:

Thailand

From collections of *M. cochinchinensis* in August 1950 in Thailand, 400 puparia were recovered, a mix of three predominant species: *B. cucurbitae* (listed as *Dacus cucurbitae* Coq.), *B. dorsalis* (listed as *Dacus dorsalis* Hendel) and *Bactrocera tau* (listed as *Dacus nubilus* Hendel) (*B. cucurbitae* was present in small numbers).

Verma and Singh 1976:

District of Champaran, State of Bihar, India

Fruits of *Momordica cochinchinensis* (listed as *Memordica cochinsinensis*), locally known as ‘kakari’ and ‘chathael,’ were found to be infested by *B. cucurbitae* (listed as *Dacus cucurbitae*) in the district of Champaran. Fruits were found to have 6 to 10 *B. cucurbitae* maggots.

Listing Only: CABI 2016 (listed as a secondary host); California Department of Food and Agriculture 2001 (listed as *Momordica cochinchinensis*); Cantrell et al. 1999; De Meyer et al. 2014; Government of Western Australia Department of Agriculture and Food 2015; Leblanc et al. 2013b; +Phillips 1946 (listed as Chinese cucumber); Plantwise Knowledge Bank 2015; Singh et al. 2004; USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); White and Elson-Harris 1992.

Synonyms: *Momordica ovata* Cogn., *Muricia cochinchinensis* Lour.

Momordica cylindrica L., see *Luffa aegyptiaca* Mill.

Momordica dioica Roxb. ex Willd.

Family: Cucurbitaceae

Grin Nomen Number: 24523

Common Names: kaksa (India), spine gourd (English).

Native: ASIA-TROPICAL – *Indian Subcontinent*: India, Pakistan, Sri Lanka.

Cultivated: ASIA-TROPICAL – *Indian Subcontinent*: India.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from samples of *M. dioica*. Number of fruit samples and infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D. L. Hancock.

Listing Only: CABI 2016 (listed as a secondary host); De Meyer et al. 2014; Leblanc et al. 2013b; Plantwise Knowledge Bank 2015; USDA-APHIS 2000; USDA-APHIS 2008.

Momordica foetida Schumach.

Family: Cucurbitaceae

Grin Nomen Number: 24525

Native: AFRICA – *Northeast Tropical Africa:* Eritrea, Ethiopia; *East Tropical Africa:* Kenya, Tanzania, Uganda; *West-Central Tropical Africa:* Burundi, Cameroon, Equatorial Guinea – Bioko; Rwanda, Zaire; *West Tropical Africa:* Côte d'Ivoire, Ghana, Liberia, Nigeria, Sierra Leone, Togo; *South Tropical Africa:* Angola, Malawi, Mozambique, Zambia, Zimbabwe; *Southern Africa:* Namibia, South Africa – Cape Province, KwaZulu-Natal, Transvaal; Swaziland.

Field Infestation:

Mwatawala et al. 2010:

Morogoro Region, Central Tanzania

Forty-one (41) immature *M. foetida* fruits (listed as *M. cf foetida* Schumach.) (0.712 kg) were collected at irregular intervals between October 2004 and April 2008, from the Morogoro Region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupariation of infesting tephritid fruit flies. Emerged adults were removed and identified. *Bactrocera cucurbitae* flies were recovered from from 2 of 3 collections (66.67%), with an overall infestation rate of 67.32 flies/kg fruit and 74.53 flies/kg infested fruit.

Listing Only: Copeland et al. 2009; De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*).

Synonyms: *Momordica schimperiana* Naudin

Momordica luffa L., see *Luffa aegyptiaca* Mill.

Momordica muricata Willd., see *Momordica charantia* L.

Momordica pedata L., see *Cyclanthera pedata* (L.) Schrad.

Momordica ovata Cogn., see *Momordica cochinchinensis* (Lour.) Spreng.

Momordica rostrata A. Zimm.

Family: Cucurbitaceae

Grin Nomen Number: 24525

Native: AFRICA – *East Tropical Africa:* Kenya, Tanzania, Uganda; *Northeast Tropical Africa:* Ethiopia, Somalia.

Listing Only: Copeland et al. 2009; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*).

Momordica schimperiana Naudin, see *Momordica foetida* Schumach.

Momordica spp.

Family: Cucurbitaceae

Grin Nomen Number: 315818

Field Infestation:

Back and Pemberton 1917:

Hawaii, U.S.A.

Chinese cucumber is listed as a preferred host of *B. cucurbitae*. In November 1914, 319 of 331 *Momordica* sp. fruits collected from 6 square feet of pasture in Kona, Hawaii Island, U.S.A. were infested by melon fly (96.4%). Two hundred fifty (250) fruits (out of a collection of 442 fruits) were held over sand, from which 1,586 melon fly larvae were obtained, an average of 6.3 larvae per fruit.

Fullaway 1916:

Singapore

Bactrocera cucurbitae adults (listed as *Dacus cucurbitae*) were reared out of *Momordica* sp. fruits (listed as momordicas). No infestation rate data given.

Willard 1920:

Kona, Hawaii, U.S.A.

Out of 442 *Momordica* sp. fruits (also referred to as wild Chinese cucumber) collected in Kona on 8 May 1916, 248 (56.1%) were infested by *B. cucurbitae*. From those infested fruits, 559 *B.*

cucurbitae eggs and 1,222 *B. cucurbitae* larvae were recovered for an average infestation rate (egg plus larvae) of 4.03 *B. cucurbitae* per fruit and 7.18 *B. cucurbitae* per infested fruit.

Interception Data:

Defra 2008:

India

One (1) live pupa and two live immatures of *Bactrocera cucurbitae* was recovered in North West United Kingdom from four boxes of *Momordica* sp. originating in India.

PestID 2016:

Guam

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Momordica* sp. fruit(s), originating in Guam, at an airport in Hawaii (Honolulu) on one occasion in 1993. Recovery was six live larvae.

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Momordica* sp. fruits, originating in Hawaii, at an airport in Hawaii (Honolulu) on 24 occasions between 1992 and 2007. Average recovery was 7.0 live larvae. On one occasion in 2005, one live pupa was recovered.

India

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Momordica* sp. fruits, originating in India, at an airport in New York (JFK) on one occasion in 1992. Recovery was two live larvae.

Philippines

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Momordica* sp. fruits, originating in the Philippines, at an airport in California (Los Angeles) on one occasion in 1998. Recovery was 10 live larvae.

USDA 1959:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from *Momordica* spp. which originated in Hawaii and was intercepted in Hawaii (1 interception in mail; adult fruit flies and eggs) between 1 July 1957 and 30 June 1958 (number of individuals recovered not reported). Taxonomic identification was done by agricultural specialists of the Bureau of Entomology and Plant Quarantine, USDA.

Listing Only: Back and Pemberton 1918 (listed as a preferred host); California Department of Food and Agriculture 2001; Chawla 1966 (listed as *Dacus cucurbitae*); De Meyer et al. 2014; Holbrook 1967 (listed as “heavily or generally infested”); Hollingsworth et al. 1996; Isnadi 1991 (listed as *Dacus cucurbitae*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as both Chinese cucumber [gourd] and as parya-soorten; Chinese cucumber is listed as a preferred host, while it is indicated that there is insufficient data to justify regulation of parya-soorten); Vijaysegaran 1985 (listed as *Dacuis cucurbitae*); Weems 1964 (listed as *Dacus cucurbitae*; listed as a wild host); Weems et al. 2001 (listed as a wild host).

Momordica trifoliolata Hook. f.

Family: Cucurbitaceae

Grin Nomen Number: 24531

Native: AFRICA – *Northeast Tropical Africa:* Ethiopia, Somalia; *East Tropical Africa:* Kenya, Tanzania, Uganda; *South Tropical Africa:* Mozambique; *Western Indian Ocean:* Madagascar.

Field Infestation:

Mwatawala et al. 2010:

Morogoro Region, Central Tanzania

One thousand ninety-six (1,096) immature *M. trifoliolata* fruits (listed as *M. cf trifoliolata* Hook f.) (9.006 kg) were collected at irregular intervals between October 2004 and April 2008, from the Morogoro Region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupariation of infesting tephritid fruit flies. Emerged adults were removed and identified.

Bactrocera cucurbitae flies were recovered from 34 of 58 collections (58.62%), with an overall infestation rate of 106.93 flies/kg fruit and 157.07 flies/kg infested fruit.

Listing Only: Copeland et al. 2009; De Meyer et al. 2014 (listed as *Momordica trifoliata*); De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*; listed as *Momordica trifoliata* Hook. f.).

Momordica zeylanica Mill., see *Momordica charantia* L.

Mukia maderaspatana (L.) M. Roem., see *Cucumis maderaspatanus* L.

Mukia scabrella (L.) Arn., see *Cucumis maderaspatanus* L.

Muricia cochinchinensis Lour., see *Momordica cochinchinensis* (Lour.) Spreng.

Musa acuminata Colla

Family: Musaceae

Grin Nomen Number: 24706

Common Names: ädelbanan (Swedish), banana (English), banana-nanica (Portuguese-Brazil), Banane (German), bananier (French), bananier nain (French), bitoki (Uganda), bungulan (unknown), cau batu (Sudanese), Cavendish banana (English), Chinese banana (English), dwarf banana (English), gedang klutuk (Indonesian-Java), nanicao (Portuguese-Brazil), pisang batu (Indonesian), plátano (Spanish), Zwergbanane (German).

Native: ASIA-TEMPERATE – *China*: China – Guangxi, Yunnan; ASIA-TROPICAL – *Indian Subcontinent*: India, Sri Lanka; *Indo-China*: Indochina, Myanmar, Thailand; *Malesia*: Indonesia, Malaysia, Philippines.

Naturalized: AFRICA – *East Tropical Africa*: Tanzania – Pemba.

Cultivated: Widely cultivated.

Field Infestation:

Armstrong 1983 (**Note:** this is negative data; no *B. cucurbitae* infestation found):

Hawaii, U.S.A.

Between 1977 and 1978, ripe culled *M. acuminata* banana cultivars (a mix of three cultivars: ‘Brazilian,’ ‘Valery,’ and ‘William’s’) were collected at 3-month intervals from cull dumps at banana plantations in Kaneohe and in Waimanalo on the Island of Oahu, Hawaii and held for assessment of infestation by tephritid fruit flies. Sampled bananas were 15±2 days postharvest with about 13 days exposure to natural fly populations. Although cue lure-based trapping had shown *B. cucurbitae* adults (listed as *Dacus cucurbitae*) were in the area of both cull dumps, no melon flies were reared from the total of 54.0 kg of cull fruits collected. The author concluded that this result supported a conclusion that bananas are not a host for *B. cucurbitae*.

Lab Infestation:

Armstrong 1983:

Ten (10) fingers of each of three *M. acuminata* cultivars (‘Brazilian,’ ‘Valerie,’ and ‘William’s’) of each of six ripeness stages (1 = [mature] green; 2 = green with a trace of yellow; 3 = more green than yellow; 4 = more yellow than green; 5 = green tip only; 6 = all yellow) were exposed for 1 hour to about 16,000 laboratory-reared, sexually mature, *Bactrocera cucurbitae* (listed as *Dacus cucurbitae*), *B. dorsalis* and *Ceratitis capitata* adults in a 14.5 m³ screened cage (10 replications per ripeness stage per variety). After exposure, bananas were held on sand in fiberglass boxes for 3 weeks, with pupae removed and placed in glass jars until adult emergence. Averages of numbers of adult *B. cucurbitae* flies recovered per kg banana were 0.0, 0.0, 0.2, 1.2, 7.0, and 13.0 (‘Brazilian’), 0.0, 0.0, 0.0, 0.8, 5.1, and 8.4 (‘Valery’), and 0.0, 0.0, 0.0, 1.1, 7.3, and 9.9 (‘William’s’) for ripeness stages 1–6, respectively.

Synonyms: *Musa cavendishii* Lamb., *Musa chinensis* Sweet, nom. nud., *Musa nana* Lour., *Musa ×sapientum* var. *suaveolens* (Blanco) Malag., *Musa sinensis* Sagot ex Baker

Musa cavendishii Lamb., see *Musa acuminata* Colla

Musa chinensis Sweet, nom. nud., see *Musa acuminata* Colla

Musa dacca Horan., see *Musa ×paradisiaca* L.

Musa martinii Van Geert, see *Musa* spp.

Musa nana Lour., see *Musa acuminata* Colla

Musa ×paradisiaca L.

Family: Musaceae

Grin Nomen Number: 70453

Common Names: banana-caturra (Portuguese-Brazil), banana-da-terra (Portuguese-Brazil), banana-de-São-Tomé (Portuguese-Brazil), banana (English), banana-maçã (Portuguese-Brazil), banana-ouro (Portuguese-Brazil), banana-prata (Portuguese-Brazil), Banane (German), bananier (French), banano (Spanish), Ess-Banane (German), French plantain (English), Mehlbanane (German), plantain (English).

Cultivated: Widely cultivated.

Field Infestation:

McBride and Tanada 1949:

Kaneohe, Island of Oahu, Hawaii, U.S.A.

Eleven (11) fruits of bluefield banana (listed as *Musa paradisiaca* L. subsp. *sapientum* [L.] Kuntze) were collected on 25 August 1947, in Kaneohe, on the Island of Oahu, by M. Chong. Recovered from these fruits were one *B. dorsalis* Hendel (listed as *Dacus dorsalis*) and one *B. cucurbitae* (listed as *Dacus cucurbitae*). The authors listed Bluefield banana as a doubtful host.

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Musa paradisiaca* fruits, originating in Hawaii, at an airport in Hawaii (Honolulu) on one occasion in 2003. Recovery was three live larvae.

Lab Infestation:

Chawla 1966:

In captivity, female *B. cucurbitae* adults (listed as *Dacus cucurbitae*) laid eggs on cut fruits of ripe *M. paradisiaca*. The eggs hatched and the development of the larvae proceeded normally through adult emergence.

In captivity, female *B. cucurbitae* adults (listed as *Dacus cucurbitae*) laid eggs on cut fruits of raw banana (listed as *Musa sapientum*). Larvae did not develop normally.

Rajamannar 1962:

Using *B. cucurbitae* (listed as *Dacus cucurbitae*) 1st instar larvae obtained from eggs oviposited on bottle gourd (*Lagenaria siceraria*; listed as *L. vulgaris*), 4 of 100 (4%) 1st instar larvae raised on *Musa ×paradisiaca* (listed as *Musa paradisiaca* subsp. *sapientum* and banana) fruit pupated, with an average time to pupation of 8.8 days. In a separate test, 68 of 100 (68%) 1st instar larvae were found to feed on pieces of *Musa ×paradisiaca* fruit (an average of 13.6 out of 20 larvae, based on five replicated trials).

Listing Only: Dhillon et al. 2005a (listed as both *Musa paradisiaca* sp. *sapientum* and as blue field banana); Holbrook 1967 (listed as *Musa paradisiaca* var. *sapientum*); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Musa paradisiaca sapientum*, which is listed as a doubtful host); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Musa paradisiaca* var. *sapientum*; insufficient data to justify regulation); White and Elson-Harris 1992 (authors state “requires confirmation”).

Synonyms: *Musa dacca* Horan., *Musa ×paradisiaca* subsp. *sapientum* (L.) Kuntze, *Musa ×paradisiaca* var. *dacca* (Horan.) Baker ex K. Schum., *Musa ×sapientum* L.

Musa ×paradisiaca subsp. *sapientum* (L.) Kuntze, see *Musa ×paradisiaca* L.

Musa ×paradisiaca subsp. *seminifera* (Lour.) K. Schum., see *Musa* spp.

Musa ×paradisiaca var. *dacca* (Horan.) Baker ex K. Schum., see *Musa ×paradisiaca* L.

Musa ×sapientum L., see *Musa ×paradisiaca* L.

Musa ×sapientum var. *suaveolens* (Blanco) Malag., see *Musa acuminata* Colla

Musa seminifera Lour., see see *Musa* spp.

Musa sinensis Sagot ex Baker, see *Musa acuminata* Colla

Musa spp.

Family: Musaceae

Grin Nomen Number: 312415

Listing Only: Cantrell et al. 1999 (listed as “conditional–mature green bananas are non-hosts”); Dhillon et al. 2005a; Rejesus et al. 1991 (listed as *Dacus cucurbitae*).

Myrtus brasiliiana L., see *Eugenia uniflora* L.

Myrtus samarangensis Blume, see *Syzygium samarangense* (Blume) Merr. and L. M. Perry

Neochamandra wallichii (C. B. Clarke) W. J. de Wilde and Duyfjes, see *Zehneria wallichii* (C.B. Clarke) C. Jeffrey

Nephelium litchi Cambess., see *Litchi chinensis* Sonn.

Nephelium longan (Lour.) Hook., see *Dimocarpus longan* Lour. subsp. *longan*

Nephelium longana (Lam.) Cambess., see *Dimocarpus longan* Lour.

Ochrocarpos africanus (Sabine) Oliv., see *Mammea Africana* Sabine

Ochrosia sp.

Family: Apocynaceae

Grin Nomen Number: 317684

Listing Only: Hardy and Adachi 1956 (listed as *Dacus cucurbitae*).

Ocimum basilicum L.

Family: Lamiaceae

Grin Nomen Number: 25478

Common Names: albahaca (Spanish), alfavaca (Portuguese), basil (English), basilic (French), basilico (Italian), Basilienkraut (German), basilika (Swedish), Basilikum (German), luo le (transcribed Chinese), manjerição (Portuguese), me-bōki (Japanese Rōmaji), reihan (Arabic), sweet basil (English).

Cultivated: widely cultivated.

Origin: Possible origin Africa.

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Ocimum basilicum* leaves/cuttings, originating in Hawaii, at an airport in Hawaii (Honolulu) on three occasions from 2010 to 2013. Recovery was one live adult at each of the three interceptions.

Synonyms: *Ocimum basilicum* var. *album* (L.) Benth., *Ocimum basilicum* var. *glabratum* Benth., *Ocimum basilium* var. *majus* Benth., *Ocimum basilium* var. *purpurescens* Benth., *Ocimum ciliatum* Hornem.

Ocimum basilicum var. *album* (L.) Benth., see *Ocimum basilicum* L.

Ocimum basilicum var. *glabratum* Benth., see *Ocimum basilicum* L.

Ocimum basilium var. *majus* Benth., see *Ocimum basilicum* L.

Ocimum basilium var. *purpurescens* Benth., see *Ocimum basilicum* L.

Ocimum ciliatum Hornem., see *Ocimum basilicum* L.

Ocimum sp.

Family: Lamiaceae

Grin Nomen Number: 301093

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Ocimum* sp. leaves, originating in Hawaii, at an airport in Hawaii (Honolulu) on one occasion in 2007 and on one occasion in 2009. Recovery was one live adult in each interception.

Opuntia amyclaea Ten., see *Opuntia ficus-indica* (L.) Mill.

Opuntia consoleana hort. ex Lem., see *Opuntia* sp.

Opuntia cordobensis Speg., see *Opuntia ficus-indica* (L.) Mill.

Opuntia decumana (Willd.) Haw., see *Opuntia ficus-indica* (L.) Mill.

Opuntia ficus-barbarica A. Berger, see *Opuntia ficus-indica* (L.) Mill.

Opuntia ficus-indica (L.) Mill.

Family: Cactaceae

Grin Nomen Number: 310524

Common Names: Barbary-fig (English), boereturksvy (Africans), chumba (Spanish), chumbera (Spanish), figo-da-Espanha (Portuguese), Feigenkaktus (German), figo-da-Índia (Portuguese), figueira-da-Barbária (Portuguese), figuier d’Inde (French), figuier de Barbarie (French), fikonkaktus (Swedish), grootdoringturksvy (Afrikaans), higuera (Spanish), Indian-fig (English), Indian-fig prickly-pear (English), jamaracá (Portuguese), jurumbeba (Portuguese), mission cactus (English), mission prickly-pear (English), orelha-de-onça (Portuguese), palma-de-gado (Portuguese), palma-gigante (Portuguese), prickly-pear (English), nopal de Castilla (Spanish), nopal pelón (Spanish), smooth mountain prickly-pear (English), smooth prickly-pear (English), spineless cactus (English), sweet prickly-pear (English), tuberous prickly-pear (English), tuna (Spanish), tuna cactus (English), tuna de Castilla (Spanish), tuna mansa (Spanish).

Naturalized: AFRICA – *Macaronesia*: Cape Verde; Portugal – Madeira Islands; Spain – Canary Islands; *Northern Africa*: Libya; Morocco; Tunisia; *Northeast Tropical Africa*: Eritrea, Ethiopia; *East Tropical Africa*: Kenya; *South Tropical Africa*: Angola; *Southern Africa*: South Africa; ASIA-TEMPERATE – *Arabian Peninsula*: Saudi Arabia; Yemen; *Western Asia*: Cyprus, Lebanon, Syria, Turkey; *China*: China; AUSTRALIA – *Australia*: Australia; EUROPE – *Southeastern Europe*: Greece; Italy; *Southwestern Europe*: France (includes Corsica); Spain (includes Baleares); NORTHERN AMERICA – *Southwestern U.S.A.*: United States – Arizona, California; PACIFIC – *North-Central Pacific*: United States – Hawaii; SOUTHERN AMERICA – *Caribbean*: Cuba; Guadeloupe; Hispaniola; Netherlands Antilles; Puerto Rico; Trinidad and Tobago – Trinidad; *Central America*: Nicaragua; *Western South America*: Bolivia; Ecuador; Peru; *Southern South America*: Argentina; Paraguay.

Cultivated: widely cultivated

Listing Only: Holbrook 1967 (listed as *Opuntia megacantha*; listed as a “non-host or host of undetermined status”).

Synonyms: *Cactus decumanus* Willd., *Cactus ficus-indica* L., *Opuntia amyclaea* Ten., *Opuntia cordobensis* Speg., *Opuntia decumana* (Willd.) Haw., *Opuntia ficus-barbarica* A. Berger, *Opuntia ficus-indica* var. *gymnocarpa* (F. A. C. Weber) Speg., *Opuntia gymnocarpa* F. A. C. Weber, *Opuntia hispanica* Griffiths, *Opuntia joconostle* F. A. C. Weber ex Diguët, *Opuntia maxima* Mill., *Opuntia megacantha* Salm-Dyck, *Opuntia paraguayensis* K. Schum.

Opuntia ficus-indica var. *gymnocarpa* (F. A. C. Weber) Speg., see *Opuntia ficus-indica* (L.) Mill.

Opuntia glaucophylla H. L. Wendl., see *Opuntia* sp.

Opuntia gymnocarpa F. A. C. Weber, see *Opuntia ficus-indica* (L.) Mill.

Opuntia hispanica Griffiths, see *Opuntia ficus-indica* (L.) Mill.

Opuntia joconostle F. A. C. Weber ex Diguët, see *Opuntia ficus-indica* (L.) Mill.

Opuntia megacantha Salm-Dyck, see *Opuntia ficus-indica* (L.) Mill.

Opuntia paraguayensis K. Schum., see *Opuntia ficus-indica* (L.) Mill.

Opuntia sp.

Family: Cactaceae

Grin Nomen Number: 300410

Listing Only: USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation).

Synonyms: *Opuntia consoleana* hort. ex Lem., *Opuntia glaucophylla* H. L. Wendl.

Orthostemon sellowianus O. Berg, see *Acca sellowiana* (O. Berg) Burret

Paliurus dao Blanco, see *Dracontomelon dao* (Blanco) Merr. and Rolfe

Paliurus edulis Blanco, see *Dracontomelon dao* (Blanco) Merr. and Rolfe

Pandanus fascicularis Lam.

Family: Pandanaceae

Grin Nomen Number: 402974

Common Names: padang (English), pandan laut (Indonesia), pandan laut (Malay), pandan pasir (Indonesian-Java), sabotan (Philippine).

Native: ASIA-TEMPERATE – *China:* China-Guangdong, Guangxi, Hainan; Hong Kong; *Eastern Asia:* Japan – Ryukyu Islands; Taiwan; ASIA-TROPICAL – *Indian Subcontinent:* India, Sri Lanka; *Indo-China:* Cambodia; Laos; Myanmar; Thailand; Vietnam; *Malesia:* Indonesia; Malaysia; Philippines; PACIFIC – *Northwestern Pacific:* Micronesia.

Field Infestation:

Tsuruta et al. 1997:

Sri Lanka

Two (2) adult *B. cucurbitae* were recovered from an unspecified number of *P. fascicularis* fruits (listed as *Pandanus odoratissimus*) collected from the Pamunugema area of Sri Lanka. No infestation rate data were given.

Listing Only: CABI 2016 (listed as *Pandanus odorifer*; listed as a secondary host); De Meyer et al. 2014 (listed as *Pandanus odoratissimus*); Plantwise Knowledge Bank 2015 (listed as *Pandanus odorifer*).

Synonyms: *Pandanus odoratissimus* auct., *Pandanus odorifer* auct., *Pandanus tectorius* var. *sinensis* Warb.

Pandanus odoratissimus auct., see *Pandanus fascicularis* Lam.

Pandanus odorifer auct., see *Pandanus fascicularis* Lam.

Pandanus tectorius var. *sinensis* Warb., see *Pandanus fascicularis* Lam.

Papaya carica Gaertn., see *Carica papaya* L.

Papilionaceae Giseke, nom. cons., see *Fabaceae* Lindl., nom. cons.

Passiflora edulis Sims

Family: Passifloraceae

Grin Nomen Number: 26962

Common Names: common passionfruit (English), grenadella (Afrikaans), maracujá (Portuguese-Brazil), maracujá-comum (Portuguese-Brazil), maracujá-de-comer (Portuguese-Brazil), maracujá-de-ponche (Portuguese-Brazil), maracujá-do-mato (Portuguese-Brazil), maracujá-doce (Portuguese-Brazil), maracujá-mirim (Portuguese-Brazil), maracujá-peroba (Portuguese-Brazil), maracujá-preto (Portuguese-Brazil), maracujá-redondo (Portuguese-Brazil), passionsfrukt (Swedish), purple granadilla (English).

Native: SOUTHERN AMERICA – *Brazil*: Brazil – Alagoas, Amazonas, Bahia, Ceara, Espirito Santo, Federal District, Goias, Maranhao, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Para, Paraiba, Parana, Pernambuco, Piaui, Rio Grande do Norte, Rio Grande do Sul, Rio de Janeiro, Santa Catarina, Sao Paulo, Sergipe, Tocantins; *Southern South America*: Argentina – Corrientes, Misiones; Paraguay.

Naturalized: AFRICA – *East Tropical Africa*: Kenya, Tanzania, Uganda; *South Tropical Africa*: Angola, Malawi, Mozambique, Zambia, Zimbabwe; *Southern Africa*: South Africa, Swaziland; *Western Indian Ocean*: Mauritius, Réunion; ASIA-TEMPERATE – *China*: China; *Eastern Asia*: Taiwan; ASIA-TROPICAL – *Malesia*: Philippines; AUSTRALASIA – *Australia*: Australia; *New Zealand*: New Zealand; NORTHERN AMERICA – *Southeastern U.S.A.*: United States – Florida; PACIFIC – *North-Central Pacific*: United States – Hawaii; *South-Central Pacific*: Cook Islands, French Polynesia, Pitcairn; *South-western Pacific*: Fiji, New Caledonia, Niue, Tonga; SOUTHERN AMERICA – *Western South America*: Ecuador – Galapagos Islands.

Cultivated: Widely cultivated.

Field Infestation:

Tsuruta et al. 1997:

Sri Lanka

Adult *B. cucurbitae* were recovered from an unspecified number of *P. edulis* fruits collected in Sri Lanka. Seven (7) came from fruits collected in the Bombuwela area and an unspecified number came from fruits collected in the Gonnoruwa area. No infestation rate data were given.

Interception Data:

PestID 2016:

Nigeria

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Passiflora edulis* fruit(s), originating in Nigeria, at an airport in Texas (Houston) on one occasion in 1997. Recovery was 21 live larvae.

Listing Only: CABI 2016 (listed as a secondary host); California Department of Food and Agriculture 2001; De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Dhillon et al. 2005a; Holbrook 1967; Kapoor 1970 (listed as *Dacus cucurbitae*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); Plantwise Knowledge Bank 2015; Quilici and Jeuffrault 2001 (listed as being only a little favorable as a host); Ryckewaert et al. 2010; Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); Vargas et al. 2004; White and Elson-Harris 1992 (authors state “requires confirmation”).

Passiflora edulis Sims forma *flavicarpa* O. Deg.

Family: Passifloraceae

Grin Nomen Number: 26963

Common Names: maracujá (Portuguese), maracuja (Swedish), maracuyá amarillo (Spanish), yellow passionfruit (English).

Native: SOUTHERN AMERICA – *Brazil*: Brazil.

Cultivated: widely cultivated.

Listing Only: Holbrook 1967 (listed as “heavily or generally infested”); Nishida and Bess 1957 (listed as *Dacus cucurbitae*); Steiner 1955 (listed as *Dacus cucurbitae*).

Passiflora foetida L.

Family: Passifloraceae

Grin Nomen Number: 26968

Common Names: granadilla de culebra (Spanish), love-in-a-mist (English), love-in-a-mist passionflower (English), Marie-Gougeat (French), mossy passionflower (English), pasiflora hedionda (Spanish), running pop (English), stinkende Grenadille (German), stinking granadilla (English), stinking passionflower (English), stinking passionfruit (English), wild passionfruit (English), wild water-lemon (English).

Native: NORTHERN AMERICA – *South-Central U.S.A.*: United States – Texas; *Southwestern U.S.A.*: United States – Arizona; *Northern Mexico*: Mexico – Chihuahua, Coahuila, Nuevo Leon, San Luis Potosi, Sinaloa, Sonora, Tamaulipas, Zacatecas; *Southern Mexico*: Mexico – Chiapas, Colima, Guanajuato, Guerrero, Hidalgo, Jalisco, Mexico, Michoacan, Morelos, Nayarit, Oaxaca, Puebla, Queretaro, Tabasco, Veracruz, Yucatan; SOUTHERN AMERICA – *Caribbean*: Antigua and Barbuda, Bahamas, Cuba, Dominica, Grenada, Guadeloupe, Hispaniola, Jamaica, Martinique, Montserrat, Puerto Rico, St. Lucia, St. Vincent and Grenadines, Trinidad and Tobago; *Central America*: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama; *Northern South America*: French Guiana, Guyana, Suriname, Venezuela; *Brazil*: Brazil; *Western South America*: Bolivia, Colombia, Ecuador, Peru; *Southern South America*: Argentina, Chile, Paraguay, Uruguay.

Naturalized: Naturalized elsewhere in tropics.

Listing Only: Holbrook 1967 (listed as “occasionally infested”); Kapoor 1970 (listed as *Dacus cucurbitae*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); Ryckewaert et al. 2010; Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); White and Elson-Harris 1992 (authors state “requires confirmation”).

Synonyms: *Passiflora foetida* var. *arizonica* Killip, *Passiflora foetida* var. *hastata* (Bertol.) Mast., *Passiflora foetida* var. *hibiscifolia* (Lam.) Killip, *Passiflora foetida* var. *hispida* (DC. ex Planch. and Triana) Killip ex Gleason, *Passiflora hastata* Bertol., *Passiflora hibiscifolia* Lam., *Passiflora hispida* DC. ex Triana and Planch.

Passiflora foetida var. *arizonica* Killip, see *Passiflora foetida* L.

Passiflora foetida var. *hastata* (Bertol.) Mast., see *Passiflora foetida* L.

Passiflora foetida var. *hibiscifolia* (Lam.) Killip, see *Passiflora foetida* L.

Passiflora foetida var. *hispida* (DC. ex Planch. and Triana) Killip ex Gleason, see *Passiflora foetida* L.

Passiflora hastata Bertol., see *Passiflora foetida* L.

Passiflora hibiscifolia Lam., see *Passiflora foetida* L.

Passiflora hispida DC. ex Triana and Planch., see *Passiflora foetida* L.

Passiflora laurifolia L.**Family:** Passifloraceae**Grin Nomen Number:** 26981**Common Names:** bell-apple (English), gelbe Grenadille (German), guldgrenadill (Swedish), Jamaica-honeysuckle (English), parcha (Spanish), pomme d'or (French), sweetcup (English), Wasserlimone (German), water-lemon (English), yellow granadilla (English).**Native:** SOUTHERN AMERICA – *Caribbean:* Antigua and Barbuda, Barbados, Cuba, Dominica, Grenada, Guadeloupe, Martinique, Montserrat, Puerto Rico, St. Lucia, St. Vincent and Grenadines; *Northern South America:* French Guiana, Guyana, Suriname, Venezuela; *Western South America:* Peru.**Cultivated:** also cultivated.**Field Infestation:***Back and Pemberton 1917:*

Hawaii, U.S.A.

The authors reported typically not finding *P. laurifolia* fruits (also referred to as water lemon) infested by *B. cucurbitae* either in the market or when growing wild, but noted that eggs laid in *P. laurifolia* fruits at a residence in Manoa Valley (on the Island of Oahu, Hawaii, U.S.A.) produced “noticeable deformities in shape and cracks in the rind,” and a few adult *B. cucurbitae* were recovered, but from just 1 of the fruits.

+Back and Pemberton 1918:

Hawaii, U.S.A.

Passiflora laurifolia (listed both as *Passiflora* sp. and as water lemon) is listed as “occasionally infested” by *B. cucurbitae*. The authors stated that adult melon flies have been reared from water lemon, but that water lemon does not serve regularly as a host; that it is attacked by melon fly only in rare instances, and then only slightly.

Listing Only: Cantrell et al. 1999; Holbrook 1967 (listed as “occasionally infested”); Kandybina 1987 (listed as *Dacus cucurbitae*); +McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as water lemon, *Passiflora* sp., listed as rarely injured); Oakley 1950 (listed as *Dacus cucurbitae*); Phillips 1946; +Rajamannar 1962 (listed as *Dacus cucurbitae*; listed as water lemon); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host); White and Elson-Harris 1992 (authors state “requires confirmation”).

Passiflora ligularis Juss.**Family:** Passifloraceae**Grin Nomen Number:** 26982**Common Names:** cranix (Spanish), granada-china (Spanish), granadilla (Spanish), granadille (French), grenadille douce (French), maracujá (Portuguese-Brazil), sötgrenadill (Swedish), süße Grenadille (German), sweet granadilla (English).**Native:** NORTHERN AMERICA – *Southern Mexico:* Mexico – Chiapas, Colima, Michoacan, Oaxaca, Puebla, Veracruz; SOUTHERN AMERICA – *Central America:* Costa Rica, El Salvador, Guatemala, Honduras, Panama; *Northern South America:* Venezuela; *Western South America:* Bolivia, Colombia, Ecuador, Peru.**Listing Only:** Holbrook 1967 (listed as “occasionally infested”); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation).*Passiflora macrocarpa* Mast., see *Passiflora quadrangularis* L.*Passiflora mollissima* (Kunth) L. H. Bailey, see *Passiflora tripartita* (Juss.) Poir. var. *mollissima* (Kunth) Holm-Niels. and P. Jørg.*Passiflora quadrangularis* L.**Family:** Passifloraceae**Grin Nomen Number:** 27001

Common Names: badea (Spanish), barbadin (Swedish), barbadine (French), giant granadilla (English), granadilla (Spanish), granadilla real (Spanish), grenadine (English), Königs-Grenadille (German), maracujá-açú (Portuguese-Brazil), maracujá-mamão (Portuguese-Brazil), maracujá-melão (Portuguese-Brazil), maracujá-uaçu (Portuguese-Brazil), Riesen-Grenadille (German).

Cultivated: Widely cultivated in tropics.

Origin: Neotropics.

Listing Only: Cantrell et al. 1999 (listed as *Passiflora quadrangula*); Dhillon et al. 2005a; Holbrook 1967; Kapoor 1970 (listed as *Dacus cucurbitae*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*; listed as *Passiflora quadrangula*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); White and Elson-Harris 1992 (authors state “requires confirmation”).

Synonyms: *Passiflora macrocarpa* Mast., *Passiflora quadrangularis* L. var. *variegata*

Passiflora quadrangularis L. var. *variegata*, see *Passiflora quadrangularis* L.

Passiflora seemanii Griseb.

Family: Passifloraceae

Grin Nomen Number: 415271

Common Names: guate guate (Spanish-Panama).

Native: SOUTHERN AMERICA – *Central America:* Costa Rica – Alajuela, Puntarenas; Honduras, Nicaragua, Panama – Chiriqui, Cocle, Darien, Panama; *Western South America:* Colombia – Antioquia, Cauca, Santander.

Listing Only: Dhillon et al. 2005a; Holbrook 1967 (listed as “rarely infested”); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as rarely injured); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*; listed as *Passiflora seemanii*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation).

Passiflora spp.

Family: Passifloraceae

Grin Nomen Number: 300432

Field Infestation:

+Swezey 1935:

Honolulu, Island of Oahu, Hawaii, U.S.A.

One (1) infested ripe *Passiflora* sp. fruit (listed as passion fruit) was collected from a garden in Manoa Valley, on the Island of Oahu, Honolulu, Hawaii. Thirty-three (33) *B. cucurbitae* pupae (listed as *Chaetodacus cucurbitae* [Coq.]) were recovered from which 8 adult *B. cucurbitae* and 23 adult *Psytalia fletcheri* (listed as *Opius fletcheri* Silv.) emerged.

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Passiflora* sp. fruits, originating in Hawaii, at an airport in Hawaii (Honolulu) on two occasions in 2005. Recovery was 11 and 12 live larvae.

Listing Only: Botha et al. 2004 (listed as a secondary host); CABI 2016; Cantrell et al. 1999; Chawla 1966 (listed as *Dacus cucurbitae*); Hollingsworth et al. 1996; Isnadi 1991 (listed as *Dacus cucurbitae*); Kapoor 1970 (listed as *Dacus cucurbitae*); +NAPPO, PAS 2015 (listed as passion-flower); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Plantwise Knowledge Bank 2015; Ponce 1937 (listed as *Dacus cucurbitae*); +Rajamannar 1962 (listed as *Dacus cucurbitae*; listed as passion flower); +Ramadan and Messing 2003 (listed as passion fruit); Syed 1971 (listed as *Dacus cucurbitae*); +Tsatsia and Hollingsworth 1997 (listed as passion fruit); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ

1983 (listed as *Dacus cucurbitae*); Weems 1964 (listed as *Dacus cucurbitae*; listed as a wild host); Weems 1967 (listed as *Dacus cucurbitae*; listed as a wild host); Weems et al. 2001 (listed as a wild host); White and Elson-Harris 1992.

Synonyms: *Tacsonia* spp.

Passiflora subpeltata Ortega

Family: Passifloraceae

Grin Nomen Number: 312877

Common Names: white passionflower (English), white passionfruit (English), wild passionfruit (English), wild passionvine (English), weiße Passionblume (German), granadina (Spanish).

Native: NORTHERN AMERICA – *Northern Mexico:* Mexico – Zacatecas; *Southern Mexico:* Mexico – Chiapas, Federal District, Hidalgo, Jalisco, Mexico, Michoacan, Morelas, Nayarit, Oaxaca, Puebla, Queretaro, Veracruz; SOUTHERN AMERICA – *Central America:* Guatemala, Panama; *Northern South America:* Venezuela; *Western South America:* Colombia.

Cultivated: also cultivated.

Listing Only: Holbrook 1967 (listed as a “nonhost or host of undetermined status”).

Passiflora tripartita (Juss.) Poir. var. *mollissima* (Kunth) Holm-Niels. and P. Jørg.

Family: Passifloraceae

Grin Nomen Number: 400952

Common Names: banana passionflower (English), banana passionfruit (English), banana poka (English), bananadilla (English), Bananen-Passionsblume (German), Curuba (German), curuba (Swedish), curuba de Castilla (Spanish-Columbia), piesangdilla (Afrikaans), tacso (French), tacso (Spanish), tacso de Castilla (Spanish-Ecuador), tumbo (Spanish).

Native: SOUTHERN AMERICA – *Western South America:* Colombia; Ecuador; Peru.

Naturalized: AFRICA – *Macaronesia:* Portugal – Madeira Islands; *East Tropical Africa:* Kenya; *South Tropical Africa:* Zambia; *Southern Africa:* South Africa – Limpopo, Western Cape; ASIA-TROPICAL – *Indian Subcontinent:* India; Sri Lanka; AUSTRALASIA – *Australia:* Australia – New South Wales, Queensland, Victoria; *New Zealand:* New Zealand; PACIFIC – *North-Central Pacific:* United States – Hawaii.

Cultivated: widely cultivated.

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Passiflora mollissima* (synonym of *P. tripartita*) fruit(s), originating in Hawaii, at an airport in Hawaii (Honolulu) on one occasion in 2004. Recovery was four live larvae.

Synonyms: *Passiflora mollissima* (Kunth) L. H. Bailey, *Tacsonia mollissima* Kunth

Peponia parviflora var. *trilobata* Cogn., see *Coccinia trilobata* (Cogn.) C. Jeffrey

Persea americana Mill.

Family: Lauraceae

Grin Nomen Number: 27393

Common Names: abacate (Portuguese), abokado (Japanese Rōmaji), aguacate (Spanish), avocado (English), Avocado (German), avocado (Swedish), Avocadobaum (German), Avocadopalme (German), avocatier (French), avokado (Swedish), e li (transcribed Chinese), palto (Spanish), wani-nashi (Japanese Rōmaji).

Native: NORTHERN AMERICA – *Northern Mexico:* Mexico – San Luis Potosi, Sinaloa, Sonora, Tamaulipas; *Southern Mexico:* Mexico – Chiapas, Nayarit, Oaxaca, Puebla, Quintana Roo, Tabasco; SOUTHERN AMERICA – *Central America:* Belize – Corozal; Costa Rica – Alajuela, Puntarenas; El Salvador – Chalatenango, Santa Ana; Guatemala – Baja Verapaz, Chimaltenango, Huehuetenango, Jalapa, Quiche, Solola, Zacapa; Honduras – Atlantida, Copan, El Paraiso, Francisco Morazan, Intibuca; Nicaragua – Granada, Madriz, Matagalpa; *Northern South America:* Venezuela – Amazonas.

Naturalized: PACIFIC – *North-Central Pacific*: United States – Hawaii; *South-Central Pacific*: French Polynesia; Pitcairn.

Cultivated: NORTHERN AMERICA – *Northern Mexico*: Mexico – Nuevo Leon; *Southern Mexico*: Mexico – Guerrero, Hidalgo, Jalisco, Mexico, Michoacan, Veracruz; SOUTHERN AMERICA – *Central America*: Belize; Costa Rica – Cartago, San Jose; El Salvador – San Salvador; Honduras – Olancho, Nicaragua – Chontales, Jinotega; Panama – Chiriqui, Panama; *Northern South America*: Venezuela; widely cultivated in Tropics and Subtropics.

Origin: Central America.

Field Infestation:

McBride and Tanada 1949:

Hawaii, U.S.A.

In 1946, *B. cucurbitae* (listed as *Dacus cucurbitae*) was reared from *P. americana* by O.C. McBride: 5 *B. cucurbitae* adults emerged from 19 fruits that had ripened on the tree. The authors listed *P. americana* as a rarely injured plant.

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Persea americana* fruits, originating in Hawaii, at airports in Hawaii (Honolulu-5; Kailua-Kona-3) on eight occasions between 1989 and 2004. Average recovery was 4.5 live larvae (range: 2 – 7).

USDA 1948a:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from avocado (*P. americana*) which originated in Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1945 and 30 June 1946 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

Lab Infestation:

Iwaizumi et al. 1994:

Intact, mature *P. americana* fruits were exposed to 10 gravid female *B. cucurbitae* for 24 hours in a screen-net cage. An average (over three replications) of 0.3 ± 0.5 adults was recovered. Avocado fruits punctured several times with insect pins were similarly exposed to 10 gravid females, with an average recovery of 2.0 ± 1.6 adult flies.

Listing Only: Botha et al. 2004 (listed as a secondary host); CABI 2016; California Department of Food and Agriculture 2001; Cantrell et al. 1999; Chawla 1966 (listed as *Dacus cucurbitae*); Dhillon et al. 2005a; EcoPort 2008; Government of Western Australia Department of Agriculture and Food 2015; +Hawaii Department of Agriculture 2009 (listed as avocado); Holbrook 1967 (listed as “rarely infested”); Hollingsworth et al. 1996; Kapoor 1970 (listed as *Dacus cucurbitae*); +Margosian et al. 2009 (listed as avocado); Nafus 1997 (infests *P. americana* in the Mariana Islands); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); Plantwise Knowledge Bank 2015; Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); White and Elson-Harris 1992.

Synonyms: *Laurus persea* L., *Persea americana* var. *floccose* (Moz) Scora, nom. inval., *Persea americana* var. *nubigena* (L. O. Williams) L. E. Kopp, *Persea americana* var. *steyermarkii* (C. K. Allen) Scora, nom. inval., *Persea americana* var. *tolimanensis* (Zentmyer and Schieber) Scora, nom. inval., *Persea americana* var. *zentmyer* Scora, nom. inval., *Persea floccose* Mez, *Persea gigantea* L. O. Williams, *Persea nubigena* L. O. Williams, *Persea persea* (L.) Cockerell, *Persea steyermarkii* C. K. Allen, *Persea tolimanensis* Zentmyer and Schieber, nom. inval., *Persea zentmyeri* Schieber and B. Bergh, nom. inval.

Persea americana var. *floccose* (Moz) Scora, nom. inval., see *Persea americana* Mill.

Persea americana var. *nubigena* (L. O. Williams) L. E. Kopp, see *Persea americana* Mill.

Persea americana var. *steyermarkii* (C. K. Allen) Scora, nom. inval., see *Persea americana* Mill.

Persea americana var. *tolimanensis* (Zentmyer and Schieber) Scora, nom. inval., see *Persea americana* Mill.

Persea americana var. *zentmyeri* Scora, nom. inval., see *Persea americana* Mill.

Persea floccose Mez, see *Persea americana* Mill.

Persea gigantea L. O. Williams, see *Persea americana* Mill.

Persea nubigena L. O. Williams, see *Persea americana* Mill.

Persea persea (L.) Cockerell, see *Persea americana* Mill.

Persea sp.

Family: Lauraceae

Grin Nomen Number: 312431

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Persea* sp. fruit(s), originating in Hawaii, at an airport in Hawaii (Honolulu) on one occasion in 2005. Recovery was nine live larvae.

Persea steyermarkii C. K. Allen, see *Persea americana* Mill.

Persea tolimanensis Zentmyer and Schieber, nom. inval., see *Persea americana* Mill.

Persea zentmyeri Schieber and B. Bergh, nom. inval., see *Persea americana* Mill.

Persica vulgaris Mill., see *Prunus persica* (L.) Batsch var. *persica*

Phaseolaceae Mart., see *Fabaceae* Lindl., nom. cons.

Phaseolus angustifolius Roxb., nom. nud., see *Phaseolus* spp.

Phaseolus aureus Roxb., see *Vigna radiata* (L.) R. Wilczek var. *radiata*

Phaseolus falcatus Benth. ex Hemsl., see *Phaseolus lunatus* L.

Phaseolus hastatus Freytag and Debouck, nom. inval., see *Phaseolus* spp.

Phaseolus inamoenus L., see *Phaseolus lunatus* L.

Phaseolus limensis Macfad., see *Phaseolus lunatus* L.

Phaseolus lunatus L.

Family: Fabaceae

Grin Nomen Number: 27591

Common Names: aoi-mame (Japanese Rōmaji), butter bean (English), chaedu (transcribed Korean), fagiolo di Lima (Italian), fava-Belém (Portuguese-Brazil), feijão-de-Lima (Portuguese), frijol de luna (Spanish), haba lima (Spanish), haricot de Lima (French), haricot du Cap (French), judía de Lima (Spanish), Lima bean (English), Limabohne (German), limaböna (Swedish), main dou (transcribed Chinese), Mondbohne (German), pallar (Spanish), pois du Cap (French), Sieva bean (English), sugar bean (English).

Native: NORTHERN AMERICA – *Northern Mexico*: Mexico – Baja Sur, Sinaloa, Tamaulipas; *Southern Mexico*: Mexico – Campeche, Chiapas, Guerrero, Jalisco, Mexico, Michoacan, Morelos, Nayarit, Oaxaca, Tabasco, Veracruz, Yucatan; SOUTHERN AMERICA – *Central America*: Belize – Cayo, Corozal, Stann Creek, Toledo; Costa Rica – Guanacaste, Heredia; El Salvador – Ahuachapan, La Libertad, San Miguel, San Salvador, San Vicente, Sonsonate; Guatemala – Alta Verapaz, Chimaltenango, Chiquimula, El Progreso, Escuintla, Guatemala, Izabal, Jalapa, Peten, Quezaltenango, Retalhuleu, Sacatepequez, San Marcos, Santa Rosa, Solola, Suchitepequez, Zacapa; Honduras – Atlantida, Colon, Comayagua, Cortes, El Paraiso, Francisco Morazan; Nicaragua – Chinandega, Esteli, Granada, Jinotega, Managua, Zelaya; Panama – Chiriqui, Herrera, Panama; *Northern South America*: Venezuela; *Brazil*: Brazil – Para; *Western South America*: Bolivia – Cochabamba; Colombia – Magdalena; Ecuador – Azuay, Loja; Peru – Cuzco [Quillabamba]; *Southern South America*: Argentina – Chaco, Salta; Paraguay.

Naturalized: Widely naturalized.

Cultivated: Widely cultivated.

Field Infestation:

McBride and Tanada 1949:

Waialae, Honolulu, Hawaii, U.S.A.

Twelve (12) *P. lunatus* pods (listed as *P. limensis* Macf.) were collected in 1946 by Y. Tanada from Waialae, Honolulu. Fifty *B. cucurbitae* adults (listed as *Dacus cucurbitae*) were recovered. The authors listed *P. lunatus* as occasionally injured.

Interception Data:

USDA 1948b:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from lima bean (listed as *Phaseolus lunatus macrocarpus*) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1946 and 30 June 1947 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

Listing Only: California Department of Food and Agriculture 2001; Cantrell et al. 1999; Chawla 1966 (listed as *Dacus cucurbitae*; listed as *Phaseolus limensis* Macf.); Dhillon et al. 2005a (listed as both *Phaseolus limensis* and as lime bean); Holbrook 1967 (listed both as *Phaseolus limensis* and as *P. lunatus*; listed as “occasionally infested”); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Phaseolus limensis*); +Margosian et al. 2009 (listed as lima beans); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as *Phaseolus limensis*); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *Phaseolus lunatus macrocarpus*); Syed 1971 (listed as *Dacus cucurbitae*; listed as *Phaseolus limensis*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host); White and Elson-Harris 1992 (authors state “requires confirmation”).

Synonyms: *Phaseolus falcatus* Benth. ex Hemsl., *Phaseolus inamoenus* L., *Phaseolus limensis* Macfad., *Phaseolus lunatus* var. *lunatus*, *Phaseolus lunatus* L. var. *macrocarpus* (Moench) Benth., *Phaseolus lunatus* var. *silvester* Baudet, *Phaseolus macrocarpus* Moench, *Phaseolus tunkinensis* Lour., *Phaseolus viridis* Piper

Phaseolus lunatus var. *lunatus*, see *Phaseolus lunatus* L.

Phaseolus lunatus L. var. *macrocarpus* (Moench) Benth., see *Phaseolus lunatus* L.

Phaseolus lunatus var. *silvester* Baudet, see *Phaseolus lunatus* L.

Phaseolus macrocarpus Moench, see *Phaseolus lunatus* L.

Phaseolus mungo L., see *Vigna mungo* (L.) Hepper var. *mungo*

Phaseolus nanus L., see *Phaseolus vulgaris* L.

Phaseolus pulchellus Piper, see *Vigna* spp.

Phaseolus radiatus L., see *Vigna radiata* (L.) R. Wilczek var. *radiata*

Phaseolus rioverdensis Freytag and Debouck, nom. inval., see *Phaseolus* spp.

Phaseolus scaberulus Miq., see *Vigna* spp.

Phaseolus sp.

Family: Fabaceae

Grin Nomen Number: 300451

Interception Data:

USDA 1939a:

Bactrocera cucurbitae was recovered from string bean (*Phaseolus* sp.) which originated from a port in Hawaii and was intercepted at a port in California (2 interceptions in stores) between 1 July 1936 and 30 June 1937 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1942:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from string beans (*Phaseolus* sp.) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in non-entry/quarters) between 1 July 1940 and 30 June 1941 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1943:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from string bean (*Phaseolus* sp.) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in non-entry) between 1 July 1941 and 30 June 1942 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1945:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from string bean (*Phaseolus* sp.) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1943 and 30 June 1944 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1946:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from string bean (*Phaseolus* sp.) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1944 and 30 June 1945 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1948a:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from string bean (*Phaseolus* sp.) which originated in Hawaii and was intercepted at a port in California (2 interceptions in non-entry hosts) between 1 July 1945 and 30 June 1946 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1948b:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from string bean (*Phaseolus* sp.) which originated from a port in Hawaii and was intercepted at a port in California (4 interceptions in non-entry hosts) between 1 July 1946 and 30 June 1947 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

Lab Infestation:

Chawla 1966:

In captivity, female *B. cucurbitae* adults (listed as *Dacus cucurbitae*) laid eggs on cut fruits of *Phaseolus* sp. The eggs hatched and the development of the larvae proceeded normally through adult emergence.

Phaseolus spp.

Family: Fabaceae

Grin Nomen Number: 300451

Interception Data:

USDA 1926:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from string bean (*Phaseolus* spp.) which originated from a port in Hawaii and was intercepted at a port in California (five interceptions) between 1 January 1924 and 31 December 1925 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1929:

Bactrocera cucurbitae was recovered from string beans (*Phaseolus* spp.) which originated from a port in Hawaii and was intercepted at a port in California (3 interceptions in stores) between 1 January 1928 and 31 December 1928 (number of individuals recovered and life stages not reported). Host was recorded by state inspector of California. Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

Listing Only: +Australian Quarantine Service, Commonwealth Department of Primary Industry 1987 (listed as *Dacus cucurbitae*; listed as beans); +Christenson and Foote 1960 (listed as *Dacus cucurbitae*; listed as beans); EcoPort 2008; +Hawaii Department of Agriculture 2009 (listed as bean); +Hollingsworth et al. 1996 (listed as beans); +Lall 1975 (listed as *Dacus cucurbitae*; listed as beans); +Mau et al. 2007 (listed as beans); Nafus 1997 (*B. cucurbitae* infests *Phaseolus* sp. in the Mariana Islands); +Queensland Government 2015 (listed as bean); +Tsatsia and Hollingsworth 1997 (listed as beans); USDA 1986 (listed as *Dacus cucurbitae*); +USDA-ARS 1959 (listed as beans; listed as a preferred host).

Synonyms: *Phaseolus angustifolius* Roxb., nom. nud., *Phaseolus hastatus* Freytag and Debouck, nom. inval., *Phaseolus rioverdensis* Freytag and Debouck, nom. inval.

Phaseolus tunkinensis Lour., see *Phaseolus lunatus* L.

Phaseolus unguiculata (L.) Piper, see *Vigna unguiculata* (L.) Walp. subsp. *unguiculata* Unguiculata Group

Phaseolus viridis Piper, see *Phaseolus lunatus* L.

Phaseolus viridissimus Ten. ex Miq., nom. inval., see *Vigna mungo* (L.) Hepper var. *mungo*

Phaseolus vulgaris L.

Family: Fabaceae

Grin Nomen Number: 27632

Common Names: bean (English), böna (Swedish), cai dou (transcribed Chinese), deonggulgangnamkong (transcribed Korean), fragiolo (Italian), gangnamkong (transcribed Korean), ingen-mame (Japanese Rōmaji), juldangkong (transcribed Korean).

Native: NORTHERN AMERICA – *Northern Mexico*: Mexico – Durango, Sinaloa, Tamaulipas; *Southern Mexico*: Mexico – Chiapas, Guanajuato, Guerrero, Jalisco, Mexico, Michoacan, Morelos, Nayarit, Oaxaca, Puebla, Queretaro, Veracruz; SOUTHERN AMERICA – *Central America*: Costa Rica – Alajuela, San Jose; El Salvador – Ahuachapan; Guatemala – Chimaltenango, Chiquimula, Guatemala, Jalapa, Sacatepequez, Santa Rosa, Solola; Honduras – Francisco Morazan; Nicaragua – Esteli, Jinotega; *Northern South America*: Venezuela – Merida, Portuguesa, Tachira, Trujillo; *Western South America*: Bolivia – Chuquisaca, Cochabamba, Tarija; Colombia – Boyaca, Cundinamarca, Norte de Santander; Ecuador – Azuay, Chimborazo, Loja; Peru – Apurimac, Cajamarca, Cuzco, Piura; *Southern South America*: Argentina – Catamarca, Jujuy, Salta, Santiago del Estero, Tucuman.

Naturalized: Naturalized worldwide.

Uncertain: SOUTHERN AMERICA – *Northern South America*: Venezuela – Lara.

Cultivated: Cultivated worldwide.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 16 samples of *P. vulgaris*. Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

+*Back and Pemberton 1917:*

Hawaii, U.S.A.

Phaseolus vulgaris (listed as string beans) was listed as a preferred host of *B. cucurbitae*, but it was noted that “only seldom are any of the varieties affected except the more fleshy, long-podded Chinese variety,” which may be heavily attacked if grown near other favored host fruits. It was noted that as many as 36 well-grown melon fly larvae have been recovered in a single pod. An illustration of melon fly larvae in a green bean pod was provided.

+*Back and Pemberton 1918:*

Hawaii, U.S.A.

Phaseolus vulgaris (listed as string beans) was listed as a preferred host of *B. cucurbitae*, but it was noted that “only seldom are any of the varieties affected except the more fleshy, long-podded Chinese variety,” which may be heavily attacked if grown near other favored host fruits. It was noted that as many as 36 well-grown melon fly larvae have been recovered in a single pod. An illustration of melon fly larvae in a green bean pod was provided.

+*Froggatt 1909:*

Island of Oahu, Hawaii, U.S.A.

In the vegetable gardens on the slopes of Mount Tantillus, on the Island of Oahu, Hawaii, the author found fruit fly maggots in many ripening *P. vulgaris* beans (listed as string beans; the maggots were not specifically identified as *B. cucurbitae*, but the article focused on *B. cucurbitae* and *B. dorsalis* was not yet present in Hawaii; it was also not explicitly stated that adult fruit flies were recovered). No infestation rate data were given.

+*Holdaway 1940:*

Koko Head, Island of Oahu, Hawaii, U.S.A.

On 1, 3 and 5 July 1938, three varieties (‘Kentucky Wonder,’ ‘Lualualei,’ and ‘McCaslan’) of *P. vulgaris* pods (listed as bush, garden, pole or string beans) were picked from two 30-meter-long rows (for each variety) and the number of pods were counted that showed signs of oviposition by *B. cucurbitae* (listed as *Dacus cucurbitae* Coq.). Overall percentage of pods having oviposition damage was 1.1% (out of 1,950 pods [14.5 kg]), 8.6% (out of 5,765 pods [43.3 kg]), and 5.9% (out of 1,590 pods [12.0 kg]) for the three varieties, respectively. The author also reported that a grower found beans of the variety ‘Tendergreen’ to be more heavily attacked by *B. cucurbitae* than the three varieties listed above, but no data were provided for this variety.

Nohara and Ichinohe 1980:

Japan

During 1972 to 1976, collections of 17,934 *P. vulgaris* pods (114 kg) (varieties ‘Kentucky wonder’ and ‘Ohrasaya-shakugosun’) were made on farms on Okinawa Island, Miyako Island, and Ishigaki Island. No *B. cucurbitae* eggs or larvae (listed as *Dacus cucurbitae*) were recovered. During December 1977 to April 1978, in a follow-up survey of these farms, 17 *P. vulgaris* pods (of the two varieties listed above + ‘Shin-edogawa’) were found to be infested by *B. cucurbitae* out of 150,873 pods (1,063 kg) collected (0.0113%). Two (2) of the 17 infested *P. vulgaris* pods were from a lot of 118,271 pods (860 kg) of standard grade pods harvested for interprefectural shipment, while the remaining 15 pods were from 24,704 pods left over residue (144 kg). There was no infestation in the remaining 7,898 pods (58.5 kg) held for within prefecture consumption. In an associated experiment, when 200:1,000 male:gravid female *B. cucurbitae* flies were released inside a screen-enclosed field of stringbeans, 0.93% of the pods were infested. When 5, 10, 100, and 1,000 male/gravid female pairs were released inside screened enclosures, 3.6, 2.7, 9.7, and 39.5% of stringbean pods were infested. The authors concluded

that stringbean pods grown under normal field conditions can be infested by *B. cucurbitae* if the *B. cucurbitae* population is high and other more susceptible hosts are not present. Otherwise, infestation of stringbean pods will be “seldom and incidental.”

+Severin et al. 1914:

Hawaii, U.S.A.

Twelve (12) infested, green-podded *Phaseolus vulgaris* beans (listed as string beans) were collected from the field and held in the laboratory. One hundred sixty-five (165) *B. cucurbitae* adults (listed as *Dacus cucurbitae*) were recovered for an average of 13.75 flies per pod (range: 4–26).

+Swezey et al. 1906:

Hawaii, U.S.A.

At a meeting of the Hawaiian Entomological Society in Honolulu, Hawaii, Mr. Swezey exhibited specimens of *B. cucurbitae* (listed as *Dacus cucurbitae*) that he had recovered from *P. vulgaris* (listed as string beans).

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Phaseolus vulgaris* fruits, originating in Hawaii, at an airport in Hawaii (Honolulu) on three occasions from 1993 to 2009. Average recovery was 8.7 live larvae (range: 5–12).

Takeishi 1992:

Thailand

One *B. cucurbitae*-infested (listed as *Dacus cucurbitae*) *P. vulgaris* pod was collected from an airline passenger at Narita Airport, Japan, who had arrived on a flight originating in Thailand. At the time of confiscation, the larvae-infested pod was held in an individual container with sand at 20–28°C until adult emergence. Infestation rate data were not given.

USDA 1943:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from kidney bean (*P. vulgaris* L.) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1941 and 30 June 1942 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1950:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from string bean (*P. vulgaris* variety) which originated from a port in Hawaii and was intercepted at a port in California (5 interceptions in non-entry hosts) between 1 July 1947 and 30 June 1948 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1951:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*?) was recovered from string bean (*P. vulgaris* variety) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1948 and 30 June 1949 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1953:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from string bean (*Phaseolus vulgaris* variety) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in consumption host) between 1 July 1951 and 30 June 1952 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1955:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from string bean (*P. vulgaris* variety) which originated in Hawaii and was intercepted at a port in Hawaii (3 interceptions in consumption hosts) between 1 July 1952 and 30 June 1953 (number of individuals recovered and life

stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1959:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from string bean (*P. vulgaris* variety) which originated in Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1957 and 30 June 1958 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

Lab Infestation:

Chawla 1966:

In captivity, female *B. cucurbitae* adults (listed as *Dacus cucurbitae*) laid eggs on cut fruits of French beans (*P. vulgaris*). The eggs hatched and the development of the larvae proceeded normally through adult emergence.

Listing Only: +Back and Pemberton 1914 (listed as string beans); Botha et al. 2004 (listed as a secondary host); CABI 2016 (listed as a secondary host); Cantrell et al. 1999; De Meyer et al. 2014; Dhillon et al. 2005a; Hardy and Adachi 1956 (listed as *Dacus cucurbitae*); +Heppner 1989 (listed as *Dacus cucurbitae*; listed as string bean); Holbrook 1967 (listed as “occasionally infested”); Holdaway and Look 1942 (listed as *Dacus cucurbitae*; listed as beans); Hollingsworth et al. 1996; Hollingsworth and Allwood 2000; Kandybina 1987 (listed as *Dacus cucurbitae*); Kapoor 1970 (listed as *Dacus cucurbitae*); +Margosian et al. 2009 (listed as garden beans); +Mau et al. 2007 (listed as green beans); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as occasionally injured); +Messing et al. 1995 (listed as green beans); +NAPPO, PAS 2015 (listed as string bean); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); +Nishida 1953 (listed as *Dacus cucurbitae*; listed as beans); +Nishida and Bess 1957 (listed as *Dacus cucurbitae*; listed as beans); Oakley 1950 (listed as *Dacus cucurbitae*); +Okinawa Prefectural Fruit Fly Eradication Project 1987 (listed as *Dacus cucurbitae*; listed as string bean); Pacific Fruit Fly Web 2002; Phillips 1946; Plantwise Knowledge Bank 2015; +Rajamannar 1962 (listed as *Dacus cucurbitae*; listed as string bean); +Ramadan and Messing 2003 (listed as string beans); Singh et al. 2004; Syed 1971 (listed as *Dacus cucurbitae*); +Van Dine 1906 (listed as *Dacus cucurbitae*; listed as pods of string beans); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host); Walker 2005; +Weems 1964 (listed as *Dacus cucurbitae*; listed as string bean; listed as a preferred host); +Weems 1967 (listed as *Dacus cucurbitae*; listed as string bean; listed as a preferred host); +Weems et al. 2001 (listed as string bean; listed as a preferred host); White and Elson-Harris 1992.

Synonyms: *Phaseolus nanus* L., *Phaseolus vulgaris* var. *mexicanus* Freytag, nom. inval.

Phaseolus vulgaris var. *mexicanus* Freytag, nom. inval., see *Phaseolus vulgaris* L.

Phoenix dactylifera L.

Family: Arecaceae

Grin Nomen Number: 28046

Common Names: dadenpalm (Swedish), date (English), date palm (English), Dattelpalme (German), dattier (French), nakhl (Arabic), palmera datilera (Spanish), palmier dattier (French), tamareira (Portuguese).

Cultivated: Only cultivated.

Origin: ASIA-TEMPERATE – *Arabian Peninsula*: Oman.

Listing Only: +Agrawal and Mathur 1991 (listed as *Dacus cucurbitae*; listed as date); +Batra 1953 (listed as *Dacus cucurbitae*; listed as date palm); California Department of Food and Agriculture 2001; Cantrell et al. 1999; Chawla 1966 (listed as *Dacus cucurbitae*); Dhillon et al. 2005a; +Gopalan et al. 1977 (listed as *Dacus cucurbitae*; listed as date palm); Holbrook 1967 (listed as a “non-host or host of undetermined status”); Kapoor 1970 (listed as *Dacus cucurbitae*); +Kapoor 1989 (listed as *Dacus cucurbitae*; listed as date); Kapoor 1991 (listed as *Dacus cucurbitae*); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*); +Lall 1964 (listed as *Dacus cucurbitae*; listed as date and datepalm); +Lall 1975 (listed as *Dacus cucurbitae*; listed as date palm); +Margosian et al. 2009 (listed as date palm); McBride and Tanada 1949 (listed as *Dacus cucurbitae*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*);

Oakley 1950 (listed as *Dacus cucurbitae*); Singh et al. 2004; Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); White and Elson-Harris 1992 (authors state “requires confirmation”).

Phoenix spp.

Family: Arecaceae

Grin Nomen Number: 312436

Interception Data:

PestID 2016:

Morocco

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Phoenix* sp. fruit(s), originating in Morocco, at an airport in New York (JFK) on one occasion in 1998. Recovery was three live pupae.

Nigeria

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Phoenix* sp. fruit(s), originating in Nigeria, at an airport in Georgia (Atlanta) on one occasion in 2005. Recovery was one live larva.

Physalis aequata J. Jacq. ex Nees, see *Physalis philadelphica* Lam.

Physalis ixocarpa auct., see *Physalis philadelphica* Lam.

Physalis philadelphica Lam.

Family: Solanaceae

Grin Nomen Number: 102411

Common Names: alkékenge du Mexique (French), coqueret (French), husk-tomato (English), large-flowered tomatillo (English), mexikanische Blasenkirsche (German), miltomate (Spanish), tomate (Spanish), tomate de cáscara (Spanish), tomate fraise (French), tomate verde (Spanish), tomatillo (Spanish), tomatillo (Swedish), tomatillo ground-cherry (English).

Native: NORTHERN AMERICA – Mexico; SOUTHERN AMERICA – *Central America*: El Salvador, Guatemala.

Naturalized: Widely naturalized.

Cultivated: Widely cultivated.

Field Infestation:

Liquido et al. 1994:

Hawaii Island, Hawaii, U.S.A.

From July 1990 to October 1992, 56 ripe “on shrub” or ground *P. philadelphica* fruits (0.89 kg) (listed as *Physalis ixocarpa* Brot.) were collected (through collections made once or twice a month) from several sites on Hawaii Island, Hawaii. Fruits were weighed, counted, split into groups of 5 or 10 and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* larvae and pupae were recovered from infested *P. philadelphica* fruits with an overall infestation rate of 0.68 larvae and pupae per fruit (42.70 larvae and pupae/kg fruit).

Synonyms: *Physalis aequata* J. Jacq. ex Nees, *Physalis ixocarpa* auct.

Phytolacca javanica Osbeck, see *Terminalia catappa* L.

Pisosperma Sond., see *Kedrostis* Medik.

Pisum sativum L.

Family: Fabaceae

Grin Nomen Number: 300472

Common Names: ärt (Swedish), pea (English), pisello (Italian), wan dou (transcribed Chinese), wandu (transcribed Korean).

Native: AFRICA – Northern Africa: Algeria, Egypt, Libya, Morocco, Tunisia; *Northeast Tropical Africa*: Ethiopia; ASIA-TEMPERATE – Western Asia: Cyprus, Iran, Iraq, Israel, Lebanon, Syria, Turkey; *Caucasus*: Armenia, Azerbaijan, Georgia, Russian Federation – Ciscaucasia; EUROPE – *East Europe*: Moldova, Ukraine, Krym; *Southeastern Europe*: Albania, Bulgaria, Former Yugoslavia, Greece, Crete, Italy, Sardinia, Sicily, Romania; *Southwestern Europe*: France, Corsica, Portugal, Spain.

Cultivated: Cultivated worldwide.

Lab Infestation:

Chawla 1966:

In captivity, female *B. cucurbitae* adults (listed as *Dacus cucurbitae*) laid eggs on cut fruits of sweet pea (*P. sativum*). The eggs hatched and the development of the larvae proceeded normally through adult emergence.

Synonyms: *Pisum sativum* L. subsp. *tibeticum* ined.

Pisum sativum L. subsp. *tibeticum* ined., see *Pisum sativum* L.

Podophyllum sp.

Family: Berberidaceae

Grin Nomen Number: 454415

Interception Data:

Defra 2008:

India

Bactrocera cucurbitae was recovered in North West United Kingdom from six boxes of *Podophyllum* sp. originating in India. No infestation rate data were given.

Poinsettia heterophylla (L.) Klotzsch and Garcke, see *Euphorbia heterophylla* L.

Posadaea sphaerocarpa Cogn. see *Melothria sphaerocarpa* (Cogn.), H. Schaef. and S.S. Renner

Potentilla ×ananassa (Duchesne ex Rozier) Mabb., see *Fragaria ×ananassa* Duchesne ex Rozier

Pouteria campechiana (Kunth) Baehni

Family: Sapotaceae

Grin Nomen Number: 102607

Common Names: canistel (English), canistelsapote (Swedish), eggfruit-tree (English), yellow sapote (English).

Native: NORTHERN AMERICA – Mexico; SOUTHERN AMERICA – *Central America*: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama.

Interception Data:

PestID 2016:

Nigeria

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Pouteria campechiana* fruit(s), originating in Nigeria, at an airport in Illinois (Chicago) on one occasion in 2008. Recovery was five live larvae.

Synonym: *Lucuma campechiana* Kunth, *Lucuma nervosa* A. DC., *Lucuma rivicoa* C. F. Gaertn. var. *angustifolia* Miq., *Lucuma salicifolia* Kunth, *Richardella nervosa* (A DC.) Pierre, *Richardella salicifolia* (Kunth) Pierre

Pouteria mammosa auct., see *Pouteria sapota* (Jacq.) H.E. Moore and Stearn

Pouteria mammosa Cronquist, see *Manilkara zapota* (L.) P. Royen

Pouteria sapota (Jacq.) H.E. Moore and Stearn

Family: Sapotaceae

Grin Nomen Number: 1303

Common Names: große Sapote (German), mamey (Spanish), mamey colorado (Spanish), mameysapote (Swedish), mamee sapote (English), marmalade-plum (English), marmalade-tree (English), sapote (Spanish), zapote (Spanish), zapote mamey (Spanish).

Native: NORTHERN AMERICA – Mexico; SOUTHERN AMERICA – *Central America*: Belize, El Salvador – San Vicente; Guatemala, Honduras, Nicaragua.

Cultivated: Widely cultivated in tropics.

Interception Data:

PestID 2016:

Mali

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Pouteria sapota* fruit(s), originating in Mali, at an airport in Texas (Houston) on one occasion in 2014. Recovery was 31 live larvae.

Nigeria

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Pouteria sapota* fruits, originating in Nigeria, at airports in Texas (Houston-4) and New York (JFK-1) on five occasions from 1999 to 2014. Recovery averaged 4.4 live larvae (range: 1–11).

Synonym: *Achras lucuma* Blanco, *Achras mammosa* auct., *Calocarpum mammosum* auct., *Calocarpum sapota* (Jacq.) Merr., *Lucuma mammosa* auct., *Pouteria mammosa* auct., *Sideroxylon sapota* Jacq.

Pouteria sp.

Family: Sapotaceae

Grin Nomen Number: 312443

Interception Data:

PestID 2016:

Nigeria

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Pouteria* sp. fruits, originating in Nigeria, at airports in Georgia (Atlanta–2); Illinois (Chicago–1); and Texas (Houston–3) on six occasions from 2003–2012. Average recovery was 6.2 live larvae (range: 1–20).

Synonyms: *Lucuma* spp.

Praecitrullus fistulosus (Stocks) Pangalo, see *Benincasa fistulosa* (Stocks) H. Schaeff. and S. S. Renner

Prunus armeniaca L.

Family: Rosaceae

Grin Nomen Number: 29841

Common Names: abricó (Portuguese-Brazil), abricotier (French), Abrikos (Russian), albaricoque (Spanish), apricot (English), aprikos (Swedish), Aprikose (German), Aprikosenbaum (German), damasco (Portuguese), damasco (Spanish), damasqueiro (Portuguese), damasquino (Spanish), Marille (German), Siberian apricot (English), xing (transcribed Chinese).

Native: ASIA-TEMPERATE – *Middle Asia*: Kyrgyzstan; *China*: China; *Eastern Asia*: Japan, Korea.

Naturalized: ASIA-TEMPERATE – *Eastern Asia*: Japan.

Cultivated: Widely cultivated.

Lab Infestation:

Iwaizumi et al. 1994:

Intact, mature *P. armeniaca* fruits were exposed to 10 gravid female *B. cucurbitae* for 24 hours in a screen-net cage. An average (over three replications) of 314.7±128.2 adults was recovered. Fruits punctured several times with insect pins were similarly exposed to 10 gravid females, with an average recovery of 308.0±37.2 adult flies.

Listing Only: Holbrook 1967; Kandybina 1987 (listed as *Dacus cucurbitae*); +Margosian et al. 2009 (listed as apricots); Oakley 1950 (listed as *Dacus cucurbitae*); Phillips 1946; USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); White and Elson-Harris 1992 (authors state “requires confirmation”).

Prunus domestica L. var. *juliana* Poir., see *Prunus domestica* L. subsp. *domestica*

Prunus hyrcanica hort., see *Prunus* spp.

Prunus mume Siebold and Zucc.

Family: Rosaceae

Grin Nomen Number: 30048

Common Names: abricotier du Japon (French), abricotier japonais (French), damasqueiro-da-China (Portuguese), Japanese apricot (English), japanische Aprikose (German), japonsk aprikos (Swedish), maesilnamu (transcribed Korean), mei (transcribed Chinese), mume (Japanese Rōmaji), ume (Japanese Rōmaji).

Native: ASIA-TEMPERATE – *China:* China – Sichuan, Yunnan; *Eastern Asia:* Taiwan; ASIA-TROPICAL – *Indo-China:* Laos, Vietnam.

Naturalized: ASIA-TEMPERATE – *Eastern Asia:* Japan.

Cultivated: ASIA-TEMPERATE – *China:* China; *Eastern Asia:* Japan, Korea; ASIA-TROPICAL – *Indo-China:* Laos, Thailand, Vietnam.

Lab Infestation:

Iwaizumi et al. 1994:

Intact, mature *P. mume* fruits were exposed to 10 gravid female *B. cucurbitae* for 24 hours in a screen-net cage. An average (over three replications) of 12.3±10.3 adults was recovered. Fruits punctured several times with insect pins were similarly exposed to 10 gravid females, with an average recovery of 14.3±13.4 adult flies.

Synonyms: *Armeniaca mume* Siebold, *Prunus mume* Siebold and Zucc. var. *tonsa* Rehder

Prunus mume Siebold and Zucc. var. *tonsa* Rehder, see *Prunus mume* Siebold and Zucc.

Prunus persica (L.) Batsch

Family: Rosaceae

Grin Nomen Number: 30065

Common Names: bogsunganamu (transcribed Korean), momo (Japanese Rōmaji), peach (English), persika (Swedish), pêssego (Portuguese-Brazil), tao (transcribed Chinese).

Cultivated: Only cultivated.

Origin: China.

Field Infestation:

+Back and Pemberton 1917:

Hawaii, U.S.A.

Prunus persica (listed as peach) was listed as “occasionally infested” by *B. cucurbitae*. The authors reported that they yielded a single fly from peaches in 1914. The authors, though, further noted that this is one of several fruits that has “never been known to serve regularly” as a melon fly host and that this record of infestation “must be considered as exceptional.”

+Back and Pemberton 1918:

Hawaii, U.S.A.

Prunus persica (listed as peach) was listed as “occasionally infested” by *B. cucurbitae*. The writers reported that that adult melon flies have been reared from peach, but that peach does not serve regularly as a host; that it is attacked by melon fly only in rare instances, and then only slightly.

Listing Only: +Agrawal and Mathur 1991 (listed as *Dacus cucurbitae*; listed as peach); +Back and Pemberton 1914 (listed as peach); +Batra 1953 (listed as *Dacus cucurbitae*; listed as peach); Botha et al. 2004 (listed as a secondary host); CABI 2016; California Department of Food and Agriculture 2001; Cantrell et al. 1999; Chawla 1966 (listed as *Dacus cucurbitae*); Dhillon et al. 2005a; +Gopalan et al. 1977 (listed as *Dacus cucurbitae*; listed as peach); Government of Western Australia Department of Agriculture and Food 2015; +Heppner 1989 (listed as *Dacus cucurbitae*; listed as peach); Holbrook 1967 (listed as “occasionally infested”); Hollingsworth et al. 1996; Kapoor 1970 (listed as *Dacus cucurbitae*); +Kapoor 1989 (listed as *Dacus cucurbitae*; listed as peach); Kapoor 1991 (listed as *Dacus cucurbitae*); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*); +Lall 1964 (listed as *Dacus cucurbitae*; listed

as peach); +Lall 1975 (listed as *Dacus cucurbitae*; listed as peach); +Margosian et al. 2009 (listed as peaches); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as rarely injured); +NAPPO, PAS 2015 (listed as peach); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); Phillips 1946; Plantwise Knowledge Bank 2015; +Rajamannar 1962 (listed as *Dacus cucurbitae*; listed as peach); +Ramadan and Messing 2003 (listed as peach); Singh et al. 2004; Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); +USDA-ARS 1959 (listed as peach); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host); Vargas et al. 2004; +Weems 1964 (listed as *Dacus cucurbitae*; listed as peach; listed as an occasional host); +Weems 1967 (listed as *Dacus cucurbitae*; listed as peach; listed as an occasional host); +Weems et al. 2001 (listed as peach; listed as an occasional host); White and Elson-Harris 1992.

Synonyms: *Amygdalus persica* L. var. *camelliiflora* (hort. ex L. H. Bailey) Ricker, *Amygdalus persica* L. var. *densa* (Makino) Ricker, *Prunus persica* (L.) Batsch var. *camelliiflora* hort. ex L. H. Bailey, *Prunus persica* (L.) Batsch var. *densa* Makino

Prunus persica (L.) Batsch var. *camelliiflora* hort. ex L. H. Bailey, see *Prunus persica* (L.) Batsch

Prunus persica (L.) Batsch var. *densa* Makino, see *Prunus persica* (L.) Batsch

Prunus persica (L.) Batsch var. *nectarina* (Aiton) Maxim., see *Prunus persica* (L.) Batsch var. *nucipersica* (Suckow) C. K. Schneid.

Prunus persica (L.) Batsch var. *nucipersica* (Suckow) C. K. Schneid.

Family: Rosaceae

Grin Nomen Number: 104721

Common Names: brugnion (French), nectarine (English), nektarin (Swedish), Nektarine (German), Nektarinenbaum (German).

Cultivated: Only cultivated.

Listing Only: +Margosian et al. 2009 (listed as peaches [occasionally nectarine]).

Synonyms: *Amygdalus persica* L. var. *nectarina* Aiton, *Amygdalus persica* L. var. *nucipersica* Suckow, *Prunus persica* (L.) Batsch var. *nectarina* (Aiton) Maxim.

Prunus persica (L.) Batsch var. *persica*

Family: Rosaceae

Grin Nomen Number: 317360

Common names: abridor (Spanish), brugnionier (French), duraznero (Spanish), durazno (Spanish), melocotonero (Spanish), momo (Japanese Rōmaji), peach (English), pêcher (French), pessegueiro (Portuguese), Pfirsich (German), Pfirsichbaum (German).

Origin: China.

Cultivated: Widely cultivated.

Listing only: Kandybina 1987 (listed as *Dacus cucurbitae*; listed as *Persica vulgaris* Mill.); USDA 1986 (listed as *Dacus cucurbitae*; listed that *Persica vulgaris* [synonym of *Prunus persica* var. *persica*] is the same species as *Prunus persica*).

Synonyms: *Amygdalus persica* L., *Persica vulgaris* Mill.

Prunus spp.

Family: Rosaceae

Grin Nomen Number: 300491

Lab Infestation:

Iwaizumi et al. 1994:

Intact, mature *Prunus* sp. fruits (cherries) were exposed to 10 gravid female *B. cucurbitae* for 24 hours in a screen-net cage. An average (over three replications) of 6.7±4.9 adults was recovered. Cherries punctured several times with insect pins were similarly exposed to 10 gravid females, with an average recovery of 5.0±2.4 adult flies.

Listing Only: Kandybina 1987 (listed as *Dacus cucurbitae*).

Synonyms: *Amygdalus nairica* Fed. and Takht., *Amygdalus pseudopersica* (Tamamsch.) Fed. and Takht., *Amygdalus* spp., *Prunus hyrcanica* hort., *Prunus syodoi* Nakai, *Prunus velutipes* Nakai

Prunus syodoi Nakai, see *Prunus* spp.

Prunus velutipes Nakai, see *Prunus* spp.

Psidium cattleianum Sabine

Family: Myrtaceae

Grin Nomen Number: 30200

Common Names: aarbei koejawel (Afrikaans), araçá-da-praia (Portuguese-Brazil), araçá-de-comer (Portuguese-Brazil), araçá-de-coroa (Portuguese-Brazil), araçá-do-campo (Portuguese-Brazil), araçá-do-mato (Portuguese-Brazil), cherry guava (English), smultrouguava (Swedish), strawberry guava (English).

Native: SOUTHERN AMERICA – *Brazil:* Brazil; *Southern South America:* Uruguay.

Naturalized: AFRICA – *Macaronesia:* Portugal – Azores; *Southern Africa:* South Africa; *Western Indian Ocean:* Mauritius, Réunion, Seychelles; AUSTRALASIA – *Australia:* Australia; *New Zealand:* New Zealand; NORTHERN AMERICA – United States; PACIFIC – *North-Central Pacific:* United States – Hawaii; *Northwestern Pacific:* Micronesia; *South-Central Pacific:* French Polynesia.

Cultivated: also cultivated.

Field Infestation:

Vargas et al. 1990:

Island of Kauai, Hawaii, U.S.A.

During March 1987 to February 1989, 16 (year one) and 13 (year two) samples of *Psidium cattleianum* fruits (listed as *P. cattleianum*) were collected in the Moloaa area on the Island of Kauai. Fruits were placed on metal trays in plastic holding boxes containing sand. Mature *B. cucurbitae* (listed as *Dacus cucurbitae*) larvae and pupae, recovered through weekly sifting of the sand, were held for adult emergence. Out of 5,984 fruits collected in year one, 7,314 tephritid fruit fly pupae were recovered, from which only *B. dorsalis* (listed as *Dacus dorsalis*) adults emerged (1,070). Out of 3,111 fruits collected in year two, 4,086 tephritid fruit fly pupae were recovered, from which 489 *B. dorsalis* and 5 *B. cucurbitae* adults emerged, for an infestation rate of 0.2 *B. cucurbitae* adults per kg fruit.

Listing Only: California Department of Food and Agriculture 2001 (listed as *Psidium cattleianum*); +Hawaii Department of Agriculture 2009 (listed as strawberry guava); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *P. cattleianum*); USDA 1986 (listed as *Dacus cucurbitae*; listed as *P. cattleianum* and that this is the same species as *Psidium littorale*); USDA-APHIS 2000 (listed as *Psidium cattleianum*); USDA-APHIS 2008 (listed as *Psidium cattleianum*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*; listed as *Psidium cattleianum*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Psidium cattleianum*; listed as a preferred host); Vargas et al. 2004 (listed as *P. cattleianum* Sabine).

Synonyms: *Psidium humile* Vell.

Psidium cattleianum Sabine var. *littorale* (Raddi) Fosberg

Family: Myrtaceae

Grin Nomen Number: 312940

Common Names: Chinese strawberry guava (English), strawberry guava (English), yellow Cattle guava (English), yellow strawberry guava (English), waiawi (Hawaiian).

Native: SOUTHERN AMERICA – *Brazil:* Brazil.

Naturalized: naturalized elsewhere.

Cultivated: also cultivated.

Listing Only: Holbrook 1967 (listed as *Psidium littorale*; listed as a “non-host or host of undetermined status”); White and Elson-Harris 1992 (listed as *Psidium littorale*; authors state “requires confirmation”).

Synonyms: *Psidium littorale* Raddi

Psidium cujavillus Burm. f., see *Psidium guajava* L.

Psidium guajava L.

Family: Myrtaceae

Grin Nomen Number: 30205

Common Names: amrood (India-Hindi), araçá-goiaba (Portuguese-Brazil), araçá guaçú (Portuguese-Brazil), banjirō (Japanese Rōmaji), common guava (English), goiaba (Portuguese), goiabeiro (Portuguese), goyavier (French), guaiaba (Portuguese-Brazil), guaiava (Portuguese-Brazil), guava (English), guava (Swedish), Guave (German), Guavenbaum (German), guayaba (Spanish), guayabo (Spanish), Guayave (German), koejawel (Afrikaans), lemon guava (English), yellow guava (English).

Native: NORTHERN AMERICA – Mexico; SOUTHERN AMERICA – *Caribbean*: Anguilla, Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, Grenada, Guadeloupe, Hispaniola, Jamaica, Martinique, Montserrat, Netherlands Antilles, Puerto Rico, St. Kitts and Nevis, St. Lucia, St. Vincent and Grenadines, Trinidad and Tobago; *Central America*: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama; *Northern South America*: French Guiana, Guyana, Suriname, Venezuela; *Brazil*: Brazil; *Western South America*: Bolivia, Colombia, Ecuador, Peru; *Southern South America*: Argentina, Paraguay.

Naturalized: Widely naturalized.

Cultivated: Widely cultivated.

Field Infestation:

Ali et al. 2014b:

Abugubeiha Province, South Kordofan State, Sudan

Psidium guajava fruits were collected during the 2005 through 2006 growing season in Abugubeiha Province, South Kordofan State, Sudan, and held for recovery of infesting tephritid fruit flies. Out of 5.0 kg of *P. guajava* fruits, 28 *B. cucurbitae* adults were recovered for an infestation rate of 5.6 *B. cucurbitae* per kg fruit. *Bactrocera dorsalis* (listed as *B. invadens*) and *Ceratitits cosyra* were also recovered.

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 3 samples of *P. guajava*. Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Clausen et al. 1965:

Sabah, Malaysia (referred to as North Borneo; place names listed are in present day Sabah, Malaysia)

From collections of *P. guajava* in May 1951 in Sabah, Malaysia (referred to as North Borneo), 180 puparia were recovered, a mix of two predominant species: *B. cucurbitae* (listed as *Dacus cucurbitae* Coq.) and *B. dorsalis* (listed as *Dacus dorsalis* Hendel) (*B. cucurbitae* was the dominant species).

Syed 1971:

Faisalabad and Gujranwala, Province of Punjab, Pakistan

In Faisalabad and Gujranwala (1962–1963), in the absence of regular hosts, *B. cucurbitae* (listed as *Dacus cucurbitae*) was reared from *Psidium guajava* in both March and April. Total number of fruits collected and infestation rate data were not given.

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Psidium guajava* fruits, originating in Hawaii, at airports in Hawaii on 10 occasions (Honolulu–6; Kahului–2; Hilo–2) from 2000 to 2005. Live larvae were found on six occasions, with an average of 4.7 per interception. Live adults were found on four occasions, with an average of 3.75 per interception.

Nigeria

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Psidium guajava* fruit(s), originating in Nigeria, at an airport in Michigan (Detroit) on one occasion in 2006. Recovery was one live larva.

Lab Infestation:

Rajamannar 1962:

Using *B. cucurbitae* (listed as *Dacus cucurbitae*) 1st instar larvae obtained from eggs oviposited on bottle gourd (*Lagenaria siceraria*; listed as *L. vulgaris*), 1 of 100 (1%) 1st instar larvae raised on *P. guajava* (listed as guava) pupated, with an average time to pupation of 11 days. In a separate test, 67 of 100 (67%) 1st instar larvae were found to feed on *P. guajava* fruits (an average of 13.4 out of 20 larvae, based on five replicated trials).

Listing Only: +Agrawal and Mathur 1991 (listed as *Dacus cucurbitae*; listed as guava); +Batra 1953 (listed as *Dacus cucurbitae*; listed as guava); CABI 2016 (listed as a secondary host); California Department of Food and Agriculture 2001; Chawla 1966 (listed as *Dacus cucurbitae*); De Meyer et al. 2014; Dhillon et al. 2005a; +Gopalan et al. 1977 (listed as *Dacus cucurbitae*; listed as guava); Holbrook 1967 (listed as “rarely infested”); Kandybina 1987 (listed as *Dacus cucurbitae*); Kapoor 1970 (listed as *Dacus cucurbitae*); Kapoor 1991 (listed as *Dacus cucurbitae*); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*); +Lall 1964 (listed as *Dacus cucurbitae*; listed as guava); +Lall 1975 (listed as *Dacus cucurbitae*; listed as guava); +Margosian et al. 2009 (listed as guava); McBride and Tanada 1949 (listed as *Dacus cucurbitae*); +NAPPO, PAS 2015 (listed as guava); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*; listed both as *Psidium guajava* and as *Psidium guajava* var. *pyriferum*); Orian and Moutia 1960 (listed as *Dacus cucurbitae*); Phillips 1946; Plantwise Knowledge Bank 2015; Ponce 1937 (listed as *Dacus cucurbitae*); +Queensland Government 2015 (listed as guava); +Ramadan and Messing 2003 (listed as guava); Rejesus et al. 1991 (listed as *Dacus cucurbitae*); Singh et al. 2004; USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*; listed as both *Psidium guajava* and *Psidium guajava* var. *pyriferum*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); Vargas et al. 2004; Vijaysegaran 1991 (listed as *Dacus cucurbitae*); White and Elson-Harris 1992 (authors state “requires confirmation”); +Yong 1992 (listed as *Dacus cucurbitae*; listed as guava); Yunus and Hua 1980 (listed as *Dacus cucurbitae*).

Synonyms: *Psidium cujavillus* Burm. f., *Psidium pomiferum* L., *Psidium pumilum* Vahl, *Psidium pyriferum* L.

Psidium guajava var. *pyriferum*, see *Psidium guajava* L.

Psidium humile Vell., see *Psidium cattleianum* Sabine

Psidium littorale Raddi, see *Psidium cattleianum* Sabine var. *littorale* (Raddi) Fosberg

Psidium pomiferum L., see *Psidium guajava* L.

Psidium pumilum Vahl, see *Psidium guajava* L.

Psidium pyriferum L. see *Psidium guajava* L.

Psidium spp.

Family: Myrtaceae

Grin Nomen Number: 312444

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Psidium* sp. fruit(s), originating in Hawaii, at an airport in Hawaii (Honolulu) on one occasion in 2003. Recovery was nine live larvae.

Listing Only: Cantrell et al. 1999.

Pyrus amygdaliformis Vill. var. *persica* Bornm., see *Pyrus* spp.

Pyrus asiae-mediae (Popov) Maleev, see *Pyrus communis* L.

Pyrus balansae Decne., see *Pyrus communis* L.

Pyrus bourgaeana Decne., see *Pyrus communis* L.

Pyrus communis L.

Family: Rosaceae

Grin Nomen Number: 30474

Common Names: byeongbaenam (transcribed Korean), päron (Swedish), pear (English), pera (Italian), pera (Spanish), peral (Spanish), pereira (Portuguese), pero (Italian), poirier (French), seiyō-nashi (Japanese Rōmaji), xi yang li (transcribed Chinese).

Native: ASIA-TEMPERATE – *Western Asia*: Cyprus, Turkey; *Caucasus*: Armenia, Azerbaijan, Georgia, Russian Federation – Ciscaucasia, Dagestan; *Middle Asia*: Kyrgyzstan; Tajikistan; Uzbekistan; EUROPE – *Middle Europe*: Austria, Belgium; Czech Republic; Germany; Hungary; Liechtenstein; Luxembourg; Netherlands; Poland; Slovakia; Switzerland; *East Europe*: Estonia; Latvia; Lithuania; Moldova; Russian Federation – European part; Ukraine; *Southeastern Europe*: Albania; Bosnia and Herzegovina; Bulgaria; Croatia; Greece; Italy; Macedonia; Montenegro; Romania; Serbia; Slovenia; *Southwestern Europe*: France; Portugal; Spain.

Naturalized: Widely naturalized.

Cultivated: Widely cultivated.

Origin: Eurasia.

Lab Infestation:

+Back and Pemberton 1917:

Two (2) *B. cucurbitae* larvae were able to complete instars one–three on *P. communis* var. Bartlett (listed as Bartlett pear), transferred daily from one piece of pulp to a fresh piece of pulp, in an average time of 11.5 days at an average temperature of 26.2°C.

Listing Only: California Department of Food and Agriculture 2001; Dhillon et al. 2005a; Holbrook 1967 (listed as a “non-host or host of undetermined status”); Kapoor 1970 (listed as *Dacus cucurbitae*); +Margosian et al. 2009 (listed as pears); McBride and Tanada 1949 (listed as *Dacus cucurbitae*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *P. communis* [experimentally]); Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); White and Elson-Harris 1992 (authors state “requires confirmation”).

Synonyms: *Pyrus asiae-mediae* (Popov) Maleev, *Pyrus balansae* Decne., *Pyrus bourgaeana* Decne., *Pyrus communis* L. subsp. *bourgaeana* (Decne.) Nyman, *Pyrus communis* L. var. *mariana* Willk., *Pyrus domestica* Medik., *Pyrus elata* Rubtzov, *Pyrus medvedevii* Rubtzov

Pyrus communis L. subsp. *bourgaeana* (Decne.) Nyman, see *Pyrus communis* L.

Pyrus communis L. var. *mariana* Willk., see *Pyrus communis* L.

Pyrus cydonia L., see *Cydonia oblonga* Mill.

Pyrus decurrens ined., see *Pyrus* spp.

Pyrus domestica Medik., see *Pyrus communis* L.

Pyrus elata Rubtzov, see *Pyrus communis* L.

Pyrus malus L., see *Malus domestica* Borkh.

Pyrus malus subsp. *paradisiaca* (L.) Schübl. and G. Martens, see *Malus pumila* Mill.

Pyrus malus var. *paradisiaca* L., see *Malus pumila* Mill.

Pyrus medvedevii Rubtzov, see *Pyrus communis* L.

Pyrus niedzwetzkyana (Dieck) Hemsl., see *Malus pumila* Mill.

Pyrus praecox Pall., see *Malus pumila* Mill.

Pyrus sorbifolia Cham. ex Spreng., see *Pyrus* spp.

Pyrus spp.

Family: Rosaceae

Grin Nomen Number: 300499

Laboratory Infestation:

Iwaizumi et al. 1994:

Intact, mature *Pyrus* spp. (pear; three varieties: 'Kousui,' '20 centuries,' 'European') fruits were exposed (separately, by variety) to 10 gravid female *B. cucurbitae* for 24 hours in a screen-net cage, with average adult *B. cucurbitae* recoveries of 0.0, 0.7±0.9, and 0.0 (over three replications), respectively. Pear fruits punctured several times with insect pins were similarly exposed to 10 gravid females, with average adult *B. cucurbitae* recoveries of 29.0±30.4, 51.7±6.6, and 76.0±61.6 (over three replications), respectively.

Synonyms: *Pyrus amygdaliformis* Vill. var. *persica* Bornm., *Pyrus decurrens* ined., *Pyrus sorbifolia* Cham. ex Spreng.

Quinaria lansium Lour., see *Clausena lansium* (Lour.) Skeels

Rajania quinata Thunb. Ex Houtt., see *Akebia quinata* (Thunb. Ex Houtt.) Decne.

Raphanus sativus L.

Family: Brassicaceae

Grin Nomen Number: 30857

Common Names: garden radish (English), luo bo (transcribed Chinese), radish (English).

Naturalized: AFRICA – *Macaronesia*: Portugal – Azores; Spain – Canary Islands; *East Tropical Africa*: Kenya; Tanzania; *South Tropical Africa*: Angola; Zimbabwe; *Southern Africa*: South Africa – Limpopo; ASIA-TEMPERATURE – *Arabian Peninsula*: Bahrain; Kuwait; Oman; Qatar; Saudi Arabia; United Arab Emirates; Yemen; *Western Asia*: Cyprus; Turkey; *China*: China; *Eastern Asia*: Japan; AUSTRALIA – *Australia*: Australia; *New Zealand*: New Zealand; EUROPE – *Northern Europe*: Finland; Norway; *Middle Europe*: Austria; Hungary; *East Europe*: Estonia; Latvia; Lithuania; *Southeastern Europe*: Slovenia; *Southwestern Europe*: Portugal; Spain; NORTHERN AMERICA – Canada; Mexico; United States; PACIFIC – *North-Central Pacific*: United States – Hawaii; *Southwestern Pacific*: Fiji; New Caledonia; SOUTHERN AMERICA – *Caribbean*: Barbados; Bermuda; Cuba; Hispaniola; Puerto Rico; *Central America*: Guatemala; *Brazil*: Brazil; *Western South America*: Bolivia; Ecuador; Peru; *Southern South America*: Argentina; Chile; Paraguay – Misiones; Uruguay.

Cultivated: Only cultivated.

Origin: Unknown.

Field Infestation:

Nakahara 1980:

Waikane, Island of Oahu, Hawaii, U.S.A.

Two (2) rotting *R. sativus* roots (also referred to as "daikon") were field collected at Waikane, on the Island of Oahu on 7 March 1980. Three (3) adult *B. cucurbitae* were reared from these roots.

Lab Infestation:

Rajamannar 1962:

Using *B. cucurbitae* (listed as *Dacus cucurbitae*) 1st instar larvae obtained from eggs oviposited on bottle gourd (*Lagenaria siceraria*; listed as *L. vulgaris*), 3 of 100 (3%) 1st instar larvae raised on the tap roots of *R. sativus* (listed as radish) pupated, with an average time to pupation of 9.5 days. In a separate test, 60 of 100 (60%) 1st instar larvae were found to feed on the tap roots of *R. sativus* (an average of 12.0 out of 20 larvae, based on five replicated trials).

Listing Only: USDA 1986 (listed as *Dacus cucurbitae*).

Synonyms: *Raphanus sativus* L. var. *longipinnatus* L. H. Bailey

Raphanus sativus L. var. *longipinnatus* L. H. Bailey, see *Raphanus sativus* L.

Raphanus sp.

Family: Brassicaceae

Grin Nomen Number: 310087

Common Names: radish (English).

Listing Only: Kapoor 1970 (listed as *Dacus cucurbitae*).

Rhamnus zizyphus L., see *Zizyphus jujuba* Mill. var. *jujuba*

Rheedia Spp., see *Garcinia* Spp.

Rhynchosarpha hirtella Naudin, see *Kedrostis leloja* (Forssk.) C. Jeffrey

Rhynchosarpha Schrad. ex Endl., see *Kedrostis* Medik.

Richardella nervosa (A DC.) Pierre, see *Pouteria campechiana* (Kunth) Baehni

Richardella salicifolia (Kunth) Pierre, see *Pouteria campechiana* (Kunth) Baehni

Ricinus communis L.

Family: Euphorbiaceae

Grin Nomen Number: 31896

Common Names: bafureira (Portuguese), bi ma (transcribed Chinese), carrapateiro (Portuguese), castor (English), castor-bean (English), castor-bean-plant (English), castor-oil-plant (English), higuerrilla (Spanish), jarak (Indonesian), kasterolieboom (Afrikaans), kharwa'a (Arabic), lahung (transcribed Thai), mamoneiro (Portuguese), mbarika (Swahili), mbono mdogo (Swahili), mnyonyo (Swahili), palma-christi (English), Palma Christi (German), pimaja (transcribed Korean), ricin (French), ricin (Swedish), rícino (Portuguese), ricino (Italian), Rizinus (German), Wunderbaum (German).

Naturalized: Naturalized throughout tropics and subtropics.

Cultivated: also cultivated.

Origin: Probable origin Africa.

Listing Only: Botha et al. 2004 (listed as a wild host).

Robinia grandiflora L., see *Sesbania grandiflora* (L.) Pers.

Rollinia spp., see *Annona* spp.

Saba senegalensis (A. DC.) Pichon

Family: Apocynaceae

Grin Nomen Number: 102255

Common Names: liane saba (French), mad (French - Senegal), màdd (Africa - Wolof), made (French - Senegal).

Native: AFRICA – *West Tropical Africa:* Burkina Faso, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Mali, Mauritania, Senegal.

Interception Data:*PestID 2016:*

Gambia

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Saba senegalensis* fruit(s), originating in Gambia, at an airport in Virginia (Dulles) on one occasion in 2013. Recovery was four live pupae.

Mali

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Saba senegalensis* fruit(s), originating in Mali, at an airport in New York (JFK) on one occasion in 2011. Recovery was 21 live larvae.

Synonyms: *Landolphia senegalensis* (A. DC.) Kotschy and Peyr., *Vahea senegalensis* A. DC.

Sandoricum indicum Cav., see *Sandoricum koetjape* (Burm. f.) Merr.

Sandoricum koetjape (Burm. f.) Merr.

Family: Meliaceae**Grin Nomen Number:** 33013

Common Names: donka (unknown), faux mangoustan (French), kechapi (English), red santol (English), Sandoribaum (German), sandorique (French), santol (Filipino), sentol (English), sentul (Malay), sentul (Swedish).

Native: ASIA-TROPICAL – *Malesia*: Indonesia, Malaysia – Sabah, Sarawak; Papua New Guinea, Philippines.

Cultivated: Cultivated elsewhere in tropics.

Listing Only: Cantelo and Pholboon 1965 (listed as *Dacus cucurbitae*; listed as *Sandoricum indicum* Cav.).

Synonyms: *Melia koetjape* Burm. f., *Sandoricum indicum* Cav.

Sapota zapotilla (Jacq.) Coville, see *Manilkara zapota* (L.) P. Royen

Sechium edule (Jacq.) Sw.

Family: Cucurbitaceae**Grin Nomen Number:** 33453

Common Names: camochayote (Spanish-Mexico), chayote (English), Chayote (German), chinchayote (Spanish-Mexico), Chinit (Russian), cho-cho (English), chocho (Spanish), chou-chou (French), christofine (French), christophine (English), chuchu (Portuguese), cueza (Spanish-Mexico), fo shou gua (transcribed Chinese), hayoto-uri (Japanese Rōmaji), kayote (Swedish), machiche-francês (Portuguese-Brazil), machucho (Portuguese-Brazil), pipinela (Spanish), Stachelgurke (German), tallote (Spanish), vegetable-pear (English), xuxú (Portuguese-Brazil).

Native: NORTHERN AMERICA – *Southern Mexico*: Mexico – Hidalgo, Oaxaca, Puebla, Veracruz.

Cultivated: Widely cultivated in tropics.

Field Infestation:*Jacquard et al. 2013:*

Réunion Island, France

Bactrocera cucurbitae-infested *S. edule* fruits were collected from three sites on Réunion Island in 2009 and held over sand. Puparia, recovered by sifting the sand, were held for adult emergence. Twelve (12) adult *B. cucurbitae* were recovered.

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 320 *S. edule* fruits were collected (6 collections overall) from two islands/island groups (Amami, Okinawa) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 4 fruits, giving an average percentage infestation rate (weighted by the number of collections in the islands/island groups) of 0.65%.

Vayssières and Carel 1999:

Réunion Island, France

Sechium edule fruits of a local variety were collected over the course of a year from up to 70 localities on Réunion Island. Fruits with evidence of fruit fly infestation were held in individual containers, with recovered pupae held for adult emergence. *Bactrocera cucurbitae* recovery averaged 19.3 (standard deviation = 54.7) adults per kg infested fruit.

Interception Data:*PestID 2016:*

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Sechium edule* fruits, originating in Hawaii, at an airport in Hawaii (Honolulu) on eight occasions between 1988 and 1999. Average recovery was 2.75 live larvae (range: 2–5).

Indonesia

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Sechium edule* fruit(s), originating in Indonesia, at an airport in Texas (Houston) on one occasion in 2010. Recovery was two live larvae.

Vietnam

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Sechium edule* fruit(s), originating in Vietnam, at an airport in California (San Francisco) on one occasion in 2009. Recovery was 30 live larvae.

Lab Infestation:

*Shivashankar et al. 2015 (Note: this is negative data; no *B. cucurbitae* infestation found):*

One 1st instar *B. cucurbitae* larva, newly emerged from an egg oviposited on a tender *Sechium edule* fruit, was inserted into a 5 mm diameter by 2 mm deep hole punched into the surface of a freshly harvested tender *S. edule* fruit. Fruits were held, in large plastic containers having a thin layer of sand, at the mean ambient temperature and relative humidity of 28.2±1.0°C and 58.7±1.0% RH, respectively. There were ten replications with 10 fruits per replication. No pupae were recovered from any replication, while pupae were recovered from *Cucumis sativus*, *Lagenaria siceraria*, *Luffa acutangula*, and *Momordica charantia* fruits to which 1st instar larvae had similarly been introduced.

Listing Only: +Back and Pemberton 1918 (listed as chayote; listed as a preferred host); Botha et al. 2004 (listed as a secondary host); CABI 2016; California Department of Food and Agriculture 2001; Cantrell et al. 1999; Chawla 1966 (listed as *Dacus cucurbitae*; listed as *Sechium edula* Swartz); De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Government of Western Australia Department of Agriculture and Food 2015; Holbrook 1967 (listed as “heavily or generally infested”); Kandybina 1987 (listed as *Dacus cucurbitae*; listed as *Sechium edulis* Swartz); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Sachium edule*); Mamet and Williams 1993 (listed as *Dacus cucurbitae*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as rarely injured); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); Phillips 1946; Plantwise Knowledge Bank 2015; Pradhan 1977 (listed as *Dacus cucurbitae*); Quilici and Jeuffrault 2001 (listed as being a very favorable host); Rejesus et al. 1991 (listed as *Dacus cucurbitae*; listed as *Sechium eduli* Sh); Ryckewaert et al. 2010; Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host); White and Elson-Harris 1992.

Synonyms: *Chayota edulis* Jacq., *Sicyos edulis* Jacq.

Sesbania grandiflora (L.) Poir.

Family: Fabaceae

Grin Nomen Number: 33770

Common Names: agathi (India), agati (India), scarlet wistaria-tree (English), vegetable-humming-bird (English), West Indian-pea (English).

Cultivated: Cultivated in tropics.

Origin: Indonesia.

Field Infestation:

Nakagawa et al. 1968:

Hawaii, U.S.A.

Between 1958 and 1966, 7,704 buds and flowers, from 38 collections, of *S. grandiflora* were collected in Hawaii and placed over sand in holding boxes. The sand was screened weekly to recover tephritid fruit fly larvae and pupae. Recovered larvae and pupae were held in glass cups covered with glass coverslips until adult emergence and species identification. *Bactrocera cucurbitae* (listed as *Dacus cucurbitae*) and/or *B. dorsalis* (listed as *Dacus dorsalis*) were recovered in 20 out of 38 collections (52.6%). One hundred thirty-four (134) adult *B. cucurbitae* and 35 adult *B. dorsalis* emerged from 200 pupae recovered.

Nakagawa and Yamada 1965:

Hawaii, U.S.A.

Between 1962 and 1963, 9,234 buds and blossoms of the white-flowered variety, and 1,731 buds and blossoms of the pink-flowered variety, of *S. grandiflora* were collected in Hawaii and held over sand in conventional holding boxes or in 3.78 liter jars covered with cheesecloth. One hundred twenty-four (124) *B. cucurbitae* (listed as *Dacus cucurbitae*) adult flies were recovered from the white-flowered buds and blossoms, while no *B. cucurbitae* flies were recovered from the pink-flowered buds and blossoms.

Interception Data:

USDA 1965:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from agati sesbania flower (*S. grandiflora*) which originated in Hawaii and was intercepted in air baggage from Hawaii (1 interception in consumption host) between 1 July 1963 and 30 June 1964 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

Lab Infestation:

Nakagawa and Yamada 1965:

In laboratory trials in 1962-1963, both white-flowered and pink-flowered *S. grandiflora* buds and blossoms readily yielded *B. cucurbitae* adults (listed as *Dacus cucurbitae*) under forced oviposition conditions. No information was provided on the methods used for the forced infestation trials and no infestation rate data were given.

Listing Only: Botha et al. 2004 (listed as a secondary host); CABI 2016; California Department of Food and Agriculture 2001; Holbrook 1967 (listed as “occasionally infested”); Hollingsworth et al. 1996 (listed as buds of *S. grandiflora*); Plantwise Knowledge Bank 2015; USDA 1986 (listed as *Dacus cucurbitae*; listed as *Sesbania grandifolia*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Sesbania grandiflora*; listed as a preferred host); White and Elson-Harris 1992.

Synonyms: *Aeschynomene grandiflora* (L.) L., *Agati grandiflora* (L.) Desv., *Robinia grandiflora* L.

Sesbania spp.

Family: Fabaceae

Grin Nomen Number: 300544

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Sesbania* sp. fruits, originating in Hawaii, at an airport in Hawaii (Honolulu) on two occasions in 2009. Average recovery of live larvae was 23.5 (range: 22–25).

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Sesbania* sp. cut flower(s), originating in Hawaii, at an airport in Hawaii (Honolulu) on one occasion in 2002. Recovery was two live larvae, two live pupae and three live adults.

Listing Only: USDA 1986 (listed as *Dacus cucurbitae*).

Synonym: *Daubentonia* spp.

Sicyos edulis Jacq., see *Sechium edule* (Jacq.) Sw.

Sicyos hispidus Hillebr.

Family: Cucurbitaceae

Grin Nomen Number: Not listed in GRIN; naming authority taken from The Plant List

Native: Hawaii, U.S.A.

Listing Only: Hawaii Department of Agriculture 2009.

Synonyms: *Cladocarpa capitata* St. John, *C. discoidea* St. John, *C. harrisonae* St. John, *C. hispida* (Hillebr.) St. John, *C. kawelaensis* St. John, *C. lanaiensis* St. John, *C. munroi* St. John, *C. umbellata* St. John, and *C. waimeaensis* St. John.

Sicyos pachycarpus Hook. and Arn.

Family: Cucurbitaceae

Grin Nomen Number: 459540

Common Names: kupala (Hawaiian).

Native: PACIFIC – North-Central Pacific: United States – Hawaii.

Field Infestation:

Uchida et al. 1990:

Hawaii, U.S.A.

Sicyos pachycarpus fruits were collected from three sites on the Island of Oahu (Campbell Industrial Park, Makua, Mokuleia), one site on the Island of Molokai (Kaunakakai) and three sites on the Island of Maui (Haleakala Highway, Iao Valley, Kanaio) from 1 March to 25 May 1989. Fruits were sealed in zip-lock bags for 14 days and then transferred to plastic cups held over a layer of fine vermiculite in a screen-covered plastic container. Vermiculite was screened weekly with recovered larvae and pupae transferred to paper packages for adult emergence. Adult *B. cucurbitae* recoveries were 0.0 flies/kg fruit (Campbell Industrial Park; 90 fruits; 0.1186 kg), 0.0 flies/kg fruit (Makua; 62 fruits; 0.0433 kg), 22.2 flies/kg fruit (Mokuleia; 455 fruits; 0.3632 kg), 0.0 flies/kg fruit (Kaunakakai; 98 fruits; 0.112 kg), 0.0 flies/kg fruit (Haleakala Highway; 135 fruits; 0.1716 kg), 9.4 flies/kg fruit (Iao Valley; 297 fruits; 0.4265 kg), and 81.0 flies/kg fruit (Kanaio; 135 fruits; 0.1718 kg).

Listing Only: Dhillon et al. 2005a (listed as *Sycos pachycarpus*); Hawaii Department of Agriculture 2009.

Sicyos spp.

Family: Cucurbitaceae

Grin Nomen Number: 300548

Field Infestation:

Back and Pemberton 1917:

Hawaii, U.S.A.

Sicyos sp. (listed as *Sycos* sp.) is listed as a wild *B. cucurbitae* host in Hawaii. The authors reported that they found infested *Sicyos* sp. fruits on the windward side of the Island of Oahu and in the Kona district on the Island of Hawaii (Hawaii, U.S.A.).

Listing Only: Back and Pemberton 1918 (listed as *Sycos* sp.; listed as a wild host); California Department of Food and Agriculture 2001; Dhillon et al. 2005a (listed as *Sycos* sp.); Holbrook 1967; Kapoor 1970 (listed as *Dacus cucurbitae*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as *Sycos* [*Sicyos*?]); Oakley 1950 (listed as *Dacus cucurbitae*); Phillips 1946 (listed as *Sycos* sp.); Rajamannar 1962 (listed as *Dacus cucurbitae*; listed as *Sycos* sp.); +Severin et al. 1914 (listed as *Dacus cucurbitae*; listed as *Sycos* sp.); Syed 1971 (listed as *Dacus cucurbitae*; listed as *Sycos* sp.); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000 (listed as both *Sicyes* sp. and as *Sicyos* sp.); USDA-APHIS 2008 (listed as both *Sicyes* sp. and as *Sicyos* sp.); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); Van Dine 1906 (listed as *Dacus cucurbitae*; listed as *Sycos* sp.); Weems 1964 (listed as *Dacus cucurbitae*; listed as a wild host); Weems et al. 2001 (listed as a wild host); White and Elson-Harris 1992 (listed as a wild host).

Sideroxylon sapota Jacq., see *Pouteria sapota* (Jacq.) H.E. Moore and Stearn

Sinapis timoriana DC., see *Brassica juncea* (L.) Czern.

Solanum aculeatissimum L., see *Solanum capsicoides* All.

Solanum aethiopicum L.

Family: Solanaceae

Grin Nomen Number: 100448

Common Names: Chinese scarlet egg (English), gilo (English), kumba (English), scarlet egg (English), shum (English), tomato-fruit eggplant (English) aubergine amère (French), jilo (Portuguese-Brazil), röd aubergin (Swedish).

Cultivated: AFRICA – Africa.

Field Infestation:

Mwatawala et al. 2010:

Morogoro Region, Central Tanzania

Five thousand nine hundred eighty-three (5,983) *S. aethiopicum* fruits (11.489 kg) were collected at irregular intervals between October 2004 and April 2008, from the Morogoro Region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupariation of infesting tephritid fruit flies. Emerged adults were removed and identified. *Bactrocera cucurbitae* flies were recovered from 4 of 306 collections (1.31%), with an overall infestation rate of 0.05 flies/kg fruit and 6.60 flies/kg infested fruit.

Listing Only: De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*).

Synonyms: *Solanum gilo* Raddi, *Solanum gilo* var. *Pierreanum* (Pailleux and Bois) Bitter, *Solanum integrifolium* Poir., *Solanum naumannii* Engl., *Solanum pierreanum* Pailleux and Bois, *Solanum sudanense* Hammerstein, *Solanum zuccagnianum* Dunal

Solanum anguivi Lam.

Family: Solanaceae

Grin Nomen Number: 310328

Native: AFRICA – *Northeast Tropical Africa:* Eritrea, Ethiopia, Somalia; *East Tropical Africa:* Tanzania, Uganda; *West-Central Tropical Africa:* Cameroon, Equatorial Guinea – Bioko, Rwanda, Zaire; *West Tropical Africa:* Côte d'Ivoire, Ghana, Guinea, Liberia, Nigeria, Senegal, Sierra Leone; *South Tropical Africa:* Angola, Malawi, Mozambique, Zambia, Zimbabwe; *Southern Africa:* South Africa – KwaZulu-Natal, Limpopo, Mpumalanga; Swaziland; *Western Indian Ocean:* Madagascar.

Field Infestation:

Mwatawala et al. 2009b:

Morogoro Region, Central Tanzania

Solanum anguivi fruits were randomly collected weekly between October 2004 through October 2006, and from August through December, 2007, from areas within the Sokoine University of Agriculture campus in Morogoro and from Nyandira, Mikese, Mkindo in the Morogoro region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupation of infesting tephritid fruit flies. Emerged adults were removed and identified. Out of 9,749 collected fruits (8.88 kg), infestation by *B. cucurbitae* averaged 2.03 emerged adults per kg fruit.

Mwatawala et al. 2010:

Morogoro Region, Central Tanzania

Six thousand and three (6,003) *S. anguivi* fruits (10.269 kg) were collected at irregular intervals between October 2004 and April 2008, from the Morogoro Region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupariation of infesting tephritid fruit flies. Emerged adults were removed and identified. *Bactrocera cucurbitae* flies were recovered from 1 of 70 collections (1.43%), with an overall infestation rate of 0.10 flies/kg fruit and 11.24 flies/kg infested fruit.

Listing Only: De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*).

Synonyms: *Solanum hermannii* Dunal, *Solanum indicum* auct., *Solanum sodomeum* L.
Solanum auriculatum Aiton, see *Solanum mauritianum* Scop.

Solanum betaceum Cav.

Family: Solanaceae

Grin Nomen Number: 100825

Common Names: arbre à tomates (French), Baumtomate (German), tamarillo (Spanish), tomate de árbol (Spanish), tomate-de-árvore (Portuguese), tomate de La Paz (French), tomate en arbre (French), tomate-francês (Portuguese-Brazil), tomate serrano (Spanish), tomateiro-arbusto (Portuguese-Brazil), trädtoomat (Swedish), tree-tomato (English).

Native: SOUTHERN AMERICA – *Western South America:* Bolivia – Tarija; *Southern South America:* Argentina – Jujuy, Salta, Santiago del Estero, Tucuman.

Naturalized: Naturalized elsewhere in tropics.

Cultivated: SOUTHERN AMERICA – *Western South America:* Bolivia – Cochabamba, La Paz; also cultivated in tropics.

Field Infestation:

Liquido et al. 1994:

Hawaii Island, Hawaii, U.S.A.

From July 1990 to October 1992, 279 (11.082 kg) ripe “on shrub” or ground *S. betacea* fruits (listed as *Cyphomandra betacea* [Cav.] Sendtn.) were collected (through collections made once or twice a month) from several sites on Hawaii Island, Hawaii. Fruits were weighed, counted, split into groups of 5 or 10, and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* larvae and pupae were recovered from infested *S. betacea* fruits with an overall infestation rate of 0.111 larvae and pupae per fruit (2.80 larvae and pupae/kg fruit).

Nakagawa et al. 1968:

Hawaii, U.S.A.

Between 1958 and 1966, 165 *C. betacea* fruits (listed as *Cyphomandra betacea* [Cav.] Sendtn.), from 5 collections, were collected in Hawaii and placed over sand in holding boxes. The sand was screened weekly to recover tephritid fruit fly larvae and pupae. Recovered larvae and pupae were held in glass cups covered with glass coverslips until adult emergence and species identification. *Bactrocera cucurbitae* (listed as *Dacus cucurbitae*) and/or *C. capitata* were recovered in 3 out of 5 collections (60.0%). Thirty (30) adult *B. cucurbitae* and 19 adult *C. capitata* emerged from 68 pupae recovered.

Listing Only: Botha et al. 2004 (listed as *Cyphomandra betacea*; listed as a secondary host); CABI 2016 (listed as a *Cyphomandra betacea*); California Department of Food and Agriculture 2001 (listed as *Cyphomandra betacea*); Cantrell et al. 1999 (listed as *Cyphomandra betacea*); Holbrook 1967 (listed as *Cyphomandra betacea*; listed as “occasionally infested”); Hollingsworth et al. 1996 (listed as *Cyphomandra crassicaulis*); Plantwise Knowledge Bank 2015 (listed as *Cyphomandra betacea*); USDA 1986 (listed as *Dacus cucurbitae*; listed as *Cyphomandra betaceae*); USDA-APHIS 2000 (listed as *Cyphomandra betacea*); USDA-APHIS 2008 (listed as *Cyphomandra betacea*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Cyphomandra betaceae*; listed as a preferred host); White and Elson-Harris 1992 (listed as *Cyphomandra crassifolia*, but the host was listed as *Cyphomandra betacea* in a cited publication).

Synonyms: *Cyphomandra betacea* (Cav.) Sendtn., *Cyphomandra crassifolia* Kuntze, *Solanum crassifolium* Ortega

Solanum capsicastrum Link ex Schauer, see *Solanum pseudocapsicum* L.

Solanum capsicoides All.

Family: Solanaceae

Grin Nomen Number: 100900

Common Names: cockroach-berry (English), devil’s-apple (English), guldbärsskatta (Swedish), mata cucaracha (Spanish).

Native: SOUTHERN AMERICA – *Brazil*: Brazil – Bahia, Minas Gerais, Para, Parana, Pernambuco, Rio Grande do Sul, Rio de Janeiro, Santa Catarina, Sao Paulo; *Southern South America*: Argentina – Misiones.

Naturalized: Widely naturalized in tropics.

Cultivated: also cultivated.

Field Infestation:

Harris and Liquido 1995:

Kalawao, Island of Molokai, Hawaii, U.S.A.

Solanum capsicoides (kikania) fruits were collected from Kalawao, on the Island of Molokai, and held for assessment of fruit fly infestation. Thirty-five (35) *B. cucurbitae* pupae were recovered, from which 7 adult males and 11 adult females emerged.

Harris et al. 2003:

Kalaupapa Peninsula, Island of Molokai, Hawaii, U.S.A.

During 1991 to 1992, 2,575 *S. capsicoides* (kikania lei) fruits (23.16 kg) (listed as both *Solanum aculeatissimum* Jacq. and as lei kikania; Wagner et al. (1990) and Staples and Herbst (2005) listed this as *S. capsicoides*. The latter indicates that *S. aculeatissimum* has been misapplied in Hawaii) were collected from the Kalaupapa peninsula and placed on sand in fruit holding boxes. The sand was screened weekly for recovery of tephritid fruit fly puparia. Recovered puparia were placed in glass jars and held until adult emergence. Eighteen (18) adult *B. cucurbitae* were recovered, for an infestation rate of 0.0070 melon flies per fruit (0.78 melon flies/kg fruit).

Liquido et al. 1994:

Island of Hawaii, Hawaii, U.S.A.

From July 1990 to October 1992, 61 (0.214 kg) ripe tree or ground *S. capsicoides* fruits (listed as both *Solanum aculeatissimum* and as lei kikania; Wagner et al. [1990] and Staples and Herbst [2005] listed this as *S. capsicoides*. The latter indicates that *S. aculeatissimum* has been misapplied in Hawaii) were collected (through collections made once or twice a month) from several sites on Hawaii Island, Hawaii. Fruits were weighed, counted, split into groups of 5 or 10, and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* larvae and pupae were recovered from infested *S. aculeatissimum* fruits with an overall infestation rate of 0.016 larvae and pupae per fruit (4.67 larvae and pupae/kg fruit).

Listing Only: Hawaii Department of Agriculture 2009; USDA 1986 (listed as *Dacus cucurbitae*; listed as *Solanum aculeatissimum*; Wagner et al. (1990) lists this as *S. capsicoides*).

Synonyms: *Solanum ciliatum* Lam., *Solanum spinosissimum* auct.

Solanum chocclo Bukasov and Lechn., nom. nud., see *Solanum tuberosum* L.

Solanum ciliatum Lam., see *Solanum capsicoides* All.

Solanum crassifolium Ortega, see *Solanum betaceum* Cav.

Solanum diflorum Vell., see *Solanum pseudocapsicum* L.

Solanum donianum Walp.

Family: Solanaceae

Grin Nomen Number: 457032

Native: NORTHERN AMERICA – *Southeastern U.S.A.*: United States – Florida; *Southern Mexico*: Mexico – Campeche, Quintana Roo, Yucatan; SOUTHERN AMERICA – *Caribbean*: Bahamas; *Central America*: Belize; Guatemala.

Listing Only: Vijayasegaran 1991 (listed as *Dacus cucurbitae*; listed as *Solanum verbascifolium* L.); Yunus and Hua 1980 (listed as *Dacus cucurbitae*; listed as *Solanum verbascifolium* L.).

Synonym: *Solanum verbascifolium* L.

Solanum erianthum D. Don

Family: Solanaceae

Grin Nomen Number: 457032

Common Names: Big eggplant (English); China flowerleaf (English); flannelbush (English); potato-tree (English); tobacco-tree (English); wild tobacco (English); jia yan ye shu (transcribed Chinese); yanbaru-nasubi (Japanese Rōmaji).

Native: NORTHERN AMERICA – *Southeastern U.S.A.*: United States – Florida; *South-Central U.S.A.*: United States – Texas; Mexico; SOUTHERN AMERICA – *Caribbean*: Bahamas; Cuba; Dominican Republic; Puerto Rico; *Central America*: Belize; Costa Rica; El Salvador; Guatemala; Honduras; Nicaragua; Panama; *Western South America*: Colombia.

Naturalized: ASIA-TEMPERATE – *China*: China; *Eastern Asia*: Japan – Ryukyu Islands; Taiwan; ASIA-TROPICAL – *Indian Subcontinent*: Bhutan; India; Nepal; Sri Lanka; *Indo-China*: Indochina; *Malesia*: Malaysia; AUSTRALASIA – *Australia*: Australia.

Field Infestation:

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 789 *S. erianthum* fruits were collected (5 collections overall) from two islands/island groups (Miyako, Yaeyama) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in eight fruits, giving an average percentage infestation rate (weighted by the number of collections in the islands/island groups) of 3.20%.

Solanum gilo Raddi, see *Solanum aethiopicum* L.

Solanum gilo var. *Pierreanum* (Pailleux and Bois) Bitter, see *Solanum aethiopicum* L.

Solanum hermannii Dunal, see *Solanum anguivi* Lam.

Solanum incanum L.

Family: Solanaceae

Grin Nomen Number: 101488

Common Names: Bitter-apple (English), thorn-apple (English), shewk al'eqerb (Arabic).

Native: AFRICA – *North Tropical Africa*: Eritrea, Ethiopia, Somalia, Sudan; *Northern Africa*: Egypt; *West Tropical Africa*: Benin, Burkina Faso, Mali, Niger, Nigeria; ASIA-TEMPERATE – *Arabian Peninsula* – Oman, Saudi Arabia, Yemen; *Western Asia*: Afghanistan, Iran, Iraq, Israel, Jordan, Lebanon, Syria, Turkey; ASIA-TROPICAL – *Indian Subcontinent*: India, Pakistan.

Interception Data:

PestID 2016:

Nigeria

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Solanum incanum* fruit(s), originating in Nigeria, at an airport in Georgia (Atlanta) on one occasion in 2012. Recovery was seven live larvae and one dead larva.

Synonyms: *Solanum unguiculatum* A. Rich.

Solanum indicum auct., see *Solanum anguivi* Lam.

Solanum indicum subsp. *distichum* (Thonn.) Bitter, see *Solanum anguivi* Lam.

Solanum integrifolium Poir., see *Solanum aethiopicum* L.

Solanum jaliscanum Greenm., see *Solanum pseudocapsicum* L.

Solanum khasianum C. B. Clarke, see *Solanum aculeatissimum* Jacq.

Solanum leptostigma Juz. ex Bukasov, see *Solanum tuberosum*

Solanum linnaeanum Hepper and P.-M. L. Jaeger

Family: Solanaceae

Grin Nomen Number: 316356

Common Names: Apple-of-Sodom (English), black-spine nightshade (English), poison apple (English), Sodom-apple (English), sodomsäpple (Swedish).

Native: AFRICA – *South Tropical Africa*: Mozambique, Zimbabwe; *Southern Africa*: South Africa – Eastern Cape, Western Cape.

Naturalized: AFRICA – *Macaronesia*: Portugal – Azores, Madeira Islands; *Northeast Tropical Africa*: Eritrea; AUSTRALASIA – *Australia*: Australia; *New Zealand*: New Zealand; EUROPE – *South-eastern Europe*: Albania, Bulgaria, Croatia, Greece, Italy; *Southwestern Europe*: France – Corsica, Portugal, Spain; PACIFIC – *North-Central Pacific*: United States – Hawaii; *Southwestern Pacific*: Fiji, New Caledonia.

Field Infestation:

Harris et al. 2003:

Kalaupapa Peninsula, Island of Molokai, Hawaii, U.S.A.

From 1991 to 1992, 7,427 *S. linnaeanum* fruits (192.14 kg) (listed as *Solanum sodomeum* L.) were collected from the Kalaupapa peninsula and placed on sand in fruit holding boxes. The sand was screened weekly for recovery of tephritid fruit fly puparia. Recovered puparia were placed in glass jars and held until adult emergence. Five (5) adult *B. cucurbitae* were recovered, for an infestation rate of 0.00067 melon flies per fruit (0.026 melon flies/kg fruit).

Liquido et al. 1994:

Island of Hawaii, Hawaii, U.S.A.

From July 1990 to October 1992, 9,853 (101.08 kg) ripe “on shrub” or ground *S. linnaeanum* (listed as *S. sodomeum* L.) fruits were collected (through collections made once or twice a month) from several sites on Hawaii Island, Hawaii. Fruits were weighed, counted, split into groups of 5 or 10, and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* larvae and pupae were recovered from infested *S. linnaeanum* fruits with an overall infestation rate of 0.00010 larvae and pupae per fruit (0.0099 larvae and pupae/kg fruit).

Synonyms: *Solanum hermannii* auct., *Solanum sodomeum* auct., *Solanum sodomeum* var. *hermannii*

Solanum lycopersicum L.

Family: Solanaceae

Grin Nomen Number: 101442

Common Names: tomato (English).

Naturalized: Widely naturalized.

Cultivated: Widely cultivated.

Field Infestation:

+*Back and Pemberton 1917:*

Hawaii, U.S.A.

Solanum lycopersicum (listed as tomato) is listed as a preferred host of *B. cucurbitae*. The authors reported that 15 ripe and partly ripe fruits examined by H. F. Willard at Hauula, on the Island of Oahu, Hawaii, U.S.A. (21 March 1915), were all found to contain eggs or larvae.

+*Back and Pemberton 1918:*

Hawaii, U.S.A.

Solanum lycopersicum (listed as tomato) is listed as a preferred host of *B. cucurbitae*. The authors reported that 15 ripe and partly ripe fruits examined at Hauula, on the Island of Oahu, Hawaii, U.S.A. (21 March 1915), were all found to contain eggs or larvae.

+*Clausen et al. 1965:*

Thailand

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was present in small numbers in *S. lycopersicum* (listed as tomato) in Thailand.

+*Ebeling et al. 1953:*

Island of Oahu, Hawaii, U.S.A.

In a 0.20-ha *Solanum lycopersicum* field (listed as tomato) planted at the University of Hawaii Experiment Station at Poamoho about August to September 1950, “practically all the ripening tomatoes were infested with melon-fly larvae” (listed as *Dacus cucurbitae*) before a first spray on 2 October. In another field (at the Mid-Pacific Farm of the University of Hawaii at Manoa), tomatoes were beginning to ripen on 18 October 1950 (the day of a first border spray), and “it appeared that practically all ripening fruits were infested.”

+Froggatt 1909:

Island of Oahu, Hawaii, U.S.A.

In the vegetable gardens on the slopes of Mount Tantillus, on the Island of Oahu, Hawaii, the author found fruit fly maggots in many ripening *S. lycopersicum* fruits (listed as tomatoes; the maggots were not specifically identified as *B. cucurbitae*, but the article focused on *B. cucurbitae* and *B. dorsalis* was not yet present in Hawaii; it was also not explicitly stated that adult fruit flies were recovered). No infestation rate data were given.

+Harris et al. 1986:

Island of Kauai, Hawaii, U.S.A.

Six (6) collections of *S. lycopersicum* fruits (2.246 kg) (listed as tomato) were made on the Island of Kauai, Hawaii, between July 1980 and September 1982, with fruits held over moist sand for assessment of infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). Sixty-nine (69) *B. cucurbitae* flies were recovered (30.7 flies/kg fruit).

+Holdaway 1940:

Koko Head, Island of Oahu, Hawaii, U.S.A.

During 1938, *S. lycopersicum* fruits (listed as tomato) were reported to be seriously attacked by *B. cucurbitae* (listed as *Dacus cucurbitae*) in Koko Head, on the Island of Oahu, Hawaii. No infestation data were given.

+Inayatullah et al. 1993:

Faisalabad, Pakistan

Based on observation, the average rate of infestation of *S. lycopersicum* fruits (listed as tomato) by *B. cucurbitae* (listed as *Dacus cucurbitae*) in the vicinity of the University of Agriculture in Faisalabad was about 16%.

+Lee 1972:

Taiwan

Solanum lycopersicum plants (listed as tomato) were grown in the field year-round from 2 June 1969 to 10 June 1970. Fruits, picked 5, 10, and 15 days after flowering, were placed over sand in holding boxes. The sand was screened weekly to recover *B. cucurbitae* pupae (listed as *Dacus cucurbitae*). Pupal recovery per fruit was averaged quarterly. No *Bactrocera cucurbitae* pupae were recovered from fruits picked 5, 10, or 15 days after flowering throughout the study. However, it was noted that some *B. cucurbitae* pupae were recovered from *S. lycopersicum* fruits as the skin of which became pink in color about 1/3 or more of the fruit surface.

+Marlowe 1937:

Hawaii, U.S.A.

During August to September 1936, *S. lycopersicum* (listed as tomato) var. ‘Break of Day’ and var. ‘Prichard’ were harvested weekly from an experimental plot. Ripe fruits were inspected at the time of harvest, and mature green fruits were held for 3 to 4 days before inspection for infestation by *B. cucurbitae* (listed as *Chaetodacus cucurbitae*). The average weekly infestation rate of the ‘Prichard’ variety was 59.3% (range: 40.0–83.7%) while the average weekly infestation rate of the ‘Break of Day’ variety was 19.2% (range: 5.8–26.4%). Fruit collections averaged 322.6 and 1,041.5 per week (2,258 and 8,332 total) for the ‘Prichard’ and ‘Break of Day’ varieties, respectively.

+Nishida 1953:

Island of Oahu, Hawaii, U.S.A.

A monthly survey of *B. cucurbitae* (listed as *Dacus cucurbitae*) infestation of *S. lycopersicum* fruits (listed as tomato) was made in Waimanalo and Waianae, on the Island of Oahu, between 1951 to 1952. The rate of infestation ranged from 2 to 70% in Waianae and 2 to 40% in Waimanalo. Number of fruits observed was not reported.

+Nishida 1954:

Island of Oahu, Hawaii, U.S.A.

In a test of the effectiveness of applying insecticides with conventional-type sprayers on border vegetation to reduce infestation of *S. lycopersicum* fruits (listed as tomato) by *B. cucurbitae* (listed as *Dacus cucurbitae*), percentage infestation of fruits was observed in one field which received a border spray and in two (check) fields in which only on-crop sprays were applied. The presence of oviposition punctures was used as the criterion to identify infested fruits, irrespective of whether eggs or larvae were found. Average rate of infestation of *S. lycopersicum* fruits from the two check fields ranged between about 11 and 32% throughout the course of the trial.

+Nishida and Bess 1950:

Hawaii, U.S.A.

In a trial to test the effectiveness of using a mist blower to spray pesticide on the borders of a tomato field to reduce tomato infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*), 25 *S. lycopersicum* fruits (listed as tomato) were randomly collected on 21 March, 28 March and 6 April 1949, from a treatment field and from three control fields where no pesticidal sprays were applied. Fruit infestation averaged 68, 63 and 63% on the three control fields on these three dates, respectively, compared to 2, 2, and 4% infestation in the treatment field.

+Nishida and Haramoto 1953:

Island of Oahu, Hawaii, U.S.A.

Ten (10) *S. lycopersicum* fruits (listed as tomato) were collected from three sites (Waianae, Manoa Valley, Waimanalo) on the Island of Oahu, Hawaii, where adult flies of both *B. cucurbitae* (listed as *Dacus cucurbitae*) and *B. dorsalis* (listed as *D. dorsalis*) were known to be present. Fruits were held in containers until adult emergence. On average, 57.05% of flies recovered were *B. cucurbitae* with an average recovery of 10.9 *B. cucurbitae* per fruit (range: 4–17).

+Purcell et al. 1995:

Hawaii, U.S.A.

As part of a survey of insect pests of *S. lycopersicum* fruits (listed as tomatoes), mature green fruits were collected weekly for 4 to 8 weeks from each of six commercial tomato plantings within the time span of September 1989 to January 1990. Plantings were in Ho'olehua (Island of Molokai), Kula (Island of Maui), and Glenwood, Volcano, Captain Cook and Kealahou (Hawaii Island). Pesticides were applied for insect control, including border sprays for melon fly control at the plantings at Ho'olehua. Fruit with melon fly stings were apparent in 4 of 6 farms, but infestation levels were below 1% indicating that melon fly was susceptible to insecticides. Insecticide treatments of border vegetation in Ho'olehua farm appeared to be effective.

Ramadan and Messing 2003:

Thailand

Three (3) collections of immature *S. lycopersicum* var. *lycopersicum* fruits (listed as *Lycopersicon esculentum*) (3.0 kg) with oviposition scars or signs of larval infestation were made in 1996 from two localities in Thailand (Narathiwat and Chiang Mai [near Mae-Jo]). Fruits were held over sawdust, which was subsequently sifted for recovery of tephritid fruit fly puparia. Sixteen (16) *B. cucurbitae* puparia were recovered, for an infestation rate of 5.3 *B. cucurbitae* puparia per kg fruit. Twelve (12) adult *B. cucurbitae* and 1 parasitoid (*Psytalia fletcheri*) emerged from the 16 puparia.

+Steiner et al. 1965:

Island of Rota, Mariana Islands

Solanum lycopersicum fruits (listed as tomato) were collected on the island of Rota as part of a *B. cucurbitae* (listed as *Dacus cucurbitae*) eradication program. Mature fruits were randomly collected and held until surviving larvae matured. Monthly *S. lycopersicum* fruit infestation averaged 7.62 *B. cucurbitae* larvae/kg fruit (range: 1.76–12.8 larvae/kg fruit) over the months of January–July, 1960–1962, before the initiation of either bait sprays or sterile fly releases.

+Wong et al. 1989:

Island of Rota, Commonwealth of the Northern Mariana Islands

On the island of Rota, 157 *S. lycopersicum* fruits (listed as tomato) (from 20 collections) were collected in 1985, 68 fruits (from 15 collections) were collected in 1986, and 71 fruits (from 12 collections) were collected in 1987. Fruits were held over moist sand in plastic containers with screened

lids for recovery of *B. cucurbitae* pupae and adult emergence. *Bactrocera cucurbitae* recovery averaged 0.2 pupae/kg fruit (1985), 0.0 pupae/kg fruit (1986), and 0.0 pupae/kg fruit (1987).

Lab Infestation:

+Keck 1951:

Newly emerged *B. cucurbitae* larvae (listed as *Dacus cucurbitae*) were inserted under the skin of fresh *S. lycopersicum* fruits (listed as tomatoes) from the U. S. Mainland. The fruits were held over sand. The sand was sifted daily to recover larvae leaving the fruit to pupate. One thousand sixty-eight (1,068) larvae were observed leaving the fruits at holding temperatures ranging from 15.6–35.0°C. The average length of the larval stage ranged from 4.81 (at 29.4°C) to 12.21 (at 15.6°C) days.

+Khan et al. 2011:

In a choice test, 50.0 g of *S. lycopersicum* var. *lycopersicum* fruits (listed as *Lycopersicon esculentum* [Mill]), along with 50.0 g of each of eight other natural hosts, were exposed for 20 minutes to 50 pairs of 15–20-day-old *B. cucurbitae* and 50 pairs of 15–20-day-old *B. tau* inside a small cage, after which fruit samples were removed and placed separately on sawdust inside a cloth-covered plastic bowl for pupation. The sawdust was sieved after 6 to 8 days to recover pupae (of both fly species) which were held for adult emergence. Out of a mean infestation of 49±3.46 pupae recovered (mixed infestation of *B. cucurbitae* and *B. tau*), 26.53% (13.0) of the recovered pupae emerged as adult *B. cucurbitae*.

In a no-choice test, 50.0 g of *S. lycopersicum* var. *lycopersicum* fruits, as well as 50.0 g of each of eight other natural hosts, were exposed for 20 minutes to 5 pairs of 15–20-day-old *B. cucurbitae* and 5 pairs of 15–20-day-old *B. tau* inside separate small cages, after which fruit samples were removed and placed separately on sawdust inside a cloth-covered plastic bowl for pupation. The sawdust was sieved after 6 to 8 days to recover pupae (of both fly species) which were held for adult emergence. Out of a mean infestation of 97±2.88 pupae recovered (mixed infestation of *B. cucurbitae* and *B. tau*), 72.16% (70.0) of the recovered pupae emerged as adult *B. cucurbitae*.

Listing Only: +Agrawal and Mathur 1991 (listed as *Dacus cucurbitae*; listed as tomato); +Australian Quarantine Service, Commonwealth Department of Primary Industry 1987 (listed as *Dacus cucurbitae*; listed as tomato); CABI 2016 (listed as a secondary host); +Carey and Dowell 1989 (listed as *Dacus cucurbitae*; melon flies can attack both fruits and stems of tomato plants grown hydroponically [in Malaysia], as stems are more succulent than when grown in soil; can cause plant death); +Christenson and Foote 1960 (listed as *Dacus cucurbitae*; listed as tomato); +Commonwealth Institute of Entomology 1978 (listed as tomatoes); +Cunningham et al. 1970 (listed as *Dacus cucurbitae*; listed as tomato); De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); European and Mediterranean Plant Protection Organization 2015 (listed as a minor host); +Hardy 1949 (listed as *Dacus cucurbitae*; listed as tomato); +Hardy and Adachi 1956 (listed as *Dacus cucurbitae*; listed as tomato); +Harris 1989 (listed as *Dacus cucurbitae*; listed as tomato); +Hawaii Department of Agriculture 2009 (listed as tomato); +Heppner 1989 (listed as *Dacus cucurbitae*; listed as tomato); Holbrook 1967 (listed as *Lycopersicon esculentum*; listed as “heavily or generally infested”); +Holdaway and Look 1942 (listed as *Dacus cucurbitae*; listed as tomato); +Isnadi 1991 (listed as *Dacus cucurbitae*; listed as tomato); +Kakinohana et al. 1997 (listed as tomato); +Kalshoven 1981 (listed as *Dacus cucurbitae*; listed as tomato); +Kapoor 1989 (listed as *Dacus cucurbitae*; listed as tomato); +Kapoor 2005–2006 (listed as tomato); +Khan et al. 1989 (listed as *Dacus cucurbitae*; listed as tomato); +Lall 1975 (listed as *Dacus cucurbitae*; listed as tomato); +Lee et al. 1992 (listed as *Dacus cucurbitae*; listed as tomato); Liquido 1991b (listed as *Dacus cucurbitae*; listed as *Lycopersicon lycopersicum*); +Liu 1993 (listed as *Dacus cucurbitae*; listed as tomato); +Margosian et al. 2009 (listed as tomatoes); +Mathew et al. 1999 (listed as tomato); +Mau et al. 2007 (listed as tomatoes); +NAPPO, PAS 2015 (listed as tomato); Nishida and Bess 1957 (listed as *Dacus cucurbitae*; listed as tomato); +Okinawa Prefectural Fruit Fly Eradication Project 1987 (listed as *Dacus cucurbitae*; listed as tomato); Plantwise Knowledge Bank 2015; +Queensland Government 2015 (listed as tomato); +Ryckewaert et al. 2010 (listed as tomato); +Severin et al. 1914 (listed as *Dacus cucurbitae*; listed as tomato); +Terry 1906 (listed as *Dacus cucurbitae*; listed as tomatoes); +Tsatsia and Hollingsworth 1997 (listed as tomato); +USDA-ARS 1959 (listed as tomato; listed as a preferred host); +Van Dine 1906 (listed as *Dacus cucurbitae*; listed as tomatoes); +Walker 2005 (listed as tomato); +Weems 1964 (listed as *Dacus cucurbitae*; listed as tomato; listed as a preferred host); +Weems 1967 (listed as *Dacus cucurbitae*; listed as tomato; listed as a preferred host); +Weems et al. 2001 (listed as tomato; listed as

a preferred host); +White and Elson-Harris 1992 (listed as “stems of tomato grown in hydroponics”); +Yong 1992 (listed as *Dacus cucurbitae*; listed as tomato).

Solanum lycopersicum L. var. *cerasiforme* (Alef.) Fosberg

Family: Solanaceae

Grin Nomen Number: 406486

Common Names: cherry tomato (English), tomato cerise (French), Kirschtomate (German), tomatillo (Spanish).

Naturalized: Widely naturalized.

Cultivated: Widely cultivated.

Field Infestation:

Harris et al. 2003:

Kalaupapa Peninsula, Island of Molokai, Hawaii, U.S.A.

During 1991 to 1992, 250 *S. lycopersicum* var. *cerasiforme* fruits (4.11 kg) and in 1995, 36 *S. lycopersicum* cv. *cerasiforme* fruits (1.05 kg) (listed as *Lycopersicon lycopersicum* var. *cerasiforme* [Dunal], *Lycopersicum esculentissimum* Miller, and as cherry tomato) were collected from the Kalaupapa peninsula and placed on sand in fruit holding boxes. The sand was screened weekly for recovery of tephritid fruit fly puparia. Recovered puparia were placed in glass jars and held until adult emergence. Thirty-two (32) adult *B. cucurbitae* were recovered from the 1991 to 1992 collections and 9 adults were recovered from the 1995 collection, for infestation rates of 0.128 melon flies per fruit (7.78 melon flies/kg fruit) and 0.25 flies per fruit (8.57 flies/kg fruit), respectively.

Liquido et al. 1994:

Island of Hawaii, Hawaii, U.S.A.

From July 1990 to October 1992, 1,715 (13.56 kg) ripe “on plant” and 1,477 (9.43 kg) ground *S. lycopersicum* var. *cerasiforme* fruits (listed as *Lycopersicon lycopersicum* cv. *cerasiforme* [Dunal]) were collected (through collections made once or twice a month) from several sites on Hawaii Island, Hawaii. Fruits were weighed, counted, split into groups of 5 or 10, and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* larvae and pupae were recovered from “on plant” *S. lycopersicum* var. *cerasiforme* fruits with an overall infestation rate of 0.068 larvae and pupae per fruit (8.55 larvae and pupae/kg fruit) and 0.020 larvae and pupae per ground fruit (3.18 larvae and pupae/kg ground fruit).

Island of Maui, Hawaii, U.S.A.

From July 1990 to October 1992, totals of 462 (4.11 kg) ripe “on plant” and 543 (4.36 kg) ground *S. lycopersicum* var. *cerasiforme* fruits (listed as *Lycopersicon lycopersicum* cv. *cerasiforme* [Dunal]) were collected (through collections made once or twice a month) from several sites on Maui Island, Hawaii. Fruits were weighed, counted, split into groups of 5 or 10, and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* larvae and pupae were recovered from infested *S. lycopersicum* var. *cerasiforme* fruits with an overall infestation rate of 0.11 larvae and pupae per “on plant” fruit (12.41 larvae and pupae/kg “on plant” fruit) and 0.0092 larvae and pupae per ground fruit (1.15 larvae and pupae/kg ground fruit).

Synonyms: *Lycopersicon esculentum* Mill. var. *cerasiforme* Alef., *Lycopersicon lycopersicum* (L.) H. Karst. var. *cerasiforme* (Alef.) M. R. Almeida

Solanum lycopersicum L. var. *lycopersicum*

Family: Solanaceae

Grin Nomen Number: 457162

Common Names: domado (transcribed Korean), ilnyeongam (transcribed Korean), pomodoro (Italian), tomat (Swedish), tomat (transliterated Russian), tomate (French), Tomato (German), tomate (Spanish), tomateiro (Portuguese), tomatera (Spanish), tomato (English), tomato (transcribed Korean).

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 2 samples of *Solanum lycopersicum* L. var. *lycopersicum* (listed as *Lycopersicon esculentum*). Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Fontem et al. 1998-1999:

Dschang and Foubot production areas in the western highlands of the west and northwest provinces of Cameroon

From October 1993 to September 1996, a survey of biological constraints in *S. lycopersicum* var. *lycopersicum* (listed as *Lycopersicon esculentum* Mill.) production was carried out in the Dschang and Foubot production areas in the western highlands of the west and northwest provinces of Cameroon. Out of 103 farmers surveyed, 74 (72%) perceived that *B. cucurbitae* (listed as *Dacus cucurbitae*) was a major pest of tomato production. No fruits were held for assessment of actual infestation rates by *B. cucurbitae*.

Jacquard et al. 2013:

Réunion Island, France

Bactrocera cucurbitae-infested *S. lycopersicum* var. *lycopersicum* fruits (listed as *Lycopersicon esculentum*) were collected from "Location 1" on Réunion Island from June–September 2009, and held over sand. A single puparium, recovered by sifting the sand, was held for adult emergence. One (1) adult *B. cucurbitae* was recovered.

Liquido et al. 1994:

Island of Hawaii, Hawaii, U.S.A.

From July 1990 to October 1992, a total of 541 (28.57 kg) "on plant" and 403 (23.40 kg) ground *S. lycopersicum* var. *lycopersicum* fruits (listed as *Lycopersicon lycopersicum* L.) were collected (through collections made once or twice a month) from several sites on Hawaii Island, Hawaii. Fruits were weighed, counted, split into groups of 5 or 10, and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* larvae and pupae were recovered from infested *S. lycopersicum lycopersicum* fruits with an overall infestation rate of 0.296 larvae and pupae per fruit (5.60 larvae and pupae/kg fruit) for "on plant" fruits and 0.094 larvae and pupae per ground fruit (1.62 larvae and pupae/kg ground fruit).

Island of Maui, Hawaii, U.S.A.

From July 1990 to October 1992, a total of 246 (14.54 kg) ripe "on plant" or ground *S. lycopersicum* var. *lycopersicum* fruits (listed as *Lycopersicon lycopersicum* L.) were collected once or twice a month from several sites on Maui Island, Hawaii. Fruits were weighed, counted, split into groups of 5 or 10, and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* larvae and pupae were recovered from infested *S. lycopersicum* var. *lycopersicum* fruits with an overall infestation rate of 0.15 larvae and pupae per fruit (2.61 larvae and pupae/kg fruit).

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 64,299 *S. lycopersicum* var. *lycopersicum* (referred to in Japanese as トマト) fruits were collected (120 collections overall) from four islands/island groups (Amami, Miyako, Okinawa, Yaeyama) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 49 fruits, giving an average percentage infestation rate (weighted by the number of collections in the islands/island groups) of 0.276%.

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 29,737 *S. lycopersicum* var. *lycopersicum* (referred to in Japanese as フチトマト) fruits were collected (68 collections overall) from three islands/island groups (Miyako, Okinawa, Yaeyama) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 1 fruit, giving an average percentage infestation rate (weighted by the number of collections in the islands/island groups) of 0.0988%.

Mwatawala et al. 2009b:

Morogoro Region, Central Tanzania

Solanum lycopersicum var. *lycopersicum* fruits (listed as *Lycopersicon esculentum* Miller) were randomly collected weekly between October 2004 through October 2006, and from August through December 2007, from areas within the Sokoine University of Agriculture campus in Morogoro and from Nyandira, Mikese, Mkindo in the Morogoro region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupation of infesting tephritid fruit flies. Emerged adults were removed and identified. Out of 2,517 collected fruits (75.93 kg), *B. cucurbitae* was recovered from 1 out of 82 collections (1.0%) with an overall infestation rate of 0.84 emerged adults per kg fruit.

Mwatawala et al. 2010:

Morogoro Region, Central Tanzania

Two thousand two hundred twenty-one (2,221) *S. lycopersicum* var. *lycopersicum* fruits (listed as *Lycopersicon esculentum* Miller) (65.974 kg) were collected at irregular intervals between October 2004 and April 2008, from the Morogoro Region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupariation of infesting tephritid fruit flies. Emerged adults were removed and identified. *Bactrocera cucurbitae* flies were recovered from 5 of 160 collections (3.12%), with an overall infestation rate of 0.45 flies/kg fruit and 16.84 flies/kg infested fruit.

Nishida 1955:

Island of Oahu, Hawaii, U.S.A.

Infested *S. lycopersicum* var. *lycopersicum* fruits (listed as *Lycopersicon esculentum* [Mill.]), with nearly full grown *B. cucurbitae* (listed as *Dacus cucurbitae*) larvae, were collected at cultivated areas in two locations on the Island of Oahu, Hawaii from 1950 to 1951: Waianae and Waimanalo. Larvae were extracted from fruits and placed in small wax paper cups containing pumpkin pulp. The cups were placed on sand in jars in which a high humidity was maintained. One thousand two hundred sixty-five (1,265) and 1,009 *B. cucurbitae* larvae were recovered from the fruits at the two sites, respectively. Number of fruits and infestation rate data were not given.

Purcell and Messing 1996:

Island of Kauai, Hawaii, U.S.A.

Tomato, *Solanum lycopersicum* var. *lycopersicum* var. 'Celebrity' seedlings (listed as *Lycopersicon esculentum* Miller) were planted on two occasions: 9 May 1994 and 1 September 1995. On 14 October, 2 November, 14 December and 19 December 1995, between 250–400 sexually mature female *B. cucurbitae* adults were released into the fields to produce high infestation rates in hosts. Four age/ripeness categories of fruits were collected: immature, mature green, ripe (red), and rotting. Fruits were sampled weekly from eight randomly selected quadrats. Average recovery was 7.5 (79 samples), 10.6 (60 samples), 8.8 (24 samples), and 29.6 (46 samples) *B. cucurbitae* per kg fruit from the four fruit categories, respectively.

Ranganath and Veenakumari 1996a:

South Andaman, India

Damaged *S. lycopersicum* var. *lycopersicum* fruits (listed as *Lycopersicon esculentum* Miller) were collected from the Central Agricultural Research Institute's research farm in South Andaman, India, and held in large plastic containers with a layer of sand on the bottom. Adult *B. cucurbitae* flies were recovered.

Syed 1971:

Faisalabad, Gujranwala, and Murree, Province of Punjab, Pakistan

In Faisalabad and Gujranwala (1962-1963), a few *S. lycopersicum* var. *lycopersicum* fruits (listed as *Lycopersicon esculentum*) were infested by *B. cucurbitae* (listed as *Dacus cucurbitae*); In Murree (1963), *B. cucurbitae* was reared out of *S. lycopersicum* var. *lycopersicum* fruits in September and October. Total number of fruits collected and infestation rate data were not given.

Vargas et al. 1990:

Island of Kauai, Hawaii, U.S.A.

During March 1987 to February 1989, 3 (year one) and 5 (year two) samples of *Solanum lycopersicum* var. *lycopersicum* fruits (listed as *Lycopersicon esculentum* Miller) were collected in the Moloaa area on the Island of Kauai, Hawaii. Fruits were placed on metal trays in plastic holding boxes containing sand. Mature *B. cucurbitae* (listed as *Dacus cucurbitae*) larvae and pupae, recovered through weekly sifting of the sand, were held for adult emergence. Out of 147 fruits collected in year one, 530 tephritid fruit fly pupae were recovered, from which 326 *B. cucurbitae* adults emerged, for an infesta-

tion rate of 23.1 *B. cucurbitae* adults per kg fruit. Out of 114 fruits collected in year two, 68 tephritid fruit fly pupae were recovered, from which 18 *B. cucurbitae* adults emerged, for an infestation rate of 1.0 *B. cucurbitae* adults per kg fruit.

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *S. lycopersicum* var. *lycopersicum* fruits (listed as *Lycopersicon esculentum*), originating in Hawaii, at airports in Hawaii on 10 occasions (Lihue–6; Kahului–2; Honolulu–2) between 1988 and 2001. Average recovery was 7.8 live larvae (range: 1–30).

USDA 1928:

Bactrocera cucurbitae was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated from a port in Hawaii and was intercepted at a port in California between 1 January 1927 and 31 December 1927. Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1932a:

Bactrocera cucurbitae was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated from a port in Hawaii and was intercepted at a port in California (1 interception in stores) between 1 January 1930 and 30 June 1931 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1936:

Bactrocera cucurbitae was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated from a port in Hawaii and was intercepted at a port in California (2 interceptions in stores) between 1 July 1934 and 30 June 1935 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1943:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated from a port in Hawaii and was intercepted at a port in California (2 interceptions in non-entry hosts) between 1 July 1941 and 30 June 1942 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1946:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated from a port in Hawaii and was intercepted at a port in California (14 interceptions in non-entry hosts) between 1 July 1944 and 30 June 1945 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1948a:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from tomato (*Solanum lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated in Hawaii and was intercepted at ports in California and Washington (1 interception in consumption; 45 interceptions in non-entry hosts) between 1 July 1945 and 30 June 1946 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1948b:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated from a port in Hawaii and was intercepted at ports in California, Oregon, and Washington (34 interceptions in non-entry hosts) between 1 July 1946 and 30 June 1947 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1950:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated from a port in Hawaii and was intercepted at a port in California and at a port in Washington (3 interceptions in non-entry hosts) between 1 July 1947 and 30 June 1948 (number of individuals recovered and life stages not reported). Host was recovered by state inspectors of California and taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1951:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated from a port in Hawaii and was intercepted (1 interception in consumption host; 12 interceptions in non-entry hosts) at ports in California, Louisiana, Mississippi, Oregon, Texas, and Washington between 1 July 1948 and 30 June 1949 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1951:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*?) was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*, listed as *Lycopersicon esculentum*) which originated from a port in Hawaii and was intercepted at a port in California and at a port in Texas (2 interceptions in non-entry hosts) between 1 July 1948 and 30 June 1949 (number of individuals recovered and life stages not reported). Host was recovered by state inspectors of California and taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1952a:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*, listed as *Lycopersicon esculentum*) which originated from a port in Hawaii and was intercepted at ports in Alaska, California, Louisiana, and Washington (13 interceptions in non-entry hosts) between 1 July 1949 and 30 June 1950 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1952b:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated from stores in Hawaii and was intercepted at ports in Alabama, California, and Oregon (8 interceptions in non-entry hosts) between 1 July 1950 and 30 June 1951 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1953:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated from a port in Hawaii and was intercepted at a port in California (12 interceptions in non-entry hosts) between 1 July 1951 and 30 June 1952 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1954:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated from Hawaii and was intercepted at ports in Alaska, California, and Texas (10 interceptions in non-entry hosts) between 1 July 1952 and 30 June 1953 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1954:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated from Hawaii and was intercepted at a port in Washington (1 interception in a non-entry host) between 1 July 1952 and 30 June 1953 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1955:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated in Hawaii and was intercepted at ports in California and Hawaii (9 interceptions in non-entry hosts) between 1 July 1952 and 30 June 1953 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1956:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated in Hawaii and was intercepted at a port in California (8 interceptions in non-entry hosts) between 1 July 1954 and 30 June 1955 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1956:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated in Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1954 and 30 June 1955 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1957:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated in Hawaii and was intercepted at a port in California (5 interceptions in non-entry hosts) between 1 July 1955 and 30 June 1956 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1958:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated in Hawaii and was intercepted at ports in California and Washington (10 interceptions in non-entry hosts) between 1 July 1956 and 30 June 1957 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1959:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated in Hawaii and was intercepted at a port in California (8 interceptions in non-entry hosts) between 1 July 1957 and 30 June 1958 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1960:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated in Hawaii and was intercepted at ports in California and Washington (6 interceptions in non-entry hosts) between 1 July 1958 and 30 June 1959 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1961:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated in Hawaii and was intercepted at a port in California (1 interception in non-entry host) between 1 July 1959 and 30 June 1960 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1962:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated in Hawaii and was intercepted at a port in California (3 interceptions in non-entry hosts) between 1 July 1960 and 30 June 1961 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1965:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated in air baggage and stores from Hawaii and was intercepted at a port in California (2 interceptions in non-entry and 1 interception in propagation host) between 1 July 1963 and 30 June 1964 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

USDA 1966:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from tomato (*S. lycopersicum* L. var. *lycopersicum*; listed as *Lycopersicon esculentum*) which originated in stores from Hawaii and was intercepted in California (2 interceptions in non-entry hosts) between 1 July 1964 and 30 June 1965 (number of individuals recovered and life stages not reported). Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

Lab Infestation:

Akter et al. 2010:

In a laboratory host preference study conducted in Bangladesh during 2005 to 2006, 250 g *S. lycopersicum* var. *lycopersicum* (listed as *Lycopersicon esculentum* Mill.), along with 250 g of each of five other vegetables (*Cucumis sativus*, *Cucurbita maxima*, *Momordica charantia*, *S. melongena*, and *Trichosanthes cucumerina*), were simultaneously exposed to 100, 15–20-day-old gravid female *B. cucurbitae* flies for 3 hours, then placed over saw dust. The saw dust was sieved to recover pupae which were transferred to Petri dishes and held until adult emergence. The trial was replicated five times. Recovery of *B. cucurbitae* pupae and adults averaged 197±55.84 pupae and 181±56.11, respectively (788 and 724 per kg fruit, respectively). The order of adult recovery (greatest to smallest) was: *S. melongena* > *T. cucumerina* > *C. maxima* > *C. sativus* > *M. charantia* > *S. lycopersicum*.

Carey et al. 1985:

Fifty (50) newly emerged 1st generation *B. cucurbitae* larvae (listed as *Dacus cucurbitae*) (four replications) were added to a small portion of *S. lycopersicum* var. *lycopersicum* fruit (listed as *Lycopersicon esculentum*) and held at 25 (±2.0)°C and 60.0 (±6.0)% RH in a covered Petri plate, with additional host material added as needed. When some of the larvae approached maturity, the Petri plate was opened and placed in sand in a larger container to allow for pupation. The sand was then sifted daily to recover pupae which were held at the same conditions of temperature and relative humidity. On average, 57% of the larvae survived to adult emergence, with an average larva to adult development time of 17.4 days.

Rajamannar 1962:

Using *B. cucurbitae* (listed as *Dacus cucurbitae*) 1st instar larvae obtained from eggs oviposited on bottle gourd (*Lagenaria siceraria*: listed as *L. vulgaris*), 78 of 100 (78%) 1st instar larvae raised on *S. lycopersicum* var. *lycopersicum* (listed as *Lycopersicon esculentum* and tomato) pupated, with an average time to pupation of 4.3 days. In a separate test, 55 of 100 (55%) 1st instar larvae were found to feed on pieces of *S. lycopersicum* var. *lycopersicum* fruits (an average of 11.0 out of 20 larvae, based on five replicated trials).

Listing Only: Bains and Sidhu 1984 (listed as *Lycopersicon esculentum*); Botha et al. 2004 (listed as *Lycopersicon esculentum*; listed as a secondary host); California Department of Food and Agriculture 2001 (listed as *Lycopersicon esculentum*); Cantrell et al. 1999 (listed as *Lycopersicon esculentum*); Chawla 1966 (listed as *Dacus cucurbitae*; listed as *Lycopersicon esculentum* Mill.); De Meyer et al. 2014 (listed as *Lycopersicon esculentum*); Dhillon et al. 2005a (listed as *Lycopersicon esculentum*); EcoPort 2008 (listed as *Lycopersicon esculentum*); Hollingsworth et al. 1996 (listed as *Lycopersicon esculentum*); Hollingsworth and Allwood 2000 (listed as *Lycopersicon esculentum*); Kandybina 1987 (listed as *Dacus cucurbitae*; listed as *Lycopersicon esculentum* Mill.); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Lycopersicon esculentum*); Kapoor 1991 (listed as *Dacus cucurbitae*; listed as *Lycopersicon esculentum* Mill.); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*; listed as *Lycopersicon esculentum*); Leblanc et al. 2013b (listed as *Lycopersicon esculentum* Mill.); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as *Lycopersicon esculentum* Mill.; listed as frequently injured); Messing et al. 1995; Nafus 1997 (infests *Solanum lycopersicum* var. *lycopersicum* [listed as *Lycopersicon esculentum*] in the Mariana Islands); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as *Lycopersicon esculentum*); Nishida 1963 (listed as *Dacus cucurbitae*; listed as *Lycopersicon esculentum* Mill.);

Oakley 1950 (listed as *Dacus cucurbitae*; listed as *Lycopersicon esculentum*); Orian and Moutia 1960 (listed as *Dacus cucurbitae*; listed as *Lycopersicum esculentum* L.); Pacific Fruit Fly Web 2002 (listed as *Lycopersicum esculentum*); Phillips 1946 (listed as *Lycopersicum esculentum*); Ponce 1937 (listed as *Dacus cucurbitae*; listed as *Lycopersicum esculentum*); Pradhan 1977 (listed as *Dacus cucurbitae*; listed as *Lycopersicum esculentum* Mill); Quilici and Jeuffrault 2001 (listed as *Lycopersicum esculentum* L.; listed as being only a little favorable as a host); Rejesus et al. 1991 (listed as *Dacus cucurbitae*; listed as *Lycopersicon esculentum* L.); Singh et al. 2004 (listed as *Lycopersicum lycopersicum*); USDA 1986 (listed as *Dacus cucurbitae*; listed as *Lycopersicon esculentum*); USDA-APHIS 2000 (listed as *Lycopersicon esculentum*); USDA-APHIS 2008 (listed as *Lycopersicon esculentum*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*; listed as *Lycopersicon esculentum*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Lycopersicon esculentum*; listed as a preferred host); Vargas et al. 2004 (listed as *Lycopersicon esculentum* Mill.); White and Elson-Harris 1992 (listed as *Lycopersicon esculentum*).

Synonyms: *Lycopersicon esculentum* Mill., *Lycopersicon esculentum* Mill. var. *commune* L. H. Bailey, *Lycopersicon esculentum* Mill. var. *esculentum*, *Lycopersicon esculentum* Mill. var. *grandifolium* L. H. Bailey, *Lycopersicon esculentum* Mill. forma *pyriforme* (Alef.) C. H. Müll., *Lycopersicon esculentum* Mill. var. *pyriforme* (Dunal) Alef., *Lycopersicon esculentum* Mill. var. *validum* L. H. Bailey, *Lycopersicon lycopersicum* (L.) H. Karst., *Lycopersicon lycopersicum* (L.) H. Karst. var. *pyriforme* auct., *Lycopersicon pyriforme* Dunal

Solanum macrocarpon L.

Family: Solanaceae

Grin Nomen Number: 101312

Common Names: African eggplant (English), afrikanische Aubergine (German), afrikansk äggört (Swedish), anghive (French), anghive (French), aubergine africaine (French), aubergine gboma (French), beringela-africana (Portuguese), gboma eggplant (English), gboma (English), gboma (French), grosse anghive (French).

Cultivated: AFRICA – *East Tropical Africa*: Uganda; *West Tropical Africa*: Benin, Berkina Faso, Côte d'Ivoire, Ghana, Nigeria, Senegal, Togo; *South Tropical Africa*: Malawi, Mozambique, Zambia, Zimbabwe; ASIA-TROPICAL – *Malesia*: Indonesia and Malaysia; SOUTHERN AMERICA – *Caribbean*: Dominica Republic and West Indies; *Central America*: Central America; *Northern South America*: Suriname; *Brazil*: Brazil.

Origin: probable origin is in West Africa.

Field Infestation:

Mwatawala et al. 2010:

Morogoro Region, Central Tanzania

One hundred seventy-six (176) *S. macrocarpon* fruits (27.824 kg) were collected at irregular intervals between October 2004 and April 2008, from the Morogoro Region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupariation of infesting tephritid fruit flies. Emerged adults were removed and identified. *Bactrocera cucurbitae* flies were recovered from 3 of 176 collections (1.70%), with an overall infestation rate of 0.65 flies/kg fruit and 39.13 flies/kg infested fruit.

Listing Only: De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*).

Solanum mauritianum Scop.

Family: Solanaceae

Grin Nomen Number: 101429

Common Names: Bugtree (English), couvetinga (Portuguese [Brazil]), cuvitinga (Portuguese), ear-leaf nightshade (English), fumeira (Portuguese [Brazil]), fumo-bravo (Portuguese [Brazil]), liusboom (Afrikaans), tobacco-wood (English), wild tobacco (English), wild tobacco-bush (English), wild tobacco-tree (English).

Native: SOUTHERN AMERICA – *Brazil*: Brazil – Espirito Santo, Minas Gerais, Parana, Rio Grande do Sul, Rio de Janeiro, Santa Catarina, Sao Paulo; *Southern South America*: Argentina – Buenos Aires; Uruguay.

Naturalized: AFRICA – *Macaronesia*: Portugal – Azores, Madeira Islands; Spain – Canary Islands; *Middle Atlantic Ocean*; St. Helena; *East Tropical Africa*: Kenya; *Southern Africa*: South Africa; *Western Indian Ocean*: Madagascar, Mauritius Mayotte, Réunion; ASIA-TROPICAL – *Indian Subcontinent*: India, Sri Lanka; *Malesia*: Indonesia – Java; AUSTRALASIA – *Australia*: Australia; *New Zealand*: New Zealand; PACIFIC – *North-Central Pacific*: United States – Hawaii; *South-Central Pacific*: Cook Islands, French Polynesia – Marquesas Islands; *Southwestern Pacific*: Fiji, New Caledonia, Solomon Islands, Tonga.

Cultivated: also cultivated.

Field Infestation:

Jacquard et al. 2013:

Réunion Island, France

Bactrocera cucurbitae-infested *S. mauritianum* fruits were collected from “Location 4” on Réunion Island from June to September 2009, and held over sand. Puparia, recovered by sifting the sand, were held for adult emergence. Six (6) adult *B. cucurbitae* were recovered.

Synonyms: *Solanum auriculatum* Aiton

Solanum melongena L.

Family: Solanaceae

Grin Nomen Number: 101312

Common Names: aubergin (Swedish), aubergine (English), aubergine (French), Aubergine (German), berenjena (Spanish), béringène (French), berinjala (Portuguese), brinjal eggplant (English), eggplant (English), Eierfrucht (German), gaji (transcribed Korean), maranziana (Italian), mélongène (French), mulignana (Italian), nasu (Japanese Rōmaji), petrociana (Italian), qie (transcribed Chinese).

Naturalized: Sometimes naturalized.

Cultivated: Widely cultivated.

Origin: probable independent origins in Southern and Eastern Asia

Field Infestation:

Bains and Sidhu 1984:

State of Punjab, India

Field observations of infestation of *S. melongena* fruits by *B. cucurbitae* (listed as *Dacus cucurbitae*) were made at 10-day intervals in Punjab, India, between May and November. Infested fruits were found in 3 of 14 observations (21.4%) with an average infestation rate of 0.19 (± 0.12 [standard error])%.

+*Froggatt 1909:*

Central or North-Western India

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was recovered from maggot-infested *S. melongena* fruits (listed as eggplants) from gardens in Central or North-Western India. No infestation rate data were given.

Liquido et al. 1994:

Island of Hawaii, Hawaii, U.S.A.

From July 1990 to October 1992, totals of 567 ripe “on plant” (36.08 kg) and 1,169 ground (75.86 kg) *S. melongena* fruits were collected (through collections made once or twice a month) from several sites on Hawaii Island, Hawaii. Fruits were weighed, counted, split into groups of 5 or 10, and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* larvae and pupae were recovered from infested *S. melongena* fruits with an overall infestation rate of 0.0018 larvae and pupae per “on plant” fruit (0.028 larvae and pupae/kg “on plant” fruit) and 0.026 larvae and pupae per ground fruit (0.409 larvae and pupae/kg ground fruit).

Island of Maui, Hawaii, U.S.A.

From July 1990 to October 1992, totals of 344 (39.78 kg) ripe “on plant” and 571 ground (71.62 kg) *S. melongena* fruits were collected once or twice a month from several sites on Maui Island, Hawaii. Fruits were weighed, counted, split into groups of 5 or 10, and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* larvae and pupae were recovered from infested *S. melongena* fruits with overall infestation rates of 0.0029 larvae and pupae per “on plant”

fruit (0.025 larvae and pupae/kg “on plant” fruit) and 0.0070 larvae and pupae per ground fruit (0.056 larvae and pupae/kg ground fruit).

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 10,043 *S. melongena* fruits were collected (73 collections overall) from four islands/island groups (Amami, Miyako, Okinawa, Yaeyama) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 1 fruit, giving an average percentage infestation rate (weighted by the number of collections in the islands/island groups) of 0.0144%.

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Solanum melongena* fruits, originating in Hawaii, at an airport in Hawaii (Honolulu) on three occasions between 2005 and 2009. Average recovery was 13.3 live larvae.

Lab Infestation:

Akter et al. 2010:

In a laboratory host preference study conducted in Bangladesh during 2005 to 2006, 250 g *S. melongena*, along with 250 g of each of five other vegetables (*Cucumis sativus*, *Cucurbita maxima*, *Momordica charantia*, *Solanum lycopersicum* var. *lycopersicum*, and *Trichosanthes cucumerina*), were simultaneously exposed to 100, 15–20-day-old gravid female *B. cucurbitae* flies for 3 hours, then placed over saw dust. The saw dust was sieved to recover pupae which were transferred to Petri dishes and held until adult emergence. The trial was replicated five times. Recovery of *B. cucurbitae* pupae and adults averaged 389±88.79 and 346±83.08, respectively (1,556 and 1,384 per kg fruit, respectively). The order of adult recovery (greatest to smallest) was: *S. melongena* > *T. cucumerina* > *C. maxima* > *C. sativus* > *M. charantia* > *S. lycopersicum*.

+*Back and Pemberton 1917:*

Solanum melongena (listed as eggplant) is listed as “occasionally infested” by *B. cucurbitae*. The authors report that, in the laboratory, when sound (undamaged) *Solanum melongena* fruits were placed in a jar with gravid melon fly females, no eggs were laid in the fruits. However, they also reported that, when 1 eggplant containing a slight decayed spot was placed in a jar with gravid melon fly females, eggs were laid in the decayed area only, from which 9 adult melon flies emerged.

Bains and Sidhu 1984:

Newly emerged *B. cucurbitae* larvae (listed as *Dacus cucurbitae*) were placed on cut pieces of *S. melongena* and held in Petri plates having moist blotting paper on the bottom. Larval survival to pupation was 53.9%.

Carey et al. 1985:

Fifty (50) newly emerged 1st generation *B. cucurbitae* larvae (listed as *Dacus cucurbitae*) (4 replications) were added to a small portion of *S. melongena* fruit (also listed as eggplant) and held at 25 (±2.0)°C and 60.0 (±6.0)% RH in a covered Petri plate, with additional host material added as needed. When some of the larvae approached maturity, the Petri plate was opened and placed in sand in a larger container to allow for pupation. The sand was then sifted daily to recover pupae which were held at the same conditions of temperature and relative humidity. On average, 35% of the larvae survived to adult emergence, with an average larva to adult development time of 20.2 days.

Chawla 1966:

In captivity, female *B. cucurbitae* adults (listed as *Dacus cucurbitae*) laid eggs on cut fruits of *S. melongena*. The eggs hatched out and the development of the larvae proceeded to continue normally through adult emergence.

Khan et al. 2011:

In a choice test, 50.0 g of *S. melongena* fruits, along with 50.0 g of each of eight other natural hosts, were exposed for 20 minutes to 50 pairs of 15–20-day-old *B. cucurbitae* and 50 pairs of 15–20-day-old *B. tau* inside a small cage, after which fruit samples were removed and placed separately

on sawdust inside a cloth-covered plastic bowl for pupation. The sawdust was sieved after 6 to 8 days to recover pupae (of both fly species) which were held for adult emergence. Out of a mean infestation of 124 ± 6.06 pupae recovered (mixed infestation of *B. cucurbitae* and *B. tau*), 82.81% (102.7) of the recovered pupae emerged as adult *B. cucurbitae*.

In a no-choice test, 50.0 g of *S. melongena* fruits, as well as 50.0 g of each of eight other natural hosts, were exposed for 20 minutes to 5 pairs of 15–20-day-old *B. cucurbitae* and 5 pairs of 15–20-day-old *B. tau* inside separate small cages, after which fruit samples were removed and placed separately on sawdust inside a cloth-covered plastic bowl for pupation. The sawdust was sieved after 6 to 8 days to recover pupae (of both fly species) which were held for adult emergence. Out of a mean infestation of 2 ± 2.3 pupae recovered (mixed infestation of *B. cucurbitae* and *B. tau*), 50.0% (1.0) of the recovered pupae emerged as adult *B. cucurbitae*.

Rajamannar 1962:

Using *B. cucurbitae* (listed as *Dacus cucurbitae*) 1st instar larvae obtained from eggs oviposited on bottle gourd (*Lagenaria siceraria*; listed as *L. vulgaris*), 70 of 100 (70%) 1st instar larvae raised on *S. melongena* (listed as eggplant) pupated, with an average time to pupation of 5.0 days. In a separate test, 37 of 100 (37%) 1st instar larvae were found to feed on pieces of *S. melongena* (an average of 7.4 out of 20 larvae, based on five replicated trials).

Sarwar et al. 2013:

Healthy, undamaged, mature and ripe *S. melongena* fruits were collected from a local marketplace in Faisalabad, Pakistan. One hundred twenty-five (125) g of fruits were placed in the bottom of a sieve that was suspended from a guava (*Psidium guajava*) tree in a guava orchard that was not bearing fruits (with three replications). Fruits were left exposed to wild *B. cucurbitae* flies for 48 hours. Fruits from each replication were placed over sand in muslin cloth topped plastic containers and held for 2 to 3 weeks. *Bactrocera cucurbitae* puparia, recovered by sieving the sand, were placed in moist sand in a Petri plate and held for adult emergence. An average of 8.25 *B. cucurbitae* pupae (66.0 pupae/kg fruit) was recovered from which an average of 6.08 adult flies (48.6 adult flies/kg fruit) emerged.

+Seo et al. 1973:

Solanum melongena fruits (listed as eggplant) were infested by *B. cucurbitae* (listed as *Dacus cucurbitae*) by exposing fruits to about 50,000 adults for 3 days in an outdoor cage. Twenty-five percent of the exposed fruits were placed in holding boxes and held at 16–31°C. Surviving pupae were collected and counted. A high number of pupae was recovered and was used to estimate the number of pupae that would have been expected to be present in fruits subjected to irradiation. No infestation rate was given.

Listing Only: +Agarwal et al. 1987 (listed as *Dacus cucurbitae*; listed as brinjal); California Department of Food and Agriculture 2001; Cantrell et al. 1999; Chawla 1966 (listed as *Dacus cucurbitae*); Dhillon et al. 2005a; +EcoPort 2008 (listed as eggplant); +Greene 1929 (listed as eggplant); +Hawaii Department of Agriculture 2009 (listed as eggplant); Holbrook 1967 (listed as “occasionally infested”); Kandybina 1987 (listed as *Dacus cucurbitae*); Kapoor 1970 (listed as *Dacus cucurbitae*); Kapoor 1991 (listed as *Dacus cucurbitae*); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*); +Lall 1964 (listed as *Dacus cucurbitae*; listed as brinjal); Leblanc et al. 2013b; +Margosian et al. 2009 (listed as eggplant); +Mau et al. 2007 (listed as eggplant); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as occasionally injured); Moiz et al. 1967 (listed as *Dacus cucurbitae*); +NAPPO, PAS 2015 (listed as eggplant); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Oakley 1950 (listed as *Dacus cucurbitae*); +Okinawa Prefectural Fruit Fly Eradication Project 1987 (listed as *Dacus cucurbitae*; listed as eggplant); Orian and Moutia 1960 (listed as *Dacus cucurbitae*); Phillips 1946; Ponce 1937 (listed as *Dacus cucurbitae*); +Ramadan and Messing 2003 (listed as eggplant); Rejesus et al. 1991 (listed as *Dacus cucurbitae*); +Severin et al. 1914 (listed as *Dacus cucurbitae*; listed as eggplant); Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host); +USDA-ARS 1959 (listed as eggplant); Vargas et al. 2004; +Weems 1964 (listed as *Dacus cucurbitae*; listed as eggplant; listed as an occasional host); +Weems 1967 (listed as *Dacus cucurbitae*; listed as eggplant; listed as an occasional host); +Weems et al. 2001

(listed as eggplant; listed as an occasional host); White and Elson-Harris 1992 (authors state “requires confirmation”); +Yong 1992 (listed as *Dacus cucurbitae*; listed as egg-plant).

Solanum naumannii Engl., see *Solanum aethiopicum* L.

Solanum nigrum L.

Family: Solanaceae

Grin Nomen Number: 310124

Common Names: black nightshade (English), blackberry nightshade (English), common nightshade (English), ‘enal el-deeb (Arabic), erva-moura (Portuguese), hierba mora (Spanish), morelle noire (French), nattskatta (Swedish), pimenta-de-galinha (Portuguese-Brazil), poisonberry (English), schwarzer Nachtschatten (German).

Native: AFRICA – *Northern Africa*: Algeria, Egypt, Morocco, Tunisia; ASIA-TEMPERATE – *Western Asia*: Afghanistan; Egypt – Sinai; Iran, Lebanon, Syria, Turkey; *Caucasus*: Armenia, Azerbaijan, Georgia, Russian Federation – Ciscaucasia, Dagestan; *Siberia*: Russian Federation – Altay, Western Siberia; *Middle Asia*: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan; *China*: China; ASIA-TROPICAL – *Indian Subcontinent*: India, Nepal, Pakistan; EUROPE – *Northern Europe*: Denmark, Finland, Ireland, Norway, Sweden, United Kingdom; *Middle Europe*: Austria, Belgium, Czech Republic, Germany, Hungary, Netherlands, Poland, Slovakia, Switzerland; *East Europe*: Belarus, Estonia, Latvia, Lithuania, Moldova, Ukraine, Krym; *Southeastern Europe*: Albania, Bulgaria, Croatia, Greece, Italy, Romania, Serbia, Slovenia; *Southwestern Europe*: France, Portugal, Spain.

Naturalized: AFRICA – *Northeastern Tropical Africa*: Eritrea, Ethiopia; *South Tropical Africa*: Angola, Malawi, Mozambique, Zambia, Zimbabwe; *Southern Africa*: Botswana; Namibia; South Africa – Eastern Cape, Free State, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga, North West, Northern Cape, Western Cape; Swaziland; ASIA-TEMPERATE – *Arabian Peninsula*: Yemen; ASIA-TROPICAL – *Malesia*: Papua New Guinea; AUSTRALASIA – *Australia*: Australia; *New Zealand*: New Zealand; NORTHERN AMERICA – Canada, Mexico, United States; PACIFIC – *North-Central Pacific*: United States – Hawaii; *Northwestern Pacific*: Guam; *Southwestern Pacific*: New Caledonia; SOUTHERN AMERICA – *Central America*: Central America; *Southern South America*: Chile.

Naturalized: Tropical Africa, Mascarenes, Madagascar, Melanesia, and Polynesia.

Field Infestation:

Liquido et al. 1994:

Island of Hawaii, Hawaii, U.S.A.

From July 1990 to October 1992, 10,476 (2.64 kg) ripe tree or ground *S. nigrum* fruits were collected (through collections made once or twice a month) from several sites on Hawaii Island, Hawaii. Fruits were weighed, counted, split into groups of 50 or 100, and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* larvae and pupae were recovered from infested *S. nigrum* fruits with an overall infestation rate of 0.00029 larvae and pupae per fruit (1.14 larvae and pupae/kg fruit).

Mwatawala et al. 2009b:

Morogoro Region, Central Tanzania

Solanum nigrum fruits were randomly collected weekly between October 2004 through October 2006, and from August through December 2007, from areas within the Sokoine University of Agriculture campus in Morogoro and from Nyandira, Mikese, Mkindo in the Morogoro region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupation of infesting tephritid fruit flies. Emerged adults were removed and identified. Out of 5,920 collected fruits (2.90 kg), *B. cucurbitae* was recovered from 1 out of 34 collections (3.0%) with an overall infestation rate of 1.37 emerged adults per kg fruit.

Mwatawala et al. 2010:

Morogoro Region, Central Tanzania

Five thousand three hundred twenty-one (5,321) *S. nigrum* fruits (2.883 kg) were collected at irregular intervals between October 2004 and April 2008, from the Morogoro Region of Tanzania. Fruits were held in individual rearing boxes provided with appropriate medium for pupariation of infesting tephritid fruit flies. Emerged adults were removed and identified. *Bactrocera cucurbitae*

flies were recovered from 1 of 49 collections (2.04%), with an overall infestation rate of 0.0007 flies/kg fruit and 80.00 flies/kg infested fruit.

Listing Only: De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*).

Synonyms: *Solanum pierreanum* Pailleux and Bois, see *Solanum aethiopicum* L.

Solanum pseudocapsicum L.

Family: Solanaceae

Grin Nomen Number: 101308

Common Names: falsche Jerusalemkirsche (German), false capsicum (English), false Jerusalem-cherry (English), Jerusalem-cherry (English), Jerusalemkersie (Afrikaans), Jerusalemkirsche (German), korallbär (Swedish), Korallenstrauch (German), Madeira-cherry (English), Madeira winter-cherry (English), winter-cherries (English), winter-cherry (English).

Native: NORTHERN AMERICA – *Northern Mexico:* Mexico – San Luis Potosi, Tamaulipas; *Southern Mexico:* Mexico – Hidalgo, Jalisco, Michoacan, Nayarit, Oaxaca, Puebla, Queretaro, Veracruz; SOUTHERN AMERICA – *Caribbean:* Trinidad and Tobago; *Central America:* Guatemala; *Brazil:* Brazil – Federal District, Goias, Mato Grosso, Minas Gerais, Parana, Rio Grande do Sul, Rio de Janeiro, Santa Catarina, Sao Paulo; *Western South America:* Bolivia, Ecuador, Peru; *Southern South America:* Argentina – Buenos Aires, Catamarca, Cordoba, Corrientes, Entre Rios, Formosa, Jujuy, La Rioja, Misiones, Salta, Tucuman; Chile; Paraguay; Uruguay.

Naturalized: AFRICA – *Macaronesia:* Portugal – Azores, Madeira Islands; Spain – Canary Islands; *Southern Africa:* Lesotho; South Africa; AUSTRALASIA – *Australia:* Australia; *New Zealand:* New Zealand; PACIFIC – *North-Central Pacific:* United States – Hawaii; SOUTHERN AMERICA – South America.

Cultivated: A glabrous form is most commonly cultivated.

Field Infestation:

Liquido et al. 1994:

Island of Hawaii, Hawaii, U.S.A.

From July 1990 to October 1992, 1,681 (2.48 kg) ripe tree or ground *S. pseudocapsicum* fruits were collected (through collections made once or twice a month) from several sites on Hawaii Island, Hawaii. Fruits were weighed, counted, split into groups of 5 or 10, and held over sand in plastic buckets at 19–24°C until pupation (2 weeks). *Bactrocera cucurbitae* larvae and pupae were recovered from infested *S. pseudocapsicum* fruits with an overall infestation rate of 0.00059 larvae and pupae per fruit (0.403 larvae and pupae/kg fruit).

Synonyms: *Solanum capsicastrum* Link ex Schauer, *Solanum diflorum* Vell., *Solanum jaliscanum* Greenm., *Solanum tucumanense* Griseb.

Solanum scalare C. H. Wright, see *Solanum anguivi* Lam.

Solanum sessiliflorum Dunal

Family: Solanaceae

Grin Nomen Number: 101401

Common Names: cocona (English), cubiu (Portuguese), Orinoco-apple (English), peach-tomato (English), tomate chauve souris (French), topiro (Spanish), topiro (Swedish).

Native: SOUTHERN AMERICA – *Northern South America:* Venezuela – Amazonas, Bolivar; *Brazil:* Brazil – Amazonas; *Western South America:* Colombia, Ecuador – Los Rios, Morona-Santiago, Napo, Sucumbios; Peru.

Field Infestation:

Nakagawa et al. 1967:

Hawaii, U.S.A.

Thirty-six (36) *S. sessiliflorum* fruits were picked in Hawaii from December 1966 to February 1967. Fifty-nine (59) adult *B. cucurbitae* (listed as *Dacus cucurbitae*) were recovered (along with 23 adult *B. dorsalis* (listed as *Dacus dorsalis*) and 49 *Fopius arisanus* (listed as *Opius oophilus*). Most of the infestations occurred in ground-picked fruits.

Synonyms: *Solanum topiro* Dunal

Solanum sodomeum L., see *Solanum anguivi* Lam.

Solanum spp.

Family: Solanaceae

Grin Genus Number: 300568

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Solanum* sp. fruits, originating in Hawaii, at an airport in Hawaii (Honolulu) on three occasions between 1989 and 2003. Average recovery was 10.0 live larvae.

Listing Only: Clausen et al. 1965 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*).

Synonyms: *Cyphomandra* spp.

Solanum spinosissimum auct., see *Solanum capsicoides* All.

Solanum sudanense Hammerstein, see *Solanum aethiopicum* L.

Solanum subsect. *lycopersicon* sp.

Family: Solanaceae

Grin Nomen Number: 457163

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Solanum* subsect. *lycopersicon* sp. fruits (listed as *Lycopersicon* sp.), originating in Hawaii, at an airport in Hawaii (Honolulu) on nine occasions between 1991 and 2006. Average recovery was 10.0 live larvae (range: 3–40). Also recovered were four live pupae on one occasion in 2005.

Synonyms: *Lycopersicon* spp.

Solanum topiro Dunal, see *Solanum sessiliflorum* Dunal

Solanum trilobatum L.

Family: Solanaceae

Grin Nomen Number: No listing in GRIN for this sp.; naming authority taken from The Plant List. This scientific name, however, is listed as an “unresolved name” by The Plant List.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 2 samples of *S. trilobatum*. Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Listing Only: CABI 2016 (listed as a wild host); Cantrell et al. 1999; De Meyer et al. 2014; Plant-wise Knowledge Bank 2015.

Solanum tuberosum L.

Family: Solanaceae

Grin Nomen Number: 103137

Common Names: potato (English).

Cultivated: AFRICA – *Macaronesia*: Spain – Canary Islands; ASIA-TROPICAL – *Indian Subcontinent*: India; NORTHERN AMERICA – Mexico; SOUTHERN AMERICA – *Central America*: Central America; *Northern South America*: Venezuela; *Western South America*: Bolivia, Colombia, Ecuador, Peru; *Southern South America*: Argentina, Chile; widely cultivated.

Lab Infestation:

+Finney 1951:

The author reported that *B. cucurbitae* adults (listed as *Dacus cucurbitae*) oviposit readily in punctured, raw *S. tuberosum* tubers (listed as Irish potatoes). It was noted, however, that “The typical quick-healing property of potatoes caused a ‘corking-over’ of the egg cavity, sealing out the very low percentage of hatching larvae.” No data were reported on any survival beyond initial egg hatch.

Chawla 1966:

In captivity, female *B. cucurbitae* adults (listed as *Dacus cucurbitae*) laid eggs on cut *S. tuberosum* tubers. The eggs hatched out and the development of the larvae proceeded normally through adult emergence.

Listing Only: USDA 1986 (listed as *Dacus cucurbitae*).

Synonyms: *Solanum ascasabii* Hawkes, *Solanum boyacense* Juz. and Bukasov, *Solanum choco* Bukasov and Lechn., nom. nud., *Solanum coeruleiflorum* Hawkes, *Solanum estradae* L. E. López, *Solanum leptostigma* Juz. ex Bukasov, nom. nud., *Solanum maglia* Schltld. var. *guaytecarum* Bitter, *Solanum molinae* Juz., *Solanum multijugum* Bukasov and Bavyko, *Solanum subandigenum* Hawkes, *Solanum tenuifilamentum* Juz. and Bukasov, *Solanum tuberosum* L. var. *guaytecarum* (Bitter) Hawkes, *Solanum yabari* Hawkes

Solanum tuberosum L. subsp. *tuberosum***Family:** Solanaceae**Grin Nomen Number:** 101293

Common Names: batata (Portuguese), gamja (transcribed Korean), Irish potato (English), jagaimo (Japanese Rōmaji), Kartoffel (German), kartofel' (transliterated Russian), papa (Spanish), pomme de terre (French), potatis (Swedish), potato (English), white potato (English), yang yu (transcribed Chinese), ziemniak (Polish).

Cultivated: Cultivated worldwide.**Lab Infestation:**

+Tanada 1950:

Mokuleia, Island of Oahu, Hawaii, U.S.A.

In November 1950, an exposed *Solanum tuberosum* subsp. *tuberosum* tuber (listed as Irish potato) was collected from a field in Mokuleia, Hawaii. The potato held 11 tephritid fruit fly eggs in a small cavity under the epidermis. “All eggs hatched in the tuber, but 6 maggots left in the potato died within a few days, after attempting to feed.” The other 5 maggots were held on *Carica papaya* fruit (listed as papaya) until adult emergence and were identified as *Bactrocera cucurbitae* (listed as *Dacus cucurbitae* Coquillett).

Solanum tucumanense Griseb., see *Solanum pseudocapsicum* L.*Solanum verbascifolium* L., see *Solanum donianum* Walp.*Solanum zuccagnianum* Dunal, see *Solanum aethiopicum* L.*Solena amplexicaulis* (Lam.) Gandhi**Family:** Cucurbitaceae**Grin Nomen Number:** 320248**Native:** ASIA-TROPICAL – Indian Subcontinent: India.

Listing Only: USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*).

Synonyms: *Bryonia amplexicaulis* Lam.*Solena heterophylla* Lour.**Family:** Cucurbitaceae**Grin Nomen Number:** 34913**Common Names:** mao gua (transcribed Chinese).

Native: ASIA-TEMPERATE – *Western Asia*: Afghanistan; *China*: China – Fujian, Guangdong, Guangxi, Guizhou, Jiangxi, Sichuan, Xizang, Yunnan; *Eastern Asia*: Taiwan; ASIA-TROPICAL – *Indian Subcontinent*: Bhutan, India, Nepal, Pakistan; *Indo-China*: Cambodia, Laos, Myanmar, Thailand, Vietnam; *Malesia*: Indonesia – Java, Malaysia, Malaya.

Listing Only: Chawla 1966 (listed as *Dacus cucurbitae*; listed as *Melothria heterophylla* Cogn.); Holbrook 1967 (listed as *Melothria heterophylla*); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Melothria heterophylla*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as *Melothria heterophylla* Cogn.); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as *Melothria heterophylla*); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *Melothria heterophylla*); Syed 1971 (listed as *Dacus cucurbitae*; listed as *Melothria heterophylla*); USDA 1986 (listed as *Dacus cucurbitae*; listed as *Melothria heterophylla*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Melothria heterophylla*; insufficient data to justify regulation).

Synonyms: *Melothria heterophylla* (Lour.) Cogn.

Sphagnum sp.

Family: Sphagnaceae

Grin Nomen Number: There is no listing in GRIN for this genus; taxonomy taken from The Plant List.

Interception Data:

+USDA 1939a:

Bactrocera cucurbitae pupae were recovered from sphagnum moss packing (*Sphagnum* sp.) with soil around palm trees which originated from a port in Hawaii and was intercepted at a port in California (in cargo) between 1 July 1936 to 30 June 1937 (number of individuals not reported). Pupae clearly came from other source, but was found with sphagnum moss included in the shipment. Taxonomic identification was done by entomologists of the Bureau of Entomology and Plant Quarantine, USDA.

Spondias cirouella Tussac, see *Spondias purpurea* L.

Spondias purpurea L.

Family: Anacardiaceae

Grin Nomen Number: 35337

Common Names: cirigüela (Portuguese-Brazil), ciruela (Portuguese-Brazil), ciruela española (Spanish), ciruela mexicana (Spanish), ciruelo (Spanish), hog-plum (English), imbu (Portuguese), imbuzeiro (Portuguese), jocote (Spanish-Mexico), mombin rouge (French), ovo (Spanish), prune d'Espagne (French), purple mombin (English), red mombin (English), röd mombinspondias (Swedish), rote Mombinpflaume (German), serigüela (Portuguese-Brazil), Spanish-plum (English).

Native: NORTHERN AMERICA – Mexico; SOUTHERN AMERICA – *Central America*: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama; *Western South America*: Ecuador.

Cultivated: in Neotropics.

Listing Only: Rejesus et al. 1991 (listed as *Dacus cucurbitae*; listed as *Spondias purpurea* L.).

Synonyms: *Spondias cirouella* Tussac

Spondias sp.

Family: Anacardiaceae

Grin Nomen Number: 312460

Interception Data:

PestID 2016:

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Spondias* sp. fruit(s), originating in Nigeria, at an airport in Texas (Houston) on one occasion in 2012. Recovery was one live larvae.

Strychnos gillettii De Wild., see *Strychnos spinosa* Lam.

Strychnos nux-vomica L.

Family: Loganiaceae

Grin Nomen Number: 35851

Common Names: ma qian zi (transcribed Chinese), nux-vomica (English), nux-vomica-tree (English), rävkaketräd (Swedish), strychninetree (English).

Native: ASIA-TROPICAL – *Indian Subcontinent:* India, Sri Lanka; *Indo-China:* Cambodia, Laos, Thailand, Vietnam; *Malesia:* Malaysia, Malaya.

Cultivated: also cultivated.

Field Infestation:

Tsuruta et al. 1997:

Sri Lanka

Adult *B. cucurbitae* were recovered from an unspecified number of *S. nux-vomica* fruits collected in Sri Lanka. An unspecified number of adults were recovered from fruits collected in the Kalpitiya and Udabaddava areas of Sri Lanka. No infestation rate data were given.

Listing Only: Ayyar 1935 (listed as *Chaetodacus cucurbitae*; it has been reared from “*Nux vomica* fruits in Malabar”); CABI 2016 (listed as a secondary host); De Meyer et al. 2014; Holbrook 1967; Oakley 1950 (listed as *Dacus cucurbitae*; listed as *S. nuxvomica*); Plantwise Knowledge Bank 2015; USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); White and Elson-Harris 1992 (authors state “requires confirmation”).

Strychnos spinosa Lam.

Family: Loganiaceae

Grin Nomen Number: 35855

Common Names: Kaffir-orange (English), monkey-orange (English), Natal-orange (English), spiny monkey ball (English).

Native: AFRICA – *East Tropical Africa:* Kenya, Tanzania, Uganda; *Northeast Tropical Africa:* Chad, Ethiopia, Somalia, Sudan; *South Tropical Africa:* Angola, Malawi, Mozambique, Zambia, Zimbabwe; *Southern Africa:* Botswana, Namibia, South Africa – Cape Province, KwaZulu-Natal, Transvaal; Swaziland; *West Tropical Africa:* Benin, Burkina Faso, Côte d’Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Mali, Niger, Nigeria, Senegal, Sierra Leone, Togo; *West-Central Tropical Africa:* Burundi, Cameroon, Central African Republic, Rwanda, Zaire; *Western Indian Ocean:* Comoros, Madagascar, Mauritius.

Cultivated: also cultivated.

Field Infestation:

Badii et al. 2015:

Northern Ghana

Ninety-six (96) *Strychnos spinosa* fruits (24.0 kg) were collected from Northern, Upper West and Upper East regions of Ghana. Fruits were brought to a laboratory in Nyankpala, Ghana, and held over a layer of sterilized sand. Pupae recovered from the sand were held on moistened filter paper in Petri plates until adult emergence. Adults were killed and identified after being fed for 3 days. Taxonomic keys were used for species identification, with final species confirmation provided by Dr. Maxwell Billah. *Bactrocera cucurbitae* was recovered from *S. spinosa* fruits in 20 of 24 collections (83.3%): 4.375 puparia per fruit, 17.5 puparia per kg fruit, 3.583 adults per fruit, and 15.8 adults per kg fruit.

Synonyms: *Strychnos gillettii* De Wild., *Strychnos tonga* Gilg.

Strychnos tonga Gilg., see *Strychnos spinosa* Lam.

Swartziaceae Bartl., see *Fabaceae* Lindl., nom. cons.

Sycos pachycarpus, see *Sicyos pachycarpus* Hook. and Arn.

Sycos sp., see *Sicyos* sp.

Syzygium aqueum (Burm. f.) Alston

Family: Myrtaceae

Grin Nomen Number: 50068

Common Names: bellfruit (English), jambo ayer (French), jambu air (Malay), machomphu-pa (transcribed Thai), perita costeña (Spanish), tambis (Spanish), vattenäpple (Swedish), Wasserjambuse (German), water-apple (English), watery rose-apple (English).

Native: ASIA-TROPICAL – *Indian Subcontinent:* Bangladesh, Sri Lanka; *Indo-China:* Myanmar, Thailand; *Malesia:* Indonesia, Malaysia, Papua New Guinea; AUSTRALASIA – *Australia:* Australia – Queensland.

Cultivated: ASIA-TEMPERATE – *China:* China; ASIA-TROPICAL – *Indian Subcontinent:* India; *Indo-China:* Thailand; *Malesia:* Indonesia – Java, Singapore.

Listing Only: +Kapoor 2005–2006 (listed as watery rose-apple); Rajamannar 1962 (listed as *Dacus cucurbitae*; listed as *Eugenia aquea*); Vijaysegaran 1991 (listed as *Dacus cucurbitae*; listed as both *Eugenia agueva* Burm. and as *E. aguea* Burm.); White and Elson-Harris 1992 (authors state “requires confirmation”); +Yong 1992 (listed as *Dacus cucurbitae*; listed as water apple); Yunus and Hua 1980 (listed as *Dacus cucurbitae*; listed as *Eugenia aquea* Burm.).

Synonyms: *Eugenia aquea* Burm. f.

Syzygium jambos (L.) Alston

Family: Myrtaceae

Grin Nomen Number: 50070

Common Names: jamboes (Afrikaans), jambos (English), jambosier (French), Malabar-plum (English), manzana rosa (Spanish), pomarroza (Spanish), pomme rose (French), rose-apple (English), Rosenapfelbaum (German), rosenäpple (Swedish), yambo (Spanish).

Naturalized: AFRICA – *Western Indian Ocean:* Mauritius, Réunion, Seychelles; NORTHERN AMERICA – Mexico, United States; PACIFIC – *North-Central Pacific:* United States – Hawaii; SOUTHERN AMERICA – *Caribbean:* West Indies; *Central America:* Central America; *Western South America:* Ecuador – Galapagos Islands; South America.

Cultivated: Cultivated in tropics.

Origin: probable origin Malesia.

Listing Only: Holbrook 1967 (listed as a “non-host or host of undetermined status”); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Eugenia jambos*; insufficient data to justify regulation).

Synonyms: *Eugenia jambos* L.

Syzygium malaccense (L.) Merr. and L. M. Perry

Family: Myrtaceae

Grin Nomen Number: 70774

Common Names: jamboissier rouge (French), jambu bol (Indonesian), jambu bol (Malay), mala-jäpple (Swedish), Malakka-Apfel (German), Malay-apple (English), Malayapfel (German), manzana de agua (Spanish), mountain-apple (English), Otaheite-apple (English), pink satin-ash (English), poirier de Malaque (French), pomarroza de Malaca (Spanish), pomerac (English), pomme malac (French), rose-apple (English).

Native: ASIA-TROPICAL – *Malesia:* Indonesia – Java, Sumatra; Malaysia, Malaya.

Naturalized: Naturalized elsewhere in tropics.

Cultivated: Cultivated elsewhere in tropics.

Listing Only: Meksongsee et al. 1991 (listed as *Dacus cucurbitae*; listed as *Eugenia malaccensis* L.).

Synonyms: *Caryophyllus malaccensis* (L.) Stokes, *Eugenia malaccensis* L.

Syzygium samarangense (Blume) Merr. and L. M. Perry

Family: Myrtaceae

Grin Nomen Number: 312990

Common Names: cajuil de Surinam (Spanish), Java-Apfel (German), Java-apple (English), ja-vaäpple (Swedish), makopa (Spanish), Semarang rose-apple (English), wax jambu (English).

Native: ASIA-TROPICAL – *Indo-China*: Myanmar, Thailand; *Malesia*: Indonesia, Malaysia, Papua New Guinea, Philippines; PACIFIC – *Southwestern Pacific*: Solomon Islands.

Cultivated: Cultivated elsewhere in tropics.

Field Infestation:

Clausen et al. 1965:

Sabah, Malaysia (referred to as North Borneo; place names listed are in present day Sabah, Malaysia)

From collections of *S. samarangense* (listed as *Eugenia javanica*) in May 1951 in Sabah, Malaysia (referred to as North Borneo), 1,000 puparia, a mix of two predominant species: *Bactrocera cucurbitae* (listed as *Dacus cucurbitae* Coq.) and *B. dorsalis* (listed as *Dacus dorsalis* Hendel) (ratio not stated), were recovered. *Bactrocera cucurbitae* recovery was in smaller numbers than had been recovered from cucurbitaceous hosts.

Listing Only: Botha et al. 2004 (listed as a secondary host); CABI 2016; Cantrell et al. 1999; Hollingsworth et al. 1996; Plantwise Knowledge Bank 2015; USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); White and Elson-Harris 1992.

Synonyms: *Eugenia javanica* Lam., *Myrtus samarangensis* Blume

Tacsonia spp., see *Passiflora* spp.

Telfairia occidentalis Hook. f.

Family: Cucurbitaceae

Grin Nomen Number: 80125

Common Names: fluted gourd (English), fluted-pumpkin (English), oysternut (English).

Native: AFRICA – *East Tropical Africa*: Uganda; *South Tropical Africa*: Angola; *West Tropical Africa*: Ghana, Nigeria, Sierra Leone.

Field Infestation:

Vayssières et al. 2007:

Côte d'Ivoire, West Africa

Tephritid fruit fly-infested *Telfairia occidentalis* fruits were collected from untreated orchards in West Africa. Fruits were placed on mesh supports over sand. Tephritid fruit fly pupae, recovered through weekly sieving of the sand, were transferred to small hatching boxes lined with wet blotting paper and held for adult emergence. The average *B. cucurbitae* infestation level in *T. occidentalis* fruits in West Africa fell in the range of 1–25 pupae/kg fruit.

Listing Only: De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*).

Terminalia catappa L.

Family: Combretaceae

Grin Nomen Number: 36334

Common Names: almendro de la India (Spanish), amendoeira (Portuguese-Brazil), amendoeira-da-Índia (Portuguese), badam (India), badamier (French), chapéu-de-sol (Portuguese-Brazil), country-almond (English), Indian-almond (English), indischer Mandelbaum (German), Katappenbaum (German), Malabar-almond (English), sea-almond (English), tropical-almond (English), tropisk mandel (Swedish).

Native: AFRICA – *Western Indian Ocean*: Madagascar; ASIA-TEMPERATE – *China*: China – Guangdong, Yunnan; *Eastern Asia*: Taiwan; ASIA-TROPICAL – *Indian Subcontinent*: India; *Indo-China*: Cambodia, Myanmar, Vietnam; *Malesia*: Indonesia, Malaysia, Papua New Guinea, Philippines; AUSTRALASIA – *Australia*: Australia – Northern Territory, Queensland; PACIFIC – *Southwestern Pacific*: Fiji, New Caledonia, Solomon Islands, Vanuatu.

Naturalized: Widely naturalized in tropics.

Cultivated: Widely cultivated in tropics.

Field Infestation:

Harris et al. 2003:

Kalaupapa Peninsula, Island of Molokai, Hawaii, U.S.A.

During 1991 to 1992, 209 *T. catappa* fruits (4.36 kg) were collected from the Kalaupapa peninsula and placed on sand in fruit holding boxes. The sand was screened weekly for recovery of tephritid fruit fly puparia. Recovered puparia were placed in glass jars and held until adult emergence. Two (2) adult *B. cucurbitae* were recovered, for an infestation rate of 0.0096 melon flies per fruit (0.46 melon flies/kg fruit).

Somta et al. 2010:

Nakhon Pathom, Thailand

A plastic mat was placed under a *T. catappa* tree in Nakhon Pathom, Thailand and all immature (green) and ripe/mature (yellow) *T. catappa* fruits that fell overnight were collected from the mat the following morning. This was repeated about every 3 weeks from December 2007 to December 2008. Fruits were placed on top of a mesh on top of heat sterilized sand. The sand was sieved weekly for 4 weeks with recovered pupariating larvae and pupae transferred to plastic cups and stored in air-conditioned rooms until adult emergence. Out of 318 green fruits and 1,667 yellow fruits collected, no *B. cucurbitae* pupae were recovered from green fruits and only 1 *B. cucurbitae* pupa was recovered from yellow fruits. The 1 pupa recovered came from 135 yellow fruits collected on 28 November 2008. The *B. cucurbitae* recovery amounted to only 0.013% of the total *Bactrocera* spp. pupae recovered over all collections.

Listing Only: Cantrell et al. 1999; USDA 1986 (listed as *Dacus cucurbitae*).

Synonyms: *Phytolacca javanica* Osbeck

Tetrastigma lanceolarium Planch., see *Tetrastigma leucostaphylum* (Dennst.) Alston ex Mabb.

Tetrastigma leucostaphylum (Dennst.) Alston ex Mabb.

Family: Vitaceae

Grin Nomen Number: 313885

Native: ASIA-TROPICAL – *Indian Subcontinent:* Bangladesh, Bhutan, India-Andhra Pradesh, Assam, Karnataka, Kerala, Meghalaya, Orissa, Tamil Nadu; Nepal, Sri Lanka; *Indo-China:* Cambodia, Laos, Myanmar, Thailand, Vietnam; *Malesia:* Indonesia – Java, Malaysia, Malaya.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 2 samples of *Tetrastigma leucostaphylum* (listed as *Tetrastigma lanceolarium*). Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Listing Only: CABI 2016 (listed as *Tetrastigma lanceolarium*; listed as a wild host); Cantrell et al. 1999 (listed as *Tetrastigma lanceolarium*); De Meyer et al. 2014 (listed as *Tetrastigma lanceolarium*); Plantwise Knowledge Bank 2015 (listed as *Tetrastigma lanceolarium*).

Synonyms: *Cissus lanceolaria* Roxb., *Cissus leucostaphyla* Dennst., *Tetrastigma lanceolarium* Planch.

Toxanthera Hook. f., see *Kedrostis* Medik.

Toxanthera natalensis Hook. f., see *Kedrostis leloja* (Forssk.) C. Jeffrey

Trichosanthes anguina L., see *Trichosanthes cucumerina* L. var. *anguina* (L.) Haines

Trichosanthes bracteata (Lam.) Voigt, see *Trichosanthes tricuspida* Lour.

Trichosanthes cucumerina L.

Family: Cucurbitaceae

Grin Nomen Number: 40106

Common Names: annual gourd (English), snake gourd (English).

Native: ASIA-TEMPERATE – *China:* China– Yunnan; ASIA-TROPICAL – *Indian Subcontinent:* Bangladesh, India, Nepal, Pakistan, Sri Lanka; *Indo-China:* Myanmar, Vietnam; *Malesia:* Indonesia,

Malaysia, Philippines; AUSTRALASIA – *Australia*: Australia – Northern Territory, Queensland, Western Australia.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from six samples of *T. cucumerina*. Infestation rate data not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Amin et al. 2011:

Dinajpur, Bangladesh

From April through July 2009, *T. cucumerina* was grown in a randomized complete design with four other cucurbit species (four replicates) at the Entomology Farm Laboratory, Hajee Mohammad Danesh Science and Technology University, Dinajpur, Bangladesh. Fruits were observed for infestation by *B. cucurbitae*, and harvested at maturity stage. An average of about 35% of *T. cucumerina* fruits were infested by *B. cucurbitae*. Adult *B. cucurbitae* were also recovered from field-infested *T. cucumerina* fruits brought to the laboratory.

Chinajariyawong et al. 2000:

Thailand

Bactrocera cucurbitae was reared from one sample of *T. cucumerina* collected in Thailand. No infestation rate data given.

Hollingsworth et al. 2003:

Solomon Islands

From June 1994 to June 1998, both fallen and picked *T. cucumerina* fruits were collected from up to seven provinces of the Solomon Islands (Central, Choiseul, Guadalcanal, Isabel, Malaita, Temotu, Western). *Bactrocera cucurbitae* was recovered from 1 of 3 fallen samples (33.3%) and 2 of 26 picked samples (7.7%). Ninety-six (96) *B. cucurbitae* flies were recovered from 12 fallen fruits (4.85 kg) for overall infestation rates of 8.0 flies per fruit and 19.8 flies/kg fruit. Sixty-four (64) *B. cucurbitae* flies were recovered from 174 picked fruits (50.698 kg) for overall infestation rates of 0.37 flies per fruit and 1.26 flies/kg fruit.

Leblanc et al. 2012:

Solomon Islands

Trichosanthes cucumerina fruits were collected from 1994 to 1999 in the Solomon Islands and held in plastic containers over finely sieved sawdust that had been sterilized in an oven or frozen overnight to kill mites. The sawdust was sieved to recover tephritid fruit fly puparia. Puparia were kept in moist sawdust until adult emergence. Adults were fed for 5 days, then killed by freezing to allow colors and markings, necessary for correct species identification, to fully develop. *Bactrocera cucurbitae* was recovered in 6 of 47 (12.8%) samples in the Solomon Islands.

Leblanc et al. 2013a:

Solomon Islands

Trichosanthes cucumerina fruits (335 fruits; 63.72 kg) were collected from 1994 to 1999 in the Solomon Islands and held in plastic containers over finely sieved sawdust that had been sterilized in an oven or frozen overnight to kill mites. The sawdust was sieved to recover tephritid fruit fly puparia. Puparia were kept in moist sawdust until adult emergence. Adults were fed for 5 days, then killed by freezing to allow colors and markings, necessary for correct species identification, to fully develop. *Bactrocera cucurbitae* was recovered in 6 of 47 (12.8%) samples in the Solomon Islands with an overall infestation rate of 0.83 flies/kg fruit and 7.16 flies/kg infested fruit.

Stonehouse et al. 2007:

Thiruvananthapuram, State of Kerala, India

In a study comparing the effectiveness of protein bait spray applications for control of tephritid fruit fly infestation in *T. cucumerina* fruits at the farm level versus the village level (defined to be 1.0 km²) in Thiruvananthapuram, India, between 3 and 12 harvests of *T. cucumerina* fruits were made in each of two years at farms with varying extent of bait spray application. Percentage infestation was determined based either on visual examination of fruit to detect oviposition or by rearing out adult flies in the laboratory. On two farms in Thiruvananthapuram where no bait spray was applied,

an average of 32.4% of the fruits was infested. Infestation was primarily by *B. cucurbitae*, but accompanied in some cases by a minority of other species.

Tsuruta et al. 1997:

Sri Lanka

At least 66 *B. cucurbitae* adults were recovered from *T. cucumerina* fruits collected in Sri Lanka. *Bactrocera cucurbitae* adults were recovered from an unspecified number of fruits collected from Marassana (7), Pelwehera (10), Nalanda (9), Tabbowa (14), Ambana (7), Katunayake (19), Thoduwawa (number not indicated), and Eraminigolla (number not indicated). No infestation rate data were given.

Vayssières and Carel 1999:

Réunion Island, France

Trichosanthes cucumerina fruits of a local variety were collected over the course of a year from up to 70 localities on Réunion Island. Fruits with evidence of fruit fly infestation were held in individual containers, with recovered pupae held for adult emergence. *Bactrocera cucurbitae* recovery averaged 77.6 (standard deviation = 37.7) adults per kg infested fruit.

Interception Data:

Takeishi 1992:

Thailand

One *B. cucurbitae*-infested (listed as *Dacus cucurbitae*) *T. cucumerina* fruit was collected from an airline passenger at Narita Airport, Japan, who had arrived on a flight originating in Thailand. At the time of confiscation, the larvae-infested fruit was held in an individual container with sand at 20–28°C until adult emergence.

Lab Infestation:

Akter et al. 2010:

In a laboratory host preference study conducted in Bangladesh during 2005 to 2006, 250 g *Trichosanthes cucumerina*, along with 250 g of each of five other vegetables (*Cucumis sativus*, *Cucurbita maxima*, *Momordica charantia*, *Solanum melongena*, and *S. lycopersicum* var. *lycopersicum*), were simultaneously exposed to one hundred (100) 15–20-day-old gravid female *B. cucurbitae* flies for 3 hours, then placed over saw dust. The saw dust was sieved to recover pupae which were transferred to Petri dishes and held until adult emergence. The trial was replicated five times. Recovery of *B. cucurbitae* pupae and adults averaged 312±62.51 pupae and 292±64.35, respectively (1,248 and 1,168 per kg fruit, respectively). The order of adult recovery (greatest to smallest) was: *S. melongena* > *T. cucumerina* > *C. maxima* > *C. sativus* > *M. charantia* > *S. lycopersicum*.

Amin et al. 2011:

Bactrocera cucurbitae larvae and *B. cucurbitae*-infested *T. cucumerina* fruits were collected from a field at the Entomology Farm Laboratory, Hajee Mohammad Danesh Science and Technology University, in Dinajpur, Bangladesh and held in jars in a laboratory at 25±2°C, 60±5% RH and a 12:12 (L:D) h photoperiod. Adult male and female *B. cucurbitae* that emerged were kept in the same jar and provided fresh *T. cucumerina* fruit for oviposition. Larvae, pupae and adults that emerged from these stock cultures were used for observation of *B. cucurbitae* life history parameters.

Saha et al. 2007:

The relative quality of seven different *B. cucurbitae* fruit hosts was assessed by comparing pupal recovery (in F₁ and F₂ generations) following exposure of 500 g of each fruit to 200 gravid *B. cucurbitae* adults (from laboratory-adapted stock culture) for 30 minutes. For *T. cucumerina*, 235 and 305 pupae (470 and 610 pupae/kg fruit) and 174 and 221 adults (348 and 441 adults per kg fruit) were recovered in the F₁ and F₂ generations, respectively.

Listing Only: +Agrawal and Mathur 1991 (listed as *Dacus cucurbitae*; listed as wild snake gourd); CABI 2016; Cantrell et al. 1999; De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Dhillon et al. 2005a (listed as both *Trichosanthes cucumeria* and as *T. cucumerina*); EcoPort 2008; Government of Western Australia Department of Agriculture and Food 2015; Holbrook 1967; +Hollingsworth et al. 1996 (listed as snake gourd); Hollingsworth and Allwood 2000; Kapoor 1970 (listed as *Dacus cucurbitae*); Kapoor 1991 (listed as *Dacus cucurbitae*); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*; listed as *Trichosantes cucumerina*); Leblanc 2000; Leblanc et al. 2013b; McBride and Tanada 1949 (listed as *Dacus cucurbitae*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Nishida 1963 (listed as *Dacus cucurbitae*; listed as both cheechera and as *T. cucumerina*); Oakley

1950 (listed as *Dacus cucurbitae*); Pacific Fruit Fly Web 2002; +Phillips 1946 (listed as snake gourd); Plantwise Knowledge Bank 2015; Quilici and Jeuffrault 2001 (listed as being a very favorable host); +Renjhen 1949 (listed as *Dacus cucurbitae*; listed as snake-gourd); Sookar and Khayratee 2000; Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation); Vagalo et al. 1997; +Walker 2005 (listed as snake gourd); Walton 1986 (listed as *Dacus cucurbitae*); White and Elson-Harris 1992; +Yong 1992 (listed as *Dacus cucurbitae*; listed as snake gourd).

Trichosanthes cucumerina L. var. *anguina* (L.) Haines

Family: Cucurbitaceae

Grin Nomen Number: 310205

Common Names: club gourd (English), serpent-cucumber (English), serpent gourd (English), snake gourd (English), viper's gourd (English).

Cultivated: Only cultivated.

Field Infestation:

Clarke et al. 2001:

Thailand

One hundred sixty-seven (167) (12.5 kg) infested *T. cucumerina* var. *anguina* fruits (listed as *T. anguina*) were collected in Bangkok, Thailand from 1986 to 1994. Infestation rates of 21.2 *B. cucurbitae* per infested fruit and 284.2 *B. cucurbitae* per kg infested fruit were observed. *Bactrocera cucurbitae* individuals were identified by either R.A.I. Drew or D. L. Hancock.

Clausen et al. 1965:

Sri Lanka (referred to as Ceylon)

Bactrocera cucurbitae puparia (listed as *Dacus cucurbitae*) recovered from *T. cucumerina* var. *anguina* collections (listed as *Trichosanthes anguina*) in Sri Lanka were shipped to Hawaii during August and September 1951.

Nagappan et al. 1971:

Coimbatore, State of Tamil Nadu, India

To test the effectiveness of different insecticides in reducing infestation of an extra long snakegourd variety (*Trichosanthes cucumerina* var. *anguina* [listed as *Trichsanthes anguina*]) by *B. cucurbitae* (listed as *Dacus cucurbitae*), randomized treatments with four replicates were set up in Coimbatore and replicated in each of three seasons from 1967 to 1969. At each harvest, healthy fruits were separated from those infested by *B. cucurbitae* and percentage infestation calculated. Percentage infestation of snakegourd by *B. cucurbitae* in the Control treatment averaged 41.39% (averaged over all three field seasons).

Nath and Bhushan 2006:

Varanasi, State of Uttar Pradesh, India

Trichosanthes cucumerina var. *anguina* (listed as *Trichosanthes anguina*) was sown, with three replications, in Varanasi, India, the last week of March (summer season) and again the last week of June (rainy season) in both 2001 and 2002. Percentage infestation by *B. cucurbitae* averaged 7.3% (range: 6.0–8.6%) in the summer season and 25.7% (range: 25.3–26.1%) in the rainy season.

Srinivasan and Narayanaswamy 1962:

Coimbatore, State of Tamil Nadu, India

In an insecticide efficacy treatment experiment, *T. cucumerina* var. *anguina* plants (listed as *Trichosanthes anguina*) were grown 4 plants per trellis, with each trellis used for a different treatment. Forty-two (42) mature *T. anguina* fruits (6.99 kg) were collected from untreated control plants and assessed for infestation by *B. cucurbitae* (listed as *Dacus cucurbitae*). Fifteen (15) *T. anguina* fruits (35.7%) were infested by *B. cucurbitae*.

Lab Infestation:

Chelliah 1970:

Bactrocera cucurbitae (listed as *Dacus cucurbitae*) was successfully reared from egg to adult emergence in the laboratory on fruits of *T. cucumerina* var. *anguina* (listed as *Trichosanthes*

anguina). Larval survival, based on 200 individuals reared in 20 replications, averaged 91.92%, with an average larval duration of 4.67 days.

Listing Only: Botha et al. 2004 (listed as variety *anguinea*; listed as a primary host); CABI 2016 (listed as *Trichosanthes cucumerina* var. *anguinea*; listed as a primary host); California Department of Food and Agriculture 2001 (listed as *Trichosanthes anguina*); Dhillon et al. 2005a (listed as *Trichosanthes anguina*); Doharey 1983 (listed as *Trichosanthes anguina*); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Trichosanthes anguina*); Kapoor 1991 (listed as *Dacus cucurbitae*; listed as *Trichosanthes anguina* L.); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*; listed as *Trichosantes anguina*); Mamet and Williams 1993 (listed as *Dacus cucurbitae*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as *T. anguina* L.; listed as frequently injured); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as *Trichosanthes anguina* L.); Nishida 1963 (listed as *Dacus cucurbitae*; listed both as chachenda and as *T. anguina* L.); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *T. anguina*); Orian and Moutia 1960 (listed as *Dacus cucurbitae*; listed as *T. anguina* L.); Plantwise Knowledge Bank 2015; Pradhan 1977 (listed as *Dacus cucurbitae*; listed as *Trichosanthes anguina* L.); Puttarudriah and Usman 1954 (listed as *Dacus cucurbitae*; listed as *T. anguina*); Ramsamy 1989 (listed as *Dacus cucurbitae*; listed as *T. anguina* L.); Syed 1971 (listed as *Dacus cucurbitae*; listed as *Trichosanthes anguina*); USDA 1986 (listed as *Dacus cucurbitae*; listed as *Trichosanthes anguina*); USDA-APHIS 2000 (listed as *Trichosanthes anguina*); USDA-APHIS 2008 (listed as *Trichosanthes anguina*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*; listed as *Trichosanthes anguina*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Trichosanthes anguina*; insufficient data to justify regulation); Vijaysegaran 1991 (listed as *Dacus cucurbitae*; listed as *Trichosanthes anguina* L.); Yunus and Hua 1980 (listed as *Dacus cucurbitae*; listed as *Trichosanthes anguina* L.).

Synonyms: *Trichosanthes anguina* L.

Trichosanthes cucumeroides (Ser.) Maxim., see *Trichosanthes pilosa* Lour.

Trichosanthes dioica Roxb.

Family: Cucurbitaceae

Grin Nomen Number: 314328

Common Names: palwal (India), parwal (India), pointed gourd (English).

Native: ASIA-TROPICAL – *Indian Subcontinent:* Bangladesh, India, Nepal, Pakistan – Punjab; Sri Lanka; *Indo-China:* Myanmar.

Field Infestation:

Barma et al. 2013:

State of West Bengal, India

In order to develop an equation that could be used to predict *B. cucurbitae* infestation in *T. dioica* fruits, *T. dioica* fruits were raised at the Central Research Farm, Bidhan Chandra Krishi Viswavidyalaya, Gayeshpur, Nadia, West Bengal, India, over 3 years (2008–2010), and the percentage infestation and number of maggots per infested fruit recorded. *Bactrocera cucurbitae* infestation was found on *T. dioica* fruits from mid-April (not until early May in 2010) to mid-September, with the average number of *B. cucurbitae* larvae per fruit ranging from 0.0 to a maximum of 7.09 larvae per fruit in 2008. Maximum average infestation rate approached, but never reached 4.0 in 2009.

Bhowmik et al. 2014:

Nadia District, State of West Bengal, India

Trichosanthes dioica plants were grown, without pesticide application, at three sites in the Nadia District of West Bengal, India. Percentage infestation of *T. dioica* fruits by *B. cucurbitae* was determined every 2 weeks, by observation, in 2012 (April–June) and in 2013 (March–May) (nine sampling times each year). Infestation averaged 38.8% (range: 32.9–51.7%) and 39.1% (range: 23.8–58.9%) in 2012 and 2013, respectively.

Ghule and Jha 2014:

Kalyani, Nadia, State of West Bengal, India

In a study to assess the effect of weather parameters on the infestation of *Trichosanthes dioica* fruits by *B. cucurbitae*, *T. dioica*, local variety ‘Kajli,’ was planted in Kalyani, West Bengal during the 2010 to 2011 and 2011 to 2012 growing seasons. At 7-day intervals, the percentage of infested

fruits was determined and the number of larvae counted in each infested fruit. During the 2010 to 2011 growing season, maximum larval density (15.1 larvae/fruit) was recorded during the first week of May (2011) and maximum percentage infestation (68.9%) was recorded during the third week of May (2011). During the 2011 to 2012 growing season, maximum larval density (16.9 larvae/fruit) was recorded during the third week of May (2012) and maximum percentage infestation (59.1%) was recorded during the last week of May (2012).

Lab Infestation:

Agarwal and Yazdani 1991:

One hundred (100) eggs, collected from adult *B. cucurbitae* flies (listed as *Dacus cucurbitae*) which emerged from field-infested *Luffa aegyptiaca* Mill. fruits (listed as *Luffa cylindrica*), were inserted in a triangular cut in a *Trichosanthes dioica* fruit (four replications) and held at 29.85±8.33°C and 61.72±22.05% RH. An average of 82% survived from larval stage to adult emergence.

Khan et al. 2011:

In a choice test, 50.0 g of *T. dioica* fruits, along with 50.0 g of each of eight other natural hosts, were exposed for 20 minutes to 50 pairs of 15–20-day-old *B. cucurbitae* and 50 pairs of 15–20-day-old *B. tau* inside a small cage, after which fruit samples were removed and placed separately on sawdust inside a cloth-covered plastic bowl for pupation. The sawdust was sieved after 6 to 8 days to recover pupae (of both fly species) which were held for adult emergence. Out of a mean infestation of 92±4.63 pupae recovered (mixed infestation of *B. cucurbitae* and *B. tau*), 75.0% (69.0) of the recovered pupae emerged as adult *B. cucurbitae*.

In a no-choice test, 50.0 g of *T. dioica* fruits, as well as 50.0 g of each of eight other natural hosts, were exposed for 20 minutes to 5 pairs of 15–20-day-old *B. cucurbitae* and 5 pairs of 15–20-day-old *B. tau* inside separate small cages, after which fruit samples were removed and placed separately on sawdust inside a cloth-covered plastic bowl for pupation. The sawdust was sieved after 6 to 8 days to recover pupae (of both fly species) which were held for adult emergence. Out of a mean infestation of 74±0.02 pupae recovered (mixed infestation of *B. cucurbitae* and *B. tau*), 85.13% (63.0) of the recovered pupae emerged as adult *B. cucurbitae*.

Listing Only: California Department of Food and Agriculture 2001; Cantrell et al. 1999; Dhillon et al. 2005a; Kapoor 1970 (listed as *Dacus cucurbitae*); Kapoor 1991 (listed as *Dacus cucurbitae*); Kapoor and Agarwal 1983 (listed as *Dacus cucurbitae*; listed as *Trichosantes dioica*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*); Nishida 1963 (listed as *Dacus cucurbitae*; listed as both parwal and as *T. dioica* Roxb.); Oakley 1950 (listed as *Dacus cucurbitae*); Pradhan 1977 (listed as *Dacus cucurbitae*); Syed 1971 (listed as *Dacus cucurbitae*); USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); White and Elson-Harris 1992 (authors state “requires confirmation”).

Trichosanthes himalensis C. B. Clarke, see *Trichosanthes pilosa* Lour.

Trichosanthes ovigera Blume, see *Trichosanthes pilosa* Lour.

Trichosanthes palmata Roxb., see *Trichosanthes tricuspидata* Lour.

Trichosanthes pilosa Lour.

Family: Cucurbitaceae

Grin Nomen Number: 470289

Common Names: snake gourd (English).

Native: ASIA-TEMPERATE – *China:* China – Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Sichuan, Xizang, Yunnan, Zhejiang; *Eastern Asia:* Japan – Honshu, Kyushu, Ryukyu Islands, Shikoku; Taiwan; ASIA-TROPICAL – *Indian Subcontinent:* Bangladesh, India, Nepal; *Indo-China:* Myanmar, Thailand, Vietnam; *Malesia:* Indonesia – Celebes, Irian Jaya, Java, Kalimantan, Lesser Sunda Islands, Moluccas, Sumatra; Malaysia; Papua New Guinea; Philippines – Luzon, Mindano; Singapore; AUSTRALASIA – *Australia:* Australia – Northern Territory, Queensland, Western Australia; PACIFIC – Southwestern Pacific: Solomon Islands.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 1 sample of *T. pilosa* (listed as *Trichosanthes ovigera*). *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Clarke et al. 2001:

Thailand

Fifty-five (55) (4.53 kg) infested *T. pilosa* fruits (listed as *Trichosanthes ovigera*) were collected in Chiang Mai, Thailand from 1986 to 1994. Infestation rates of 3.6 *B. cucurbitae* per infested fruit and 44.4 *B. cucurbitae* per kg infested fruits were observed. *Bactrocera cucurbitae* individuals were identified by either R.A.I. Drew or D.L. Hancock.

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 18,626 *T. pilosa* fruits (listed as *T. ovigera*) were collected (154 collections overall) from five islands/island groups (Amami, Kume, Miyako, Okinawa, Yaeyama) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 2,739 fruits, giving an average percentage infestation rate (weighted by the number of collections in the islands/island groups) of 17.7%.

Listing Only: CABI 2016 (listed as *Trichosanthes ovigera*; listed as a wild host); California Department of Food and Agriculture 2001 (listed as *Trichosanthes cucumeroides*); Cantrell et al. 1999 (listed as *Trichosanthes ovigera*); De Meyer et al. 2014 (listed as *Trichosanthes ovigera*); Holbrook 1967 (listed as *Trichosanthes cucumeroides*); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Trichosanthes cucumeroides*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as *Trichosanthes cucumeroides*); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as *Trichosanthes cucumeroides*); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *Trichosanthes cucumeroides*); Plantwise Knowledge Bank 2015 (listed as *Trichosanthes ovigera*); Syed 1971 (listed as *Dacus cucurbitae*; listed as *Trichosanthes cucumeroides*); USDA 1986 (listed as *Dacus cucurbitae*; listed as *Trichosanthes cucumeroides*); USDA-APHIS 2000 (listed as *Trichosanthes cucumeroides*); USDA-APHIS 2008 (listed as *Trichosanthes cucumeroides*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*; listed as *Trichosanthes cucumeroides*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Trichosanthes cucumeroides*); insufficient data to justify regulation).

Synonyms: *Bryonia cucumeroides* Ser., *Trichosanthes cucumeroides* (Ser.) Maxim., *Trichosanthes himalensis* C. B. Clarke, *Trichosanthes ovigera* Blume

Trichosanthes spp.

Family: Cucurbitaceae

Grin Nomen Number: 300609

Listing Only: California Department of Food and Agriculture 2001; Chawla 1966 (listed as *Dacus cucurbitae*); Nath et al. 1976; USDA-APHIS 2000 (listed as *Trichosanthis* spp.); USDA-APHIS 2008 (listed as *Trichosanthis* spp.).

Trichosanthes tricuspidata Lour.

Family: Cucurbitaceae

Grin Nomen Number: 319706

Native: ASIA-TEMPERATE – China: China – Guizhou; ASIA-TROPICAL – Indian Subcontinent: Bangladesh, India, Nepal, Sri Lanka; *Indo-China*: Cambodia, Laos, Myanmar, Thailand, Vietnam; *Malesia*: Indonesia – Java, Lesser Sunda Islands, Moluccas, Sumatra, Malaysia, Malaya, Philippines.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 7 samples of *T. tricuspidata*. Infestation rate data not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Kittayapong et al. 2000:

Thailand

Trichosanthes tricuspidata flowers were collected throughout Thailand within the time period of October 1995 through December 1998. Collections were placed over sawdust in a ventilated plastic container and brought back to the laboratory at Mahidol University in Bangkok. Both *B. cucurbitae* and *B. tau* were recovered from *T. tricuspidata* flowers. Total number of flowers collected and infestation rate data were not given.

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 469 *T. tricuspidata* fruits were collected (26 collections overall) from three islands/island groups (Amami, Kume, Yaeyama) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 13 fruits, giving an average percentage infestation rate (weighted by the number of collections in the islands/island groups) of 1.87%.

Listing Only: CABI 2016 (listed as a wild host); Cantrell et al. 1999; De Meyer et al. 2014; Plant-wise Knowledge Bank 2015; Vijaysegaran 1991 (listed as *Dacus cucurbitae*; listed as *Trichosanthes palmata*); Yunus and Hua 1980 (listed as *Dacus cucurbitae*; listed as *Trichosanthes palmata*).

Synonyms: *Modecca bracteata* Lam., *Trichosanthes bracteata* (Lam.) Voigt, *Trichosanthes palmata* Roxb.

Trichosanthes wallichiana (Ser.) Wight

Family: Cucurbitaceae

Grin Nomen Number: There is no listing in GRIN for this species; naming authority taken from The Plant List.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 1 sample of *T. wallichiana*. Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Listing Only: CABI 2016 (listed as a wild host); Cantrell et al. 1999; De Meyer et al. 2014; Plant-wise Knowledge Bank 2015.

Trichosanthes wawraei Cogn.

Family: Cucurbitaceae

Grin Nomen Number: No listing in GRIN for this sp.; naming authority taken from The Plant List.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 20 samples of *T. wawraei*. Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Clarke et al. 2001:

Thailand

One thousand twenty-three (1,023) (8.89 kg) infested *T. wawraei* fruits were collected in Bangkok, Thailand between 1986 and 1994. Infestation rates of 0.36 *B. cucurbitae* per infested fruit and 40.9 *B. cucurbitae* per kg infested fruits were observed. *Bactrocera cucurbitae* individuals were identified by either R.A.I. Drew or D. L. Hancock.

Listing Only: Cantrell et al. 1999; CABI 2016 (listed as a wild host); De Meyer et al. 2014; Plant-wise Knowledge Bank 2015.

Triphasia aurantiola Lour., see *Triphasia trifolia* (Burm. f.) P. Wilson

Triphasia trifolia (Burm. f.) P. Wilson

Family: Rutaceae

Grin Nomen Number: 40476

Common Names: limeberry (English), limeberry (Swedish), trifoliolate limeberry (India), triphasia (India).

Naturalized: Widely naturalized.

Cultivated: Widely cultivated.

Native: South East Asia.

Field Infestation:

Nakagawa et al. 1968:

Island of Rota, Mariana Islands

Between 1959 and 1963, 13,729 *T. trifolia* fruits, from 29 collections, were collected in Rota, Marianas Islands, and placed over sand in holding boxes. The sand was screened weekly to recover tephritid fruit fly larvae and pupae. Recovered larvae and pupae were held in glass cups covered with glass coverslips until adult emergence and species identification. *Bactrocera cucurbitae* (listed as *Dacus cucurbitae*) and/or *B. dorsalis* (listed as *Dacus dorsalis*) were recovered in 13 out of 29 collections (44.8%). Seven (7) adult *B. cucurbitae* and 49 adult *B. dorsalis* emerged from 96 pupae recovered.

Listing Only: Hollingsworth et al. 1996; USDA 1986 (listed as *Dacus cucurbitae*; listed as *Triphasia tufolia*); White and Elson-Harris 1992.

Synonyms: *Limonia trifolia* Burm. f., *Limonia trifoliata* L., *Triphasia aurantiola* Lour., *Triphasia trifoliata* DC.

Triphasia trifoliata DC., see *Triphasia trifolia* (Burm. f.) P. Wilson

Turia leloja Forssk., see *Kedrostis leloja* (Forssk.) C. Jeffrey

Vaccinium atlanticum E. P. Bicknell, see *Vaccinium corymbosum* L.

Vaccinium constablaei A. Gray, see *Vaccinium corymbosum* L.

Vaccinium corymbosum L.

Family: Ericaceae

Grin Nomen Number: 41002

Common Names: airelle d'Amérique (French), American blueberry (English), amerikanskt blåbär (Swedish), amerikanische Blueberry (German), arándano americano (Spanish), blueberry (English), bluet en corymbe (French), highbush blueberry (English), swamp blueberry (English).

Native: NORTHERN AMERICA – *Eastern Canada:* Canada – New Brunswick, Nova Scotia, Ontario, Quebec; *Northeastern U.S.A.:* United States – Connecticut, Indiana, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, West Virginia; *North-Central U.S.A.:* United States – Illinois, Missouri, Oklahoma, Wisconsin; *Southeastern U.S.A.:* United States – Alabama, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, South Carolina, Tennessee, Virginia; *South-Central U.S.A.:* United States – Texas.

Naturalized: ASIA-TEMPERATE – *Eastern Asia:* Japan; AUSTRALASIA – *New Zealand:* New Zealand; EUROPE – *Northern Europe:* United Kingdom; *Middle Europe:* Netherlands; NORTHERN AMERICA – *Western Canada:* Canada–British Columbia; *Northwestern U.S.A.:* United States – Washington.

Cultivated: also cultivated.

Lab Infestation:

Follett et al. 2009:

Fifty (50) *V. corymbosum* cv. “Bluecrop” fruits (average of 79.9 g), force-infested by 50 gravid female *B. cucurbitae* in an outdoor screen cage for 6 hours (twelve replicates), yielded an average (\pm standard error) of 7.2 (\pm 3.8) puparia, equivalent to 90 (\pm 40) pupae/kg fruit, with 12.7 (\pm 7.6)% adult emergence from the puparia. In another experiment, fifty (50) *V. corymbosum* cv. “Berkeley” fruits (average of 67.6 g), force-infested by 50 gravid female *B. cucurbitae* in an outdoor screen cage for 6 hours (eight replicates), yielded no puparia.

Follett et al. 2011:

Fruit of 11 southern highbush blueberry cultivars (*V. corymbosum*) grown at Mealani Experiment Station (University of Hawaii, Waimea, Island of Hawaii, Hawaii, U.S.A.) were harvested during a 14-week period from August to December 2009 as ripe fruit became available. Tests used laboratory *B. cucurbitae* flies obtained from colonies maintained at the USDA-ARS laboratory in Honolulu, HI. For each cultivar, 50 fruits (average weight 74.9 g) were spread out in a single layer and exposed to 50 gravid females in outdoor screen cages for 6 hours, then held for recovery of puparia and adult emergence (but only 30 fruits and 30 flies for the ‘Legacy’ cultivar and 36 fruits and 36 flies for the ‘Sunshine Blue’ cultivar). There were four replicates for each cultivar except for cultivars ‘Legacy’ and ‘Sunshine Blue’ for which there were only two replicates. Puparia were recovered from seven of the cultivars (‘Sapphire’, ‘Windsor’, ‘Jubilee’, ‘Biloxi’, ‘Jewel’, ‘Sharpblue’, and ‘Emerald’) averaging 1.9 puparia per trial (range 0.25 [‘Emerald’] - 7.0 [‘Sapphire’]), or 27.1 puparia/kg fruit (range 2.0 [‘Emerald’] - 112.0 [‘Sapphire’]), from which there was an average of 93.27% adult emergence. No puparia were recovered from four of the cultivars: ‘Blue Crisp’, ‘Legacy’, ‘Misty’, and ‘Sunshine Blue.’

Synonyms: *Vaccinium atlanticum* E. P. Bicknell, *Vaccinium constablaei* A. Gray

Vahea senegalensis A. DC., see *Saba senegalensis* (A. DC.) Pichon

Viciaceae Oken, see *Fabaceae* Lindl., nom. cons.

Vigna capensis (L.) Walp., see *Vigna* spp.

Vigna mungo (L.) Hepper var. *mungo*

Family: Fabaceae

Grin Nomen Number: 41621

Common Names: ambérique (French), black gram (English), fagiolo urd (Italian), feijão-da-China (Portuguese), frijol mungo (Spanish), haricot mungo (French), mash (India), mash kalai (India), moong (India), urd-bean (English), Urbohne (German), urdböna (Swedish).

Cultivated: Widely cultivated in tropics.

Origin: probable origin India.

Listing Only: Holbrook 1967 (listed as *Phaseolus mungo*); USDA 1986 (listed as *Dacus cucurbitae*; *Phaseolus mungo* [synonym of *Vigna mungo* var. *mungo*] listed as being the same species as *Vigna mungo*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Phaseolus mungo*; insufficient data to justify regulation).

Synonyms: *Phaseolus mungo* L., *Phaseolus viridissimus* Ten. ex Miq., nom. inval.

Vigna radiata (L.) R. Wilczek var. *radiata*

Family: Fabaceae

Grin Nomen Number: 312026

Common Names: ambérique (French), fagiolo mungo (Italian), frijol mungo (Spanish), golden gram (English), green gram (English), haricot doré (French), haricot mungo (French), judía mung (Spanish), mung-bean (English), Mungbohne (German), mungböna (Swedish), nogdu (transcribed Korean).

Cultivated: widely cultivated, especially in tropics.

Origin: origin Asia.

Listing Only: California Department of Food and Agriculture 2001 (listed as *Phaseolus radiatus*); Chawla 1966 (listed as *Dacus cucurbitae*; listed as *Phaseolus radiatus* L.); Dhillon et al. 2005a (listed as *Phaseolus radiatus*); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Phaseolus radiatus*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as *Phaseolus radiatus*); Narayanan and Batra 1960

(listed as *Dacus cucurbitae*; listed as *Phaseolus radiatus*); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *Phaseolus radiatus*); Syed 1971 (listed as *Dacus cucurbitae*; listed as *Phaseolus radiatus*); USDA 1986 (listed as *Dacus cucurbitae*; listed as *Phaseolus radiatus*); USDA-APHIS 2000 (listed as both mung bean and as *Phaseolus vulgaris*); USDA-APHIS 2008 (listed as both mung bean and as *Phaseolus vulgaris*); USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*; listed as *Vigna radiata*); White and Elson-Harris 1992 (listed as *Vigna radiata*; authors state “requires confirmation”).

Synonyms: *Phaseolus aureus* Roxb., *Phaseolus radiatus* L.

Vigna sesquipedalis (L.) Fruwirth, see *Vigna unguiculata* (L.) Walp. subsp. *unguiculata* Sesquipedalis Group

Vigna sinensis (L.) Savi ex Hassk., see *Vigna unguiculata* (L.) Walp. subsp. *unguiculata* Unguiculata Group

Vigna sinensis (L.) Savi ex Hassk. subsp. *sesquipedalis* (L.) Van Eselt., see *Vigna unguiculata* (L.) Walp. subsp. *unguiculata* Sesquipedalis Group

Vigna spp.

Family: Fabaceae

Grin Nomen Number: 300673

Interception Data:

PestID 2016:

Guam

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Vigna* sp. seeds, originating in Guam, at an airport in Hawaii (Honolulu) on one occasion in 1993. Recovery was two live larvae.

Hawaii, U.S.A.

Bactrocera cucurbitae was recovered by USDA-APHIS-PPQ (“interceptions”) from *Vigna* sp. pod/seeds, originating in Hawaii, at an airport in Hawaii (Honolulu) in 2007. Recovery was three live larvae.

Listing Only: Holbrook 1967 (listed as “heavily or generally infested”); McBride and Tanada 1949 (listed as *Dacus cucurbitae*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as a preferred host).

Synonyms: *Phaseolus pulchellus* Piper, *Phaseolus scaberulus* Miq., *Vigna capensis* (L.) Walp.

Vigna unguiculata (L.) Walp.

Family: Fabaceae

Grin Nomen Number: 41647

Common Names: chiclayo (Spanish), cowpea (English), dolique de Chine (French), dongbu (transcribed Korean), ögonböna (Swedish), Reeve’s pea (English), snake-bean (English).

Native: AFRICA – Africa.

Cultivated: Cultivated worldwide.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 38 samples of *Vigna unguiculata*. Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

+*Back and Pemberton 1917:*

Hawaii, U.S.A.

Vigna unguiculata (listed as cowpea) is listed as a preferred host of *B. cucurbitae*. Only the pods are affected (not the vine). The authors reported removing as many as 37 larvae from a single pod.

+*Back and Pemberton 1918:*

Hawaii, U.S.A.

Vigna unguiculata (listed as cowpea) is listed as a preferred host of *B. cucurbitae*. Only the pods are affected (not the vine). The authors reported removing as many as 37 larvae from a single pod.

+Mathew *et al.* 1999:

Vellanikkara, State of Kerala, India

Maggots were observed in the pods of *V. unguiculata* (listed as cowpea) in the vegetable fields of Kerala Horticulture Development Programme, Kerala Agricultural University, Vellanikkara. The maggots were reared and adult *B. cucurbitae* emerged. No infestation rate was reported.

Tan and Lee 1982:

Penang Island, Malaysia

Infested *V. unguiculata* fruits were randomly collected on Penang Island. Fruits were held over moist sterilized sand in fine wire mesh-covered plastic containers until pupation. Pupae were transferred and held at 27-29°C (80±5% RH) until adult emergence. *Bactrocera cucurbitae* (listed as *Dacus cucurbitae*) was recovered from infested *V. unguiculata* fruits. Total number of fruits collected and infestation rate were not given.

Interception Data:

Takeishi 1992:

Thailand

Nine (9) *B. cucurbitae*-infested (listed as *Dacus cucurbitae*) *V. unguiculata* fruits were collected from airline passengers at Narita Airport, Japan, who had arrived on a flight(s) originating in Thailand. At the time of confiscation, all larvae-infested fruits were held in individual containers with sand at 20–28°C until adult emergence. Infestation rate data were not given.

Listing Only: +Australian Quarantine Service, Commonwealth Department of Primary Industry 1987 (listed as *Dacus cucurbitae*; listed as cowpea); +Back and Pemberton 1914 (listed as cowpea); +Bateman 1989 (listed as *Dacus cucurbitae*; listed as snake bean); Botha *et al.* 2004 (listed as a secondary host); CABI 2016 (listed as a secondary host); California Department of Food and Agriculture 2001; Cantrell *et al.* 1999; De Meyer *et al.* 2014; Dhillon *et al.* 2005a; +Hawaii Department of Agriculture 2009 (listed as cowpea); +Heppner 1989 (listed as *Dacus cucurbitae*; listed as cowpea); Hollingsworth *et al.* 1996; Hollingsworth and Allwood 2000; Kandybina 1987 (listed as *Dacus cucurbitae*); +Lall 1975 (listed as *Dacus cucurbitae*; listed as cowpea); +Okinawa Prefectural Fruit Fly Eradication Project 1987 (listed as *Dacus cucurbitae*; listed as cowpea); +NAPPO, PAS 2015 (listed as cowpea); Pacific Fruit Fly Web 2002; Plantwise Knowledge Bank 2015; USDA 1986 (listed as *Dacus cucurbitae*); USDA-APHIS 2000; USDA-APHIS 2008; USDA-APHIS-PPQ 1983 (listed as *Dacus cucurbitae*); +USDA-ARS 1959 (listed as cowpeas; listed as a preferred host); Walker 2005; +Weems 1964 (listed as *Dacus cucurbitae*; listed as cowpea; listed as a preferred host); +Weems 1967 (listed as *Dacus cucurbitae*; listed as cowpea; listed as a preferred host); +Weems *et al.* 2001 (listed as cowpea; listed as a preferred host); White and Elson-Harris 1992.

Vigna unguiculata (L.) subsp. *sesquipedalis* (L.) Verdc., see *Vigna unguiculata* (L.) Walp. subsp. *unguiculata* Sesquipedalis Group

Vigna unguiculata (L.) Walp. subsp. *unguiculata* Sesquipedalis Group

Family: Fabaceae

Grin Nomen Number: 467841

Cultivated: AFRICA – Africa; ASIA-TEMPERATE – China: China; *Eastern Asia*: Taiwan; ASIA-TROPICAL – *Indian Subcontinent*: Bangladesh, India; *Indo-China*: Thailand, Vietnam; *Malesia*: Indonesia, Malaysia, Philippines; EUROPE – Europe; NORTHERN AMERICA – United States; also cultivated elsewhere.

Field Infestation:

+Mathew *et al.* 1999:

Vellanikkara, State of Kerala, India

Maggots were observed in the pods of *V. unguiculata* subsp. *unguiculata*, Sesquipedalis Group (listed as yard-long bean), in the vegetable fields of Kerala Horticulture Development Programme,

Kerala Agricultural University, Vellanikkara. The maggots were reared and adult *B. cucurbitae* emerged. No infestation rate was reported.

Listing Only: Cantrell et al. 1999 (listed as *Vigna unguiculata* ssp. *sesquipedalis*); Dhillon et al. 2005a (listed as *Vigna sesquipedalis*); Holbrook 1967 (listed as *Vigna sesquipedalis*; listed as “heavily or generally infested”); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Vigna sesquipedalis*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as *Vigna sesquipedalis* [Koern.] Wight); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as *Vigna sesquipedalis*); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *Vigna sesquipedalis*); Syed 1971 (listed as *Dacus cucurbitae*; listed as *Vigna sesquipedalis*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Vigna sesquipedalis*; listed as a preferred host); +Yong 1992 (listed as *Dacus cucurbitae*; listed as long bean).

Synonyms: *Dolichos sesquipedalis* L., *Vigna sesquipedalis* (L.) Fruwirth, *Vigna sinensis* (L.) Savi ex Hassk. subsp. *sesquipedalis* (L.) Van Eselt., *Vigna unguiculata* (L.) subsp. *sesquipedalis* (L.) Verdc.

Vigna unguiculata (L.) Walp. subsp. *unguiculata* Unguiculata Group

Family: Fabaceae

Grin Nomen Number: 300675

Common Names: Augenbohne (German), black-eyed-pea (English), costeño (Spanish), cowpea (English), crowder-pea (English), fagiolino dall’occhio (Italian), frijol de costa (Spanish), haricot indigene (French), jiang dou (transcribed Chinese), niébé (French), pois à vaches (French), rabiza (Spanish), sasage (Japanese Rōmaji), southern-pea (English), vigna cinese (Italian).

Cultivated: AFRICA – Africa; widely cultivated in tropics and subtropics.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 8 samples of *Vigna unguiculata* subsp. *unguiculata* (Unguiculata group) (listed as *Vigna sinensis*). Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Listing Only: CABI 2016 (listed as a secondary host); Cantrell et al. 1999 (listed as *Vigna sinensis*); Chawla 1966 (listed as *Dacus cucurbitae*; listed as *Vigna sinensis* [L.] Savi.); De Meyer et al. 2014 (listed as *Vigna sinensis*); Dhillon et al. 2005a (listed as *Vigna sinensis*); Hardy and Adachi 1956 (listed as *Dacus cucurbitae*; listed as *Vigna sinensis*); Holbrook 1967 (listed as *Vigna sinensis*, listed as “occasionally infested”); Kapoor 1970 (listed as *Dacus cucurbitae*; listed as *Vigna sinensis*); McBride and Tanada 1949 (listed as *Dacus cucurbitae*; listed as *Vigna sinensis* [L.] Savi; listed as occasionally injured); Narayanan and Batra 1960 (listed as *Dacus cucurbitae*; listed as *Vigna sinensis*); Oakley 1950 (listed as *Dacus cucurbitae*; listed as *Vigna sinensis*); Phillips 1946 (listed as *Vigna sinensis*); Plantwise Knowledge Bank 2015; Ponce 1937 (listed as *Dacus cucurbitae*; listed as *Vigna sinensis*); Syed 1971 (listed as *Dacus cucurbitae*; listed as *Vigna sinensis*); USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; listed as *Vigna sinensis*; listed as a preferred host); Vijaysegaran 1991 (listed as *Dacus cucurbitae*; listed as *Vigna sinensis* Savi.); Yunus and Hua 1980 (listed as *Dacus cucurbitae*; listed as *Vigna sinensis* Savi.).

Synonyms: *Dolichos sinensis* L., *Dolichos unguiculata* L., *Phaseolus unguiculata* (L.) Piper, *Vigna sinensis* (L.) Savi ex Hassk.

Vitis capensis Burm. f., see *Vitis* spp.

Vitis reticulata Gagnep., see *Vitis* spp.

Vitis spp.

Family: Vitaceae

Grin Nomen Number: 300680

Listing Only: California Department of Food and Agriculture 2001 (listed as *Vitis trifolia* with common name “grape” and Spanish name “uva”— the ascribed common names suggest that *Cayratia trifolia* was not intended); +Capinera 2001 (listed as grape); +Kapoor 1989 (listed as *Dacus cucurbitae*;

listed as grape); +Kapoor 1991 (listed as *Dacus cucurbitae*; listed as *Vitis trifolia* L. with common name “grapes” – the ascribed common name suggests that *Cayratia trifolia* was not intended).

Synonyms: *Vitis capensis* Burm. f., *Vitis reticulata* Gagnep., *Vitis titanea* ined.

Vitis titanea ined., see *Vitis* spp.

Vitis trifolia L., see *Cayratia trifolia* (L.) Domin

Vitis vinifera L.

Family: Vitaceae

Grin Nomen Number: 41905

Common Names: common grapevine (English), echter Weinstock (German), European grape (English), grape (English), grapevine (English), podo (transcribed Korean), Rebe (German), uva (Portuguese-Brazil), videira (Portuguese-Brazil), vin (Swedish).

Native: AFRICA – *Northern Africa*: Algeria, Morocco, Tunisia; ASIA-TEMPERATE – *Western Asia*: Iran, Iraq, Israel, Syria, Turkey; *Caucasus*: Armenia, Azerbaijan, Georgia, Russian Federation–Ciscaucasia, Dagestan; *Middle Asia*: Turkmenistan; EUROPE – *Middle Europe*: Austria, Czechoslovakia, Germany, Hungary, Switzerland; *East Europe*: Moldova, Ukraine, Krym; *Southeastern Europe*: Albania, Bulgaria, Former Yugoslavia, Greece; Italy, Sardinia, Sicily, Romania; *Southwestern Europe*: France, Corsica.

Cultivated: Cultivated worldwide in temperate areas.

Listing Only: Hill 1983 (listed as *Dacus cucurbitae*); Hill 2008; Kapoor 1970 (listed as *Dacus cucurbitae*); Kapoor 1993 (listed as *Dacus cucurbitae*).

Warburgia ugandensis Sprague

Family: Canellaceae

Grin Nomen Number: 455922

Common Names: befti (Unknown), East African greenbark (English), masuko (Africa-Uganda), muthiga (Unknown-Africa), ol-msogoni (Unknown-Africa), pepper-bark-tree (English).

Native: AFRICA – *Northeast Tropical Africa*: Ethiopia; *East Tropical Africa*: Kenya, Tanzania, Uganda; *West-Central Tropical Africa*: Zaire; *South Tropical Africa*: Malawi.

Listing Only: De Meyer et al. 2014; De Meyer et al. 2015 (listed as *Zeugodacus cucurbitae*); Munro 1984 (listed as *Zeugodacus cucurbitae*).

Zea mays L.

Family: Poaceae

Grin Nomen Number: 42207

Common Names: Indian corn (English), maize (English).

Native: NORTHERN AMERICA – *Northern Mexico*: Chihuahua, Durango; *Southern Mexico*: Guajuato, Jalisco, Mexico, Michoacan; SOUTHERN AMERICA – *Central America*: Guatemala.

Cultivated: also cultivated.

Listing Only: Dhillon et al. 2005a.

Zehneria erythrocarpa F. Muell., see *Diplocyclos palmatus* (L.) C. Jeffrey

Zehneria liukiuiensis (Nakai) C. Jeffrey ex E. Walker, see *Zehneria mucronata* (Blume) Miq.

Zehneria mucronata (Blume) Miq.

Family: Cucurbitaceae

Grin Nomen Number: 459623

Native: ASIA-TROPICAL – *Malesia*: Indonesia (Java, Sumatra), New Guinea, Philippines; AUSTRALASIA – Australia (Queensland).

Field Infestation:

McQuate and Teruya 2015:

Southwestern Islands of Japan

Before the start of population suppression activities in a *B. cucurbitae* eradication program, 66,980 *Zehneria mucronata* fruits (listed as *Zehneria liukiensis* [Nakai] Jeffrey ex Walker) were collected (115 collections overall) from three islands/island groups (Amami, Okinawa, Yaeyama) in Japan and held on sand or sawdust in plastic containers. After 2 to 3 weeks, the sand or sawdust was sieved to recover tephritid fruit fly pupae which were then held for adult emergence and identification. Infestation by *B. cucurbitae* was found in 651 fruits, giving an average percentage infestation rate (weighted by the number of collections in the islands/island groups) of 1.39%.

Iwaizumi 1993:

Southern Okinawa Island, Japan

Zehneria mucronata fruits (listed as *Melothria liukiensis*; The Plant List indicates that this is a synonym of *Zehneria mucronata*) were collected monthly in the southern part of Okinawa Island in January, February, April, May, November and December, 1987 and January and February, 1988, and held on sand in plastic containers until adult fly emergence. Out of 7,032 fruits collected, 524 were infested by *B. cucurbitae* (listed as *Dacus cucurbitae*), with an average monthly infestation rate of 13.5% (range: 0.0–61.1%).

Listing Only: Dhillon et al. 2005a (listed as *Melothria liukiensis*).

Synonyms: *Bryonia mucronata* Blume, *Melothria mucronata* Cogn. (listed by GRIN); *Melothria kelungensis* (Hayata) Hayata ex Makino and Nemoto, *Melothria liukiensis* Nakai, *Pilogyne mucronata* (Blume) W. J. de Wilde and Duyfjes, *Zehneria kelungensis*, *Zehneria liukiensis* (Nakai) E. Walker (these last five plus the first two above all listed by the Plant List).

Zehneria wallichii (C.B. Clarke) C. Jeffrey

Family: Cucurbitaceae

Grin Nomen Number: 466509

Native: ASIA-TEMPERATE – *China:* China – Yunnan; ASIA-TROPICAL – *Indo-China:* Myanmar, Thailand.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 7 samples of *Z. wallichii* (listed as *Melothria wallichii*). Infestation rate data not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Chinajariyawong et al. 2000:

Thailand

Bactrocera cucurbitae was reared from 1 sample of *Zehneria wallichii* (listed as *Melothria wallichii*) collected in Thailand. No infestation rate data given.

Clarke et al. 2001:

Thailand

Two hundred thirty-two (232) (1.54 kg) of infested *Z. wallichii* fruits (listed as *Melothria wallichii*) were collected in Chiang Mai, Thailand from 1986 to 1994. Infestation rates of 0.80 *B. cucurbitae* per infested fruit and 120.5 *B. cucurbitae* per kg infested fruits were observed. *Bactrocera cucurbitae* individuals were identified by either R.A.I. Drew or D. L. Hancock.

Listing Only: CABI 2016 (listed as *Melothria wallichii*; listed as a wild host); Cantrell et al. 1999 (listed as *Melothria wallichii*); De Meyer et al. 2014 (listed as *Melothria wallichii*); Plantwise Knowledge Bank 2015 (listed as *Melothria wallichii*).

Synonyms: *Melothria wallichii* C. B. Clarke, *Neoachmandra wallichii* (C. B. Clarke) W. J. de Wilde and Duyfjes

Ziziphus jujuba Mill.

Family: Rhamnaceae

Grin Nomen Number: 42282

Common Names: açoifeifeira (Portuguese), azufaifo (Spanish), Brustbeerbaum (German), Chinese-date (English), Chinese jujube (English), chinesische Dattel (German), common jujube (English), jujube

(English), Jujube (German), jujubier commun (French), kinesisk jujube (Swedish), natsume (Japanese Rōmaji), zao (transcribed Chinese).

Native: ASIA-TEMPERATE – *China*: China – Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Nei Monggol, Ningxia, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Yunnan, Zhejiang.

Cultivated: AFRICA – Africa; ASIA-TEMPERATE – *Western Asia*: Afghanistan, Iran, Iraq; *China*: China; *Eastern Asia*: Japan; ASIA-TROPICAL – *Indian Subcontinent*: India, Pakistan; EUROPE – Europe; NORTHERN AMERICA – North America; SOUTHERN AMERICA – South America.

Field Infestation:

Allwood et al. 1999:

Thailand, Malaysia, Southern India

From fruit collections in 1992, *B. cucurbitae* was recovered from 2 samples of *Z. jujuba*.

Infestation rate data were not given. *Bactrocera cucurbitae* individuals were identified by R.A.I. Drew and D.L. Hancock.

Listing Only: CABI 2016 (listed as a secondary host); Cantrell et al. 1999; De Meyer et al. 2014; Plantwise Knowledge Bank 2015; USDA-APHIS-PPQ-CSDA 1984 (listed as *Dacus cucurbitae*; insufficient data to justify regulation).

Ziziphus jujuba Mill. var. *jujuba*

Family: Rhamnaceae

Grin Nomen Number: 461560

Native: ASIA-TEMPERATE – *China*: China – Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Shanxi, Sichuan, Xinjiang, Yunnan, Zhejiang.

Cultivated: AFRICA – Africa; ASIA-TEMPERATE – *China*: China; EUROPE – Europe; NORTHERN AMERICA – North America; SOUTHERN AMERICA – South America.

Common Names: moetdaechunamu (transcribed Korean), zao (transcribed Chinese).

Listing Only: Syed 1971 (listed as *Dacus cucurbitae*; listed as *Ziziphus sativa*).

Synonyms: *Rhamnus zizyphus* L., *Ziziphus sativa* Gaertn., *Ziziphus vulgaris* Lam., *Ziziphus zizyphus* (L.) H. Karst.

Ziziphus sativa Gaertn., see *Ziziphus jujuba* Mill. var. *jujuba*

Ziziphus vulgaris Lam., see *Ziziphus jujuba* Mill. var. *jujuba*

Ziziphus zizyphus (L.) H. Karst. see *Ziziphus jujuba* Mill. var. *jujube* Mill.

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albahaca (Spanish)	<i>Ocimum basilicum</i> L.
albaricoque (Spanish)	<i>Prunus armeniaca</i> L.
albudeca (Spanish)	<i>Citrullus lanatus</i> (Thunb.) Matsum. and Nakai subsp. <i>lanatus</i>
alfavaca (Portuguese)	<i>Ocimum basilicum</i> L.
Alexandrian-laurel (English)	<i>Calophyllum inophyllum</i> L.
alexandrinischer Lorbeer (German)	<i>Calophyllum inophyllum</i> L.
alhandal (Spanish)	<i>Citrullus colocynthis</i> (L.) Schrad.
alizeti (Swahili)	<i>Helianthus annuus</i> L.
alkékenge du Mexique (French)	<i>Physalis philadelphica</i> Lam.
almendro de la India (Spanish)	<i>Terminalia catappa</i> L.
alpine strawberry (English)	<i>Fragaria vesca</i> L.
amba (transliterated Arabic)	<i>Mangifera indica</i> L.
ambérique (French)	<i>Vigna mungo</i> (L.) Hepper var. <i>mungo</i>
	<i>Vigna radiata</i> (L.) R. Wilczek var. <i>radiata</i>
	<i>Abelmoschus moschatus</i> Medik.
ambrette (French)	<i>Cajanus cajan</i> (L.) Huth
ambrévade (French)	<i>Terminalia catappa</i> L.
amendoeira (Portuguese-Brazil)	<i>Terminalia catappa</i> L.
amendoeira-da-Índia (Portuguese)	<i>Euphorbia heterophylla</i> L.
amendoim-bravo (Portuguese-Brazil)	<i>Prunus domestica</i> L. subsp. <i>domestica</i>
ameixoeira (Portuguese)	<i>Capsicum annuum</i> L.
American bird pepper (English)	<i>Vaccinium corymbosum</i> L.
American blueberry (English)	<i>Momordica charantia</i> L.
amerikanische Bittergurke (German)	<i>Vaccinium corymbosum</i> L.
amerikanische Blueberry (German)	<i>Vaccinium corymbosum</i> L.
amerikanskt blåbär (Swedish)	<i>Psidium guajava</i> L.
amrood (India-Hindi)	<i>Anacardium occidentale</i> L.
anacardier (French)	<i>Anacardium occidentale</i> L.
anacardo (Spanish)	<i>Fragaria ×ananassa</i> Duchesne ex Rozier
Ananaserdbeere (German)	<i>Solanum macrocarpon</i> L.
anghive (French)	<i>Luffa acutangula</i> (L.) Roxb.
angled loofah (English)	<i>Citrullus lanatus</i> (Thunb.) Matsum. and Nakai
anguria (Italian)	<i>Cucumis anguria</i> L.
Anguriagurka (Swedish)	<i>Ficus carica</i> L.
anjir (India-Hindi)	<i>Annona squamosa</i> L.
annone écailleuse (French)	<i>Annona reticulata</i> L.
annone réticulée (French)	<i>Trichosanthes cucumerina</i> L.
annual gourd (English)	<i>Annona squamosa</i> L.
anón (Spanish)	<i>Annona muricata</i> L.
anona (Spanish)	<i>Annona squamosa</i> L.
anona blanca (Spanish)	<i>Annona reticulata</i> L.
anona corazón (Spanish)	<i>Annona muricata</i> L.
anone (French)	<i>Annona reticulata</i> L.
anoneira (Portuguese)	<i>Annona reticulata</i> L.
anonillo (Spanish)	<i>Annona reticulata</i> L.
aoi-mame (Japanese Rōmaji)	<i>Phaseolus lunatus</i> L.
Apfel (German)	<i>Malus domestica</i> Borkh.
Apfelbaum (German)	<i>Malus domestica</i> Borkh.
Apfelsine (German)	<i>Citrus sinensis</i> (L.) Osbeck
Apfelsinenbaum (German)	<i>Citrus sinensis</i> (L.) Osbeck
apple (English)	<i>Malus domestica</i> Borkh.
äpple (Swedish)	<i>Malus domestica</i> Borkh.
apricot (English)	<i>Prunus armeniaca</i> L.
aprikos (Swedish)	<i>Prunus armeniaca</i> L.

Aprikose (German)	<i>Prunus armeniaca</i> L.
Aprikosenbaum (German)	<i>Prunus armeniaca</i> L.
aprikos (Swedish)	<i>Prunus armeniaca</i> L.
Arabian coffee (English)	<i>Coffea arabica</i> L.
Arabica coffee (English)	<i>Coffea arabica</i> L.
Arabicakaffee (German)	<i>Coffea arabica</i> L.
arabischer Kaffeebaum (German)	<i>Coffea arabica</i> L.
arabischer Kaffeestrauch (German)	<i>Coffea arabica</i> L.
arabiskt kaffee (Swedish)	<i>Coffea arabica</i> L.
araçá-da-praia (Portuguese-Brazil)	<i>Psidium cattleianum</i> Sabine
araçá-de-comer (Portuguese-Brazil)	<i>Psidium cattleianum</i> Sabine
araçá-de-coroa (Portuguese-Brazil)	<i>Psidium cattleianum</i> Sabine
araçá-do-campo (Portuguese-Brazil)	<i>Psidium cattleianum</i> Sabine
araçá-do-mato (Portuguese-Brazil)	<i>Psidium cattleianum</i> Sabine
araçá-goiaba (Portuguese-Brazil)	<i>Psidium guajava</i> L.
araçá guaçú (Portuguese-Brazil)	<i>Psidium guajava</i> L.
arancio (Italian)	<i>Citrus aurantium</i> L.
arancio amaro (Italian)	<i>Citrus aurantium</i> L.
arancio dolce (Italian)	<i>Citrus sinensis</i> (L.) Osbeck
arándano americano (Spanish)	<i>Vaccinium corymbosum</i> L.
araticum-grande (Portuguese-Brazil)	<i>Annona muricata</i> L.
araticum-manso (Portuguese-Brazil)	<i>Annona muricata</i> L.
árbol del pan (Spanish)	<i>Artocarpus heterophyllus</i> Lam.
arbre à tomates (French)	<i>Solanum betaceum</i> Cav.
Argus pheasant-tree (English)	<i>Dracontomelon dao</i> (Blanco) Merr. and Rolfe
arhar (India)	<i>Cajanus cajan</i> (L.) Huth
Armenian cucumber (English)	<i>Cucumis melo</i> L. subsp. <i>melo</i> var. <i>flexuosus</i> (L.) Naudin
armenische Melone (German)	<i>Cucumis melo</i> L. subsp. <i>melo</i> var. <i>flexuosus</i> (L.) Naudin
ärt (Swedish)	<i>Pisum sativum</i> L.
ash gourd (English)	<i>Benincasa hispida</i> (Thunb.) Cogn.
ash-pumpkin (English)	<i>Benincasa hispida</i> (Thunb.) Cogn.
asparagus broccoli (English)	<i>Brassica oleracea</i> L. var. <i>italica</i> Plenck
ata (Portuguese)	<i>Annona squamosa</i> L.
aubergin (Swedish)	<i>Solanum melongena</i> L.
aubergine (English)	<i>Solanum melongena</i> L.
aubergine (French)	<i>Solanum melongena</i> L.
Aubergine (German)	<i>Solanum macrocarpon</i> L.
aubergine africaine (French)	<i>Solanum melongena</i> L.
aubergine gboma (French)	<i>Solanum macrocarpon</i> L.
aubergine amère (French)	<i>Solanum macrocarpon</i> L.
adeus-Brasil (Portuguese-Brazil)	<i>Solanum aethiopicum</i> L.
Augenbohne (German)	<i>Euphorbia heterophylla</i> L.
auyama (Spanish)	<i>Vigna unguiculata</i> (L.) Walp. subsp. <i>unguiculata</i> Unguiculata Group
avocado (English)	<i>Cucurbita moschata</i> Duchesne
Avocado (German)	<i>Persea americana</i> Mill.
avocado (Swedish)	<i>Persea americana</i> Mill.
Avocadobaum (German)	<i>Persea americana</i> Mill.
Avocadopalme (German)	<i>Persea americana</i> Mill.
avocatier (French)	<i>Persea americana</i> Mill.
avokado (Swedish)	<i>Persea americana</i> Mill.

ayote (Spanish)
azufaifo (Spanish)

Cucurbita moschata Duchesne
Ziziphus jujuba Mill.

B

badam (India)
badamier (French)
badea (Spanish)
bael (English)
baeltree (English)
bafureira (Portuguese)
bag (transcribed Korean)
balltree (English)
balsam-apple (English)

balsam-pear (English)

Balsamapfel (German)
Balsambirne (German)
balsamgurka (Swedish)
balsamina (Spanish)
balsâmina-de purga (Portuguese)
balsamito (Spanish)
bálsamo (Spanish)
bamiâ (translated Russian)
banana (English)

banana-caturra (Portuguese-Brazil)
banana-de-São-Tomé (Portuguese-Brazil)
banana-da-terra (Portuguese-Brazil)
banana-maçã (Portuguese-Brazil)
banana-nanica (Portuguese-Brazil)
banana-ouro (Portuguese-Brazil)
banana passionflower (English)

banana passionfruit (English)

banana poka (English)

banana-prata (Portuguese-Brazil)
bananadilla (English)

Banane (German)

Bananen-Passionsblume (German)

bananier (French)

bananier nain (French)
banano (Spanish)
banjirō (Japanese Rōmaji)
barbadin (Swedish)
barbadine (French)
barbaquois (French)

Terminalia catappa L.
Terminalia catappa L.
Passiflora quadrangularis L.
Aegle marmelos (L.) Corrêa
Aegle marmelos (L.) Corrêa
Ricinus communis L.
Lagenaria siceraria (Molina) Standl.
Calophyllum inophyllum L.
Momordica balsamina L.
Momordica charantia L.
Momordica charantia L.
Momordica cochinchinensis (Lour.) Spreng.
Momordica balsamina L.
Momordica charantia L.
Momordica balsamina L.
Momordica balsamina L.
Momordica balsamina L.
Momordica charantia L.
Momordica charantia L.
Abelmoschus esculentus (L.) Moench
Musa acuminata Colla
Musa ×paradisiaca L.
Musa ×paradisiaca L.
Musa ×paradisiaca L.
Musa ×paradisiaca L.
Musa ×paradisiaca L.
Musa ×paradisiaca L.
Musa acuminata Colla
Musa ×paradisiaca L.
Passiflora tripartita (Juss.) Poir. var. *mollissima*
(Kunth) Holm-Niels. and P. Jørg.
Passiflora tripartita (Juss.) Poir. var. *mollissima*
(Kunth) Holm-Niels. and P. Jørg.
Passiflora tripartita (Juss.) Poir. var. *mollissima*
(Kunth) Holm-Niels. and P. Jørg.
Musa ×paradisiaca L.
Passiflora tripartita (Juss.) Poir. var. *mollissima*
(Kunth) Holm-Niels. and P. Jørg.
Musa acuminata Colla
Musa ×paradisiaca L.
Passiflora tripartita (Juss.) Poir. var. *mollissima*
(Kunth) Holm-Niels. and P. Jørg.
Musa acuminata Colla
Musa ×paradisiaca L.
Musa acuminata Colla
Musa ×paradisiaca L.
Psidium guajava L.
Passiflora quadrangularis L.
Passiflora quadrangularis L.
Diospyros digyna Jacq.

Barbary-fig (English)	<i>Opuntia ficus-indica</i> (L.) Mill.
basal (Arabic)	<i>Allium cepa</i> L.
basil (English)	<i>Ocimum basilicum</i> L.
basilic (French)	<i>Ocimum basilicum</i> L.
basilico (Italian)	<i>Ocimum basilicum</i> L.
Basilienkraut (German)	<i>Ocimum basilicum</i> L.
basilika (Swedish)	<i>Ocimum basilicum</i> L.
Basilikum (German)	<i>Ocimum basilicum</i> L.
bastard-mahogany (English)	<i>Mammea africana</i> Sabine
bastard-melon (English)	<i>Citrullus lanatus</i> (Thunb.) Matsum. and Nakai
batata (Portuguese)	<i>Solanum tuberosum</i> L. subsp. <i>tuberosum</i>
Baumtomate (German)	<i>Solanum betaceum</i> Cav.
beach calophyllum (English)	<i>Calophyllum inophyllum</i> L.
beach strawberry (English)	<i>Fragaria chiloensis</i> (L.) Mill.
beach touriga (English)	<i>Calophyllum inophyllum</i> L.
beautyleaf (English)	<i>Calophyllum inophyllum</i> L.
befiti (Unknown)	<i>Warburgia ugandensis</i> Sprague
bel indien (French)	<i>Aegle marmelos</i> (L.) Corrêa
bela (Spanish)	<i>Aegle marmelos</i> (L.) Corrêa
Belbaum (German)	<i>Aegle marmelos</i> (L.) Corrêa
belfruit-tree (English)	<i>Aegle marmelos</i> (L.) Corrêa
beli (India)	<i>Aegle marmelos</i> (L.) Corrêa
bell-apple (English)	<i>Passiflora laurifolia</i> L.
bell pepper (English)	<i>Capsicum annuum</i> L.
	<i>Capsicum annuum</i> L. var. <i>annuum</i>
belle-of-the-night (English)	<i>Hylocereus undatus</i> (Haw.) Britton and Rose
bellfruit (English)	<i>Syzygium aqueum</i> (Burm. f.) Alston
Bengal-quince (English)	<i>Aegle marmelos</i> (L.) Corrêa
benincasa (French)	<i>Benincasa hispida</i> (Thunb.) Cogn.
berenjena (Spanish)	<i>Solanum melongena</i> L.
bergamota (Portuguese-Brazil)	<i>Citrus reticulata</i> Blanco
Bergkaffee (German)	<i>Coffea arabica</i> L.
beringela-africana (Portuguese)	<i>Solanum macrocarpon</i> L.
berinjela-africana (Portuguese)	<i>Solanum macrocarpon</i> L.
béringène (French)	<i>Solanum melongena</i> L.
berinjela (Portuguese)	<i>Solanum melongena</i> L.
besuka-ichigo (Japanese Rōmaji)	<i>Fragaria vesca</i> L.
bhat karela (unknown)	<i>Momordica cochinchinensis</i> (Lour.) Spreng.
bi ma (transcribed Chinese)	<i>Ricinus communis</i> L.
bian dou (transcribed Chinese)	<i>Lablab purpureus</i> (L.) Sweet
bibasse (Unknown)	<i>Eriobotrya japonica</i> (Thunb.) Lindl.
bibassier (French)	<i>Eriobotrya japonica</i> (Thunb.) Lindl.
bigarade (English)	<i>Citrus aurantium</i> L.
bigaradier (French)	<i>Citrus aurantium</i> L.
big eggplant (English)	<i>Solanum erianthum</i> D. Don
bird pepper (English)	<i>Capsicum annuum</i> L.
	<i>Capsicum frutescens</i> L.
biribá (Portuguese-Brazil)	<i>Annona reticulata</i> L.
Bisam-Kürbis (German)	<i>Cucurbita moschata</i> Duchesne
bitoki (Uganda)	<i>Musa acuminata</i> Colla
bitter bottle gourd (English)	<i>Cucurbita pepo</i> L.
bitter-apple (English)	<i>Citrullus colocynthis</i> (L.) Schrad.
bitter-cucumber (English)	<i>Citrullus colocynthis</i> (L.) Schrad.
	<i>Momordica charantia</i> L.

bitter gourd (English)	<i>Momordica charantia</i> L.
bitter-melon (English)	<i>Momordica charantia</i> L.
Bitter-Melone (German)	<i>Citrullus colocynthis</i> (L.) Schrad.
bitter orange (English)	<i>Citrus aurantium</i> L.
bittergurka (Swedish)	<i>Momordica charantia</i> L.
Bittergurke (German)	<i>Momordica charantia</i> L.
Bitterorangen (German)	<i>Citrus aurantium</i> L.
black-eyed-pea (English)	<i>Vigna unguiculata</i> (L.) Walp. subsp. <i>unguiculata</i> Unguiculata Group
black gram (English)	<i>Vigna mungo</i> (L.) Hepper var. <i>mungo</i>
black nightshade (English)	<i>Solanum nigrum</i> L.
black persimmon (English)	<i>Diospyros digyna</i> Jacq.
black sapote (English)	<i>Diospyros digyna</i> Jacq.
blackberry nightshade (English)	<i>Solanum nigrum</i> L.
Blaukraut (German)	<i>Brassica oleracea</i> L. var. <i>capitata</i> L.
bledo espinoso (Spanish)	<i>Amaranthus spinosus</i> L.
blood orange (English)	<i>Citrus sinensis</i> (L.) Osbeck
blueberry (English)	<i>Vaccinium corymbosum</i> L.
bluet en corymbe (French)	<i>Vaccinium corymbosum</i> L.
Blumenkohl (German)	<i>Brassica oleracea</i> L. var. <i>botrytis</i> L.
bo luo mi (transcribed Chinese)	<i>Artocarpus heterophyllus</i> Lam.
boereturksvy (Africaans)	<i>Opuntia ficus-indica</i> (L.) Mill.
bogsunganamu (transcribed Korean)	<i>Prunus persica</i> (L.) Batsch
böna (Swedish)	<i>Phaseolus vulgaris</i> L.
bonavist-bean (English)	<i>Lablab purpureus</i> (L.) Sweet subsp. <i>purpureus</i>
bottle gourd (English)	<i>Lagenaria siceraria</i> (Molina) Standl.
Borneo-mahogany (English)	<i>Calophyllum inophyllum</i> L.
brauner Senf (German)	<i>Brassica juncea</i> (L.) Czern.
Brazil-cherry (English)	<i>Eugenia uniflora</i> L.
brécol (Spanish)	<i>Brassica oleracea</i> L. var. <i>italica</i> Plenck
brecolera (Spanish)	<i>Brassica oleracea</i> L. var. <i>italica</i> Plenck
bre-do-bravo (Portuguese-Brazil)	<i>Amaranthus spinosus</i> L.
bre-do-de-espinho (Portuguese-Brazil)	<i>Amaranthus spinosus</i> L.
Breiäpfelbaum (German)	<i>Manilkara zapota</i> (L.) P. Royen
brinjal eggplant (English)	<i>Solanum melongena</i> L.
brócoli (Portuguese)	<i>Brassica oleracea</i> L. var. <i>italica</i> Plenck
brócoli (Spanish)	<i>Brassica oleracea</i> L. var. <i>italica</i> Plenck
broccoli asperge (French)	<i>Brassica oleracea</i> L. var. <i>italica</i> Plenck
broccoli (English)	<i>Brassica oleracea</i> L. var. <i>italica</i> Plenck
Brokkoli (German)	<i>Brassica oleracea</i> L. var. <i>italica</i> Plenck
brown mustard (English)	<i>Brassica juncea</i> (L.) Czern.
brugnon (French)	<i>Prunus persica</i> (L.) Batsch var. <i>nucipersica</i> (Suckow) C. K. Schneid.
brugnonier (French)	<i>Prunus persica</i> (L.) Batsch var. <i>persica</i>
Brustbeerbaum (German)	<i>Ziziphus jujuba</i> Mill.
bugtree (English)	<i>Solanum mauritianum</i> Scop.
bullock's-heart (English)	<i>Annona reticulata</i> L.
bungulan (unknown)	<i>Musa acuminata</i> Colla
buntan (Japanese Rōmaji)	<i>Citrus maxima</i> (Burm.) Merr.
bush squash (English)	<i>Cucurbita pepo</i> L.
butter bean (English)	<i>Phaseolus lunatus</i> L.
butternut pumpkin (English)	<i>Cucurbita moschata</i> Duchesne
butternut squash (English)	<i>Cucurbita moschata</i> Duchesne
byeongbaenamamu (transcribed Korean)	<i>Pyrus communis</i> L.

C

- cabaco (Portuguese)
 cabbage (English)
- cabbage turnip (English)
 caca poule (French)
 cachiman (French)
 cachiman cannelle (French)
 cachiman épineux (French)
 cachito (Spanish)
 café (Portuguese-Brazil)
 café-do-diabo (Portuguese-Brazil)
 caféeiro (Portuguese)
 caféier d'Arabie (French)
 cafeiro (Portuguese-Brazil)
 cafeto arábico (Spanish)
 cafeto de Arabia (Spanish)
 cai dou (transcribed Chinese)
 cai gua (transcribed Chinese)
- caiba (Spanish)
 caifa (Spanish-Costa Rica)
 caigua (Spanish)
 caihua (Spanish)
 caimitillo (Spanish)
 caimitier (French)
 caimito (Spanish)
 caimito blanco (Spanish)
 caimito morado (Spanish)
 cajombre (Spanish)
 cajuil de Surinam (Spanish)
- cajou (French)
 cajú (Portuguese)
 cajueiro (Portuguese)
 cajuil (Spanish)
 calabaza blanca (Spanish)
 calabrese (English)
 calabash (English)
 calabash gourd (English)
 calabaza (Spanish)
 calabaza (Spanish-Mexico)
 calabaza moscada (Spanish)
 calabaza pellejo (Spanish)
 calabaza pumpkin (English)
 calebassier (French)
 camochayote (Spanish-Mexico)
 canistel (English)
 canistelsapote (Swedish)
 cantaloupe (English)
 Cape broccoli (English)
 capsicum (English)
- Lagenaria siceraria* (Molina) Standl.
Brassica oleracea L.
Brassica oleracea L. var. *capitata* L.
Brassica oleracea L. var. *gongylodes* L.
Euphorbia heterophylla L.
Annona reticulata L.
Annona squamosa L.
Annona muricata L.
Cajanus cajan (L.) Huth
Coffea arabica L.
Euphorbia heterophylla L.
Coffea arabica L.
Coffea arabica L.
Coffea arabica L.
Coffea arabica L.
Coffea arabica L.
Coffea arabica L.
Phaseolus vulgaris L.
Cucumis melo L. subsp. *agrestis* var. *conomon*
 (Thunb.) Makino
Cyclanthera pedata (L.) Schrad.
Cyclanthera pedata (L.) Schrad.
Cyclanthera pedata (L.) Schrad.
Cyclanthera pedata (L.) Schrad.
Chrysophyllum oliviforme L.
Chrysophyllum cainito L.
Chrysophyllum cainito L.
Chrysophyllum cainito L.
Chrysophyllum cainito L.
Chrysophyllum cainito L.
Lagenaria siceraria (Molina) Standl.
Syzygium samarangense (Blume) Merr. and
 L. M. Perry
Anacardium occidentale L.
Anacardium occidentale L.
Anacardium occidentale L.
Anacardium occidentale L.
Benincasa hispida (Thunb.) Cogn.
Brassica oleracea L. var. *italica* Plenck
Lagenaria siceraria (Molina) Standl.
Lagenaria siceraria (Molina) Standl.
Lagenaria siceraria (Molina) Standl.
Cucurbita pepo L.
Cucurbita moschata Duchesne
Cucurbita moschata Duchesne
Cucurbita moschata Duchesne
Lagenaria siceraria (Molina) Standl.
Sechium edule (Jacq.) Sw.
Pouteria campechiana (Kunth) Baehni
Pouteria campechiana (Kunth) Baehni
Cucumis melo L. subsp. *melo* var. *cantalupo* Ser
Brassica oleracea L. var. *italica* Plenck
Capsicum frutescens L.

capsicum pepper (English)	<i>Capsicum annuum</i> L. <i>Capsicum annuum</i> L. var. <i>annuum</i>
carelessweed (English)	<i>Amaranthus spinosus</i> L.
carique (French)	<i>Ficus carica</i> L.
carrapateiro (Portuguese)	<i>Ricinus communis</i> L.
carurú-bravo (Portuguese-Brazil)	<i>Amaranthus spinosus</i> L.
carurú-de-espinho (Portuguese-Brazil)	<i>Amaranthus spinosus</i> L.
carambola (English)	<i>Averrhoa carambola</i> L.
carambolier (French)	<i>Averrhoa carambola</i> L.
carambolo (Spanish)	<i>Averrhoa carambola</i> L.
carilla gourd (English)	<i>Momordica charantia</i> L.
Carpathian walnut (English)	<i>Juglans regia</i> L.
casaba melon (English)	<i>Cucumis melo</i> L. subsp. <i>melo</i> var. <i>inodorus</i> H. Jacq.
cashew (English)	<i>Anacardium occidentale</i> L.
cashew (Swedish)	<i>Anacardium occidentale</i> L.
cashewnut (English)	<i>Anacardium occidentale</i> L.
casimiroa (English)	<i>Casimiroa edulis</i> La Llave and Lex.
castanheiro-da-África (Portuguese)	<i>Blighia sapida</i> K. D. Koenig
castor (English)	<i>Ricinus communis</i> L.
castor-bean (English)	<i>Ricinus communis</i> L.
castor-bean-plant (English)	<i>Ricinus communis</i> L.
castor-oil-plant (English)	<i>Ricinus communis</i> L.
cau batu (Sudanese)	<i>Musa acuminata</i> Colla
cauliflower (English)	<i>Brassica oleracea</i> L. var. <i>botrytis</i> L.
Cavendish banana (English)	<i>Musa acuminata</i> Colla
cavolfiore (Italian)	<i>Brassica oleracea</i> L. var. <i>botrytis</i> L.
cavolo (Italian)	<i>Brassica oleracea</i> L.
cavolo broccolo (Italian)	<i>Brassica oleracea</i> L. var. <i>italica</i> Plenck
cavolo cappuccio (Italian)	<i>Brassica oleracea</i> L. var. <i>capitata</i> L.
cavolo cappuccio bianco (Italian)	<i>Brassica oleracea</i> L. var. <i>capitata</i> L.
cavolo cappuccio rosso (Italian)	<i>Brassica oleracea</i> L. var. <i>capitata</i> L.
cavolo cappuccio conico (Italian)	<i>Brassica oleracea</i> L. var. <i>capitata</i> L.
cavolo fiore (Italian)	<i>Brassica oleracea</i> L. var. <i>botrytis</i> L.
cavolo rapa (Italian)	<i>Brassica oleracea</i> L. var. <i>gongylodes</i> L.
Cayenne pepper (English)	<i>Capsicum annuum</i> L. <i>Capsicum annuum</i> L. var. <i>annuum</i>
Cayennekirsche (German)	<i>Eugenia uniflora</i> L.
Cayennepfeffer (German)	<i>Capsicum annuum</i> L. <i>Capsicum annuum</i> L. var. <i>annuum</i>
caygua (Spanish)	<i>Cyclanthera pedata</i> (L.) Schrad.
cerezo de Cayena (Spanish)	<i>Eugenia uniflora</i> L.
cerisier carré (French)	<i>Eugenia uniflora</i> L.
cerisier de Cayenne (French)	<i>Eugenia uniflora</i> L.
cerisier de Chine (French)	<i>Litchi chinensis</i> Sonn.
chacam (Spanish)	<i>Hylocereus undatus</i> (Haw.) Britton and Rose
chaedu (transcribed Korean)	<i>Phaseolus lunatus</i> L.
chak-wob (Spanish)	<i>Hylocereus undatus</i> (Haw.) Britton and Rose
chamoe (transcribed Korean)	<i>Cucumis melo</i> L. subsp. <i>melo</i>
chapéu-de-sol (Portuguese-Brazil)	<i>Terminalia catappa</i> L.
chayote (English)	<i>Sechium edule</i> (Jacq.) Sw.
Chayote (German)	<i>Sechium edule</i> (Jacq.) Sw.
cheese pumpkin (English)	<i>Cucurbita moschata</i> Duchesne

cherry pepper (English)	<i>Capsicum annuum</i> L.
cherry guava (English)	<i>Capsicum annuum</i> L. var. <i>annuum</i>
cherry tomato (English)	<i>Psidium cattleianum</i> Sabine
	<i>Solanum lycopersicum</i> L. var. <i>cerasiforme</i> (Alef.) Fosberg
chibber	<i>Cucumis maderaspatanus</i> L.
chicamita (Spanish)	<i>Cucurbita moschata</i> Duchesne
chiclayo (Spanish)	<i>Vigna unguiculata</i> (L.) Walp.
chicle (English)	<i>Manilkara zapota</i> (L.) P. Royen
chico sapote (Spanish)	<i>Manilkara zapota</i> (L.) P. Royen
chile (Spanish)	<i>Capsicum annuum</i> L.
	<i>Capsicum annuum</i> L. var. <i>annuum</i>
	<i>Capsicum frutescens</i> L.
chile pequin (Spanish)	<i>Capsicum annuum</i> L.
Chilean strawberry (English)	<i>Fragaria chiloensis</i> (L.) Mill.
Chileerdbeere (German)	<i>Fragaria chiloensis</i> (L.) Mill.
chilère (French)	<i>Fragaria chiloensis</i> (L.) Mill.
chili pepper (English)	<i>Capsicum annuum</i> L.
	<i>Capsicum annuum</i> L. var. <i>annuum</i>
chilipiquin (Spanish)	<i>Capsicum annuum</i> L.
Chillies (German)	<i>Capsicum frutescens</i> L.
Chiloe strawberry (English)	<i>Fragaria chiloensis</i> (L.) Mill.
chiltepe (Spanish)	<i>Capsicum annuum</i> L.
chiltepin (Spanish)	<i>Capsicum annuum</i> L.
chiltepinpeppar (Swedish)	<i>Capsicum annuum</i> L.
China flowerleaf (English)	<i>Solanum erianthum</i> D. Don
chinchayote (Spanish-Mexico)	<i>Sechium edule</i> (Jacq.) Sw.
Chinese banana (English)	<i>Musa acuminata</i> Colla
Chinese bitter-cucumber (English)	<i>Momordica cochinchinensis</i> (Lour.) Spreng.
Chinese clausena (English)	<i>Clausena lansium</i> (Lour.) Skeels
Chinese-cucumber (English)	<i>Momordica cochinchinensis</i> (Lour.) Spreng.
Chinese-date (English)	<i>Ziziphus jujuba</i> Mill.
Chinese jujube (English)	<i>Ziziphus jujuba</i> Mill.
Chinese mustard (English)	<i>Brassica juncea</i> (L.) Czern.
Chinese-okra (English)	<i>Luffa acutangula</i> (L.) Roxb.
Chinese preserving-melon (English)	<i>Benincasa hispida</i> (Thunb.) Cogn.
Chinese scarlet egg (English)	<i>Solanum aethiopicum</i> L.
Chinese strawberry guava (English)	<i>Psidium cattleianum</i> Sabine var. <i>littorale</i> (Raddi) Fosberg
Chinese-watermelon (English)	<i>Benincasa hispida</i> (Thunb.) Cogn.
chinesische Dattel (German)	<i>Ziziphus jujuba</i> Mill.
Chinit (Russian)	<i>Sechium edule</i> (Jacq.) Sw.
chirimoyo (Spanish)	<i>Annona squamosa</i> L.
cho-cho (English)	<i>Sechium edule</i> (Jacq.) Sw.
chocho (Spanish)	<i>Sechium edule</i> (Jacq.) Sw.
chocolate-vine (English)	<i>Akebia quinata</i> (Thunb. Ex Hoult.) Decne.
chocuan (Portuguese)	<i>Carissa bispinosa</i> (L.) Desf. ex Brenan
chou-chou (French)	<i>Sechium edule</i> (Jacq.) Sw.
chou brocoli (French)	<i>Brassica oleracea</i> L. var. <i>botrytis</i> L.
	<i>Brassica oleracea</i> L. var. <i>italica</i> Plenck
	<i>Brassica oleracea</i> L. var. <i>capitata</i> L.
chou cabus (French)	<i>Brassica oleracea</i> L. var. <i>botrytis</i> L.
chou fleur (French)	<i>Brassica oleracea</i> L. var. <i>botrytis</i> L.
chou fleur d'hiver (French)	<i>Brassica oleracea</i> L. var. <i>botrytis</i> L.
chou pommé (French)	<i>Brassica oleracea</i> L. var. <i>capitata</i> L.

chou rave (French)	<i>Brassica oleracea</i> L. var. <i>gongylodes</i> L.
chou rouge (French)	<i>Brassica oleracea</i> L. var. <i>capitata</i> L.
christophine (English)	<i>Sechium edule</i> (Jacq.) Sw.
christofine (French)	<i>Sechium edule</i> (Jacq.) Sw.
chuchu (Portuguese)	<i>Sechium edule</i> (Jacq.) Sw.
chumba (Spanish)	<i>Opuntia ficus-indica</i> (L.) Mill.
chumbera (Spanish)	<i>Opuntia ficus-indica</i> (L.) Mill.
ci xian (transcribed Chinese)	<i>Amaranthus spinosus</i> L.
cipolla (Italian)	<i>Allium cepa</i> L.
cirigüela (Portuguese-Brazil)	<i>Spondias purpurea</i> L.
ciruela (Portuguese-Brazil)	<i>Spondias purpurea</i> L.
ciruelo (Spanish)	<i>Prunus domestica</i> L. subsp. <i>domestica</i>
	<i>Spondias purpurea</i> L.
ciruela española (Spanish)	<i>Spondias purpurea</i> L.
circuela mexicana (Spanish)	<i>Spondias purpurea</i> L.
cirolero (Spanish)	<i>Prunus domestica</i> L. subsp. <i>domestica</i>
citron (English)	<i>Citrullus amarus</i> Schrad.
Citron-melon (English)	<i>Citrullus amarus</i> Schrad.
citronnier (French)	<i>Citrus limon</i> (L.) Burm. f.
citrouille (French)	<i>Cucurbita moschata</i> Duchesne
	<i>Cucurbita pepo</i> L.
club gourd (English)	<i>Trichosanthes cucumerina</i> L. var. <i>anguina</i> (L.) Haines
Cochilsapote (German)	<i>Casimiroa edulis</i> La Llave and Lex.
cockroach-berry (English)	<i>Solanum capsicoides</i> All.
cocona (English)	<i>Solanum sessiliflorum</i> Dunal
cocozelle (English)	<i>Cucurbita pepo</i> L. subsp. <i>pepo</i>
coeur de boeuf (French)	<i>Annona reticulata</i> L.
coffee (English)	<i>Coffea arabica</i> L.
coffeetree (English)	<i>Coffea arabica</i> L.
cognassier (French)	<i>Cydonia oblonga</i> Mill.
coing (French)	<i>Cydonia oblonga</i> Mill.
col (Spanish)	<i>Brassica oleracea</i> L. var. <i>capitata</i> L.
col rabano (Italian)	<i>Brassica oleracea</i> L. var. <i>gongylodes</i> L.
col rábano (Spanish)	<i>Brassica oleracea</i> L. var. <i>gongylodes</i> L.
col repollo (Spanish)	<i>Brassica oleracea</i> L. var. <i>capitata</i> L.
coliflor (Spanish)	<i>Brassica oleracea</i> L. var. <i>botrytis</i> L.
colinabo (Spanish)	<i>Brassica oleracea</i> L. var. <i>gongylodes</i> L.
colirrábano (Spanish)	<i>Brassica oleracea</i> L. var. <i>gongylodes</i> L.
colocíntida (Portuguese)	<i>Citrullus colocynthis</i> (L.) Schrad.
colocynth (English)	<i>Citrullus colocynthis</i> (L.) Schrad.
coloquinte (French)	<i>Citrullus colocynthis</i> (L.) Schrad.
coloquíntida (Spanish)	<i>Citrullus colocynthis</i> (L.) Schrad.
combava (French)	<i>Citrus hystrix</i> DC.
common fig (English)	<i>Ficus carica</i> L.
common grapevine (English)	<i>Vitis vinifera</i> L.
common guava (English)	<i>Psidium guajava</i> L.
common jujube (English)	<i>Ziziphus jujuba</i> Mill.
common mango (English)	<i>Mangifera indica</i> L.
common nightshade (English)	<i>Solanum nigrum</i> L.
common passionfruit (English)	<i>Passiflora edulis</i> Sims
concombre africain (French)	<i>Cucumis metulifer</i> E. Mey. ex Naudin
concombre grim pant (French)	<i>Cyclanthera pedata</i> (L.) Schrad.
Congo-pea (English)	<i>Cajanus cajan</i> (L.) Huth

cone pepper (English)	<i>Capsicum annuum</i> L. <i>Capsicum annuum</i> L. var. <i>annuum</i> <i>Physalis philadelphica</i> Lam.
coqueret (French)	<i>Annona muricata</i> L.
coração-de-rainha (Portuguese-Brazil)	<i>Annona reticulata</i> L.
coração-de-boi (Portuguese)	<i>Annona reticulata</i> L.
corazón de buey (Spanish)	<i>Cucumis anguria</i> L.
cornichão-das-antilhas (Portuguese-Brazil)	<i>Annona muricata</i> L.
corossol épineux (French)	<i>Annona reticulata</i> L.
corossol reticulé (French)	<i>Vigna unguiculata</i> (L.) Walp. subsp. <i>unguiculata</i> Unguiculata Group
costeño (Spanish)	<i>Terminalia catappa</i> L.
country-almond (English)	<i>Benincasa hispida</i> (Thunb.) Cogn.
courge à cire (French)	<i>Benincasa hispida</i> (Thunb.) Cogn.
courge cireuse (French)	<i>Cucurbita pepo</i> L.
courge pepon (French)	<i>Luffa aegyptiaca</i> Mill.
courge torchon (French)	<i>Cucurbita pepo</i> L. subsp. <i>pepo</i>
courgette (English)	<i>Brassica oleracea</i> L. var. <i>botrytis</i> L.
couve-flor (Portuguese)	<i>Cucurbita moschata</i> Duchesne
courge musquée (French)	<i>Brassica oleracea</i> L. var. <i>gongylodes</i> L.
couve-rábano (Portuguese)	<i>Brassica oleracea</i> L. var. <i>capitata</i> L.
couve-repolho (Portuguese)	<i>Solanum mauritianum</i> Scop.
couvetinga (Portuguese-Brazil)	<i>Vigna unguiculata</i> (L.) Walp.
cowpea (English)	<i>Vigna unguiculata</i> (L.) Walp. subsp. <i>unguiculata</i> Unguiculata Group
crab apple (English)	<i>Malus sylvestris</i> (L.) Mill.
cranix (Spanish)	<i>Passiflora ligularis</i> Juss.
crowder-pea (English)	<i>Vigna unguiculata</i> (L.) Walp. subsp. <i>unguiculata</i> Unguiculata Group
cucumber (English)	<i>Cucumis sativus</i> L.
cubiu (Portuguese)	<i>Solanum sessiliflorum</i> Dunal
cueza (Spanish-Mexico)	<i>Sechium edule</i> (Jacq.) Sw.
cukatnyj arbuz (transliterated Russian)	<i>Citrullus amarus</i> Schrad.
culate mandarin (English)	<i>Citrus reticulata</i> Blanco
cundeamor (Spanish)	<i>Momordica charantia</i> L.
Curuba (German)	<i>Momordica cochinchinensis</i> (Lour.) Spreng.
curuba (Swedish)	<i>Passiflora tripartita</i> (Juss.) Poir. var. <i>mollissima</i> (Kunth) Holm-Niels. and P. Jørg.
curuba de Castilla (Spanish-Columbia)	<i>Passiflora tripartita</i> (Juss.) Poir. var. <i>mollissima</i> (Kunth) Holm-Niels. and P. Jørg.
custard-apple (English)	<i>Passiflora tripartita</i> (Juss.) Poir. var. <i>mollissima</i> (Kunth) Holm-Niels. and P. Jørg.
cuvitinga (Portuguese-Brazil)	<i>Annona reticulata</i> L.
	<i>Annona squamosa</i> L.
	<i>Solanum mauritianum</i> Scop.
D	
dadenpalm (Swedish)	<i>Phoenix dactylifera</i> L.
daidai (Japanese Rōmaji)	<i>Citrus aurantium</i> L.
damasco (Portuguese)	<i>Prunus armeniaca</i> L.
damasco (Spanish)	<i>Prunus armeniaca</i> L.
damasqueiro (Portuguese)	<i>Prunus armeniaca</i> L.
damasqueiro-da-China (Portuguese)	<i>Prunus mume</i> Siebold and Zucc.

damasquino (Spanish)	<i>Prunus armeniaca</i> L.
damson-plum (English)	<i>Chrysophyllum oliviforme</i> L.
danggulnamu (transcribed Korean)	<i>Citrus sinensis</i> (L.) Osbeck
dao (Swedish)	<i>Dracontomelon dao</i> (Blanco) Merr. and Rolfe
dark egusi (English)	<i>Melothria sphaerocarpa</i> (Cogn.) H. Schaef. and S.S. Renner
date (English)	<i>Phoenix dactylifera</i> L.
date palm (English)	<i>Phoenix dactylifera</i> L.
Dattelpalme (German)	<i>Phoenix dactylifera</i> L.
dattier (French)	<i>Phoenix dactylifera</i> L.
dem'yanka (Russian)	<i>Solanum melongena</i> L.
deogulgangnamkong (transcribed Korean)	<i>Phaseolus vulgaris</i> L.
dessert watermelon (English)	<i>Citrullus lanatus</i> (Thunb.) Matsum. and Nakai subsp. <i>lanatus</i>
devil's-apple (English)	<i>Solanum capsicoides</i> All.
dilpasand (India)	<i>Benincasa fistulosa</i> (Stocks) H. Schaef. and S. S. Renner
dishcloth gourd (English)	<i>Luffa acutangula</i> (L.) Roxb.
dishrag gourd (English)	<i>Luffa aegyptiaca</i> Mill.
Distelbirne (German)	<i>Hylocereus undatus</i> (Haw.) Britton and Rose
dolique (French)	<i>Lablab purpureus</i> (L.) Sweet subsp. <i>purpureus</i>
dolique d'Egypte (French)	<i>Lablab purpureus</i> (L.) Sweet subsp. <i>purpureus</i>
dolique de Chine (French)	<i>Vigna unguiculata</i> (L.) Walp.
domado (transcribed Korean)	<i>Solanum lycopersicum</i> L. var. <i>lycopersicum</i>
dong gua (transcribed Chinese)	<i>Benincasa hispida</i> (Thunb.) Cogn.
donga (transcribed Korean)	<i>Benincasa hispida</i> (Thunb.) Cogn.
dongbu (transcribed Korean)	<i>Vigna unguiculata</i> (L.) Walp.
donka (unknown)	<i>Sandoricum koetjape</i> (Burm. f.) Merr.
dorniger Fuchsschwanz (German)	<i>Amaranthus spinosus</i> L.
dorniger Wachsbaum (German)	<i>Carissa bispinosa</i> (L.) Desf. ex Brenan
Drachenapfel (German)	<i>Dracontomelon dao</i> (Blanco) Merr. and Rolfe
dragon-fruit (English)	<i>Hylocereus undatus</i> (Haw.) Britton and Rose
dudhi (India)	<i>Lagenaria siceraria</i> (Molina) Standl.
duraznero (Spanish)	<i>Prunus persica</i> (L.) Batsch var. <i>persica</i>
durazno (Spanish)	<i>Prunus persica</i> (L.) Batsch var. <i>persica</i>
Dutch eggplant (English)	<i>Solanum aculeatissimum</i> Jacq.
duvärt (Swedish)	<i>Cajanus cajan</i> (L.) Huth
dwarf banana (English)	<i>Musa acuminata</i> Colla
dynya	<i>Cucumis melo</i> L. subsp. <i>melo</i>

E

eßbarer Bisameibisch (German)	<i>Abelmoschus esculentus</i> (L.) Moench
ear-leaf nightshade (English)	<i>Solanum mauritianum</i> Scop.
East African greenbark (English)	<i>Warburgia ugandensis</i> Sprague
Ebenholzbaum (German)	<i>Diospyros digyna</i> Jacq.
echte Feige (German)	<i>Ficus carica</i> L.
echte Walnuß (German)	<i>Juglans regia</i> L.
echter Weinstock (German)	<i>Vitis vinifera</i> L.
edlebur (English)	<i>Amaranthus spinosus</i> L.
eggfruit-tree (English)	<i>Pouteria campechiana</i> (Kunth) Baehni
eggplant (English)	<i>Solanum melongena</i> L.

égousi (French)	<i>Melothria sphaerocarpa</i> (Cogn.) H. Schaef. and S.S. Renner
egousi-itoo (French)	<i>Melothria sphaerocarpa</i> (Cogn.) H. Schaef. and S.S. Renner
egusi (Nigeria-Yoruba)	<i>Citrullus lanatus</i> (Thunb.) Matsum. and Nakai
egusi-itoo (English)	<i>Melothria sphaerocarpa</i> (Cogn.) H. Schaef. and S.S. Renner
Eierfrucht (German)	<i>Solanum melongena</i> L.
e li (transcribed Chinese)	<i>Persea americana</i> Mill
ʿenal el-deeb (Arabic)	<i>Solanum nigrum</i> L.
English walnut (English)	<i>Juglans regia</i> L.
épinard cochon (French)	<i>Amaranthus spinosus</i> L.
épinard malabre (French)	<i>Amaranthus spinosus</i> L.
Erdbeere (German)	<i>Fragaria ×ananassa</i> Duchesne ex Rozier
erva-moura (Portuguese)	<i>Solanum nigrum</i> L.
escobillo (Spanish)	<i>Malpighia glabra</i> L.
espinaca de Malabar (Spanish)	<i>Amaranthus spinosus</i> L.
esponja-vegetal (Portuguese)	<i>Luffa aegyptiaca</i> Mill.
Ess-Banane (German)	<i>Musa ×paradisiaca</i> L.
Essfeige (German)	<i>Ficus carica</i> L.
estropajo (Spanish)	<i>Luffa aegyptiaca</i> Mill.
eureumdeonggul (transcribed Korean)	<i>Akebia quinata</i> (Thunb. Ex Hoult.) Decne.
European crab apple (English)	<i>Malus sylvestris</i> (L.) Mill.
European grape (English)	<i>Vitis vinifera</i> L.
European plum (English)	<i>Prunus domestica</i> L. subsp. <i>domestica</i>
European strawberry (English)	<i>Fragaria vesca</i> L.
ezo-hebi-ichigo (Japanese Rōmaji)	<i>Fragaria vesca</i> L.
ezo-no-hebi-ichigo (Japanese Rōmaji)	<i>Fragaria vesca</i> L.

F

fagiolino dall'occhio (Italian)	<i>Vigna unguiculata</i> (L.) Walp. subsp. <i>unguiculata</i> Unguiculata Group
fagiolo d'Egitto (Italian)	<i>Lablab purpureus</i> (L.) Sweet
fagiolo mungo (Italian)	<i>Vigna radiata</i> (L.) R. Wilczek var. <i>radiata</i>
fagiolo urd (Italian)	<i>Vigna mungo</i> (L.) Hepper var. <i>mungo</i>
falsche Jerusalemkirsche (German)	<i>Solanum pseudocapsicum</i> L.
false capsicum (English)	<i>Solanum pseudocapsicum</i> L.
false Jerusalem-cherry (English)	<i>Solanum pseudocapsicum</i> L.
falso guayabo (Spanish)	<i>Acca sellowiana</i> (O. Berg) Burret
fan jiang (transcribed Chinese)	<i>Capsicum frutescens</i> L.
fan li zhi (transcribed Chinese)	<i>Annona squamosa</i> L.
Faselbohne (German)	<i>Lablab purpureus</i> (L.) Sweet subsp. <i>purpureus</i>
faux mangoustan (French)	<i>Sandoricum koetjape</i> (Burm. f.) Merr.
fagiolo di Lima (Italian)	<i>Phaseolus lunatus</i> L.
fava-Belém (Portuguese)	<i>Phaseolus lunatus</i> L.
Feigenbaum (German)	<i>Ficus carica</i> L.
Feigenkaktus (German)	<i>Opuntia ficus-indica</i> (L.) Mill.
feijão-da-China (Portuguese)	<i>Vigna mungo</i> (L.) Hepper
feijão-de-Lima (Portuguese)	<i>Phaseolus lunatus</i> L.
feijão-guandu (Portuguese)	<i>Cajanus cajan</i> (L.) Huth
Feijoa (German)	<i>Acca sellowiana</i> (O. Berg) Burret
feijoa (Portuguese)	<i>Acca sellowiana</i> (O. Berg) Burret
feijoa (Swedish)	<i>Acca sellowiana</i> (O. Berg) Burret

fembladig akebia (Swedish)	<i>Akebia quinata</i> (Thunb. Ex Hoult.) Decne.
fico (Italian)	<i>Ficus carica</i> L.
fig (English)	<i>Ficus carica</i> L.
figo (Portuguese-Brazil)	<i>Ficus carica</i> L.
figo-da-Espanha (Portuguese)	<i>Opuntia ficus-indica</i> (L.) Mill.
figo-da-Índia (Portuguese)	<i>Opuntia ficus-indica</i> (L.) Mill.
figuier commun (French)	<i>Ficus carica</i> L.
figueira (Portuguese)	<i>Ficus carica</i> L.
figueira-comum (Portuguese-Brazil)	<i>Ficus carica</i> L.
figueira-da-Barbária (Portuguese)	<i>Opuntia ficus-indica</i> (L.) Mill.
figueira-da-europa (Portuguese-Brazil)	<i>Ficus carica</i> L.
figueira-do-reino (Portuguese-Brazil)	<i>Ficus carica</i> L.
figuier d'Inde (French)	<i>Opuntia ficus-indica</i> (L.) Mill.
figuier de Barbarie (French)	<i>Opuntia ficus-indica</i> (L.) Mill.
fikon (Swedish)	<i>Ficus carica</i> L.
fikonkaktus (Swedish)	<i>Opuntia ficus-indica</i> (L.) Mill.
fingerblättrige Akebie (German)	<i>Akebia quinata</i> (Thunb. Ex Hoult.) Decne.
fisanier (French)	<i>Blighia sapida</i> K. D. Koenig
five-corner (English)	<i>Averrhoa carambola</i> L.
five-leaf akebia (English)	<i>Akebia quinata</i> (Thunb. Ex Hoult.) Decne.
fiveleaf (English)	<i>Akebia quinata</i> (Thunb. Ex Hoult.) Decne.
flannelbush (English)	<i>Solanum erianthum</i> D. Don
Flaschenkürbis (German)	<i>Lagenaria siceraria</i> (Molina) Standl.
flaskkurbits (Swedish)	<i>Lagenaria siceraria</i> (Molina) Standl.
flor-do-poeta (Portuguese)	<i>Euphorbia heterophylla</i> L.
fluted gourd (English)	<i>Telfairia occidentalis</i> Hook. f.
fluted-pumpkin (English)	<i>Telfairia occidentalis</i> Hook. f.
fodder-melon (English)	<i>Citrullus amarus</i> Schrad.
fo shou gua (transcribed Chinese)	<i>Sechium edule</i> (Jacq.) Sw.
fordhook squash (English)	<i>Cucurbita pepo</i> L. subsp. <i>ovifera</i> (L.) D. S. Decker var. <i>ovifera</i> (L.) Harz
fraisier (French)	<i>Fragaria ×ananassa</i> Duchesne ex Rozier
fraisier ananas (French)	<i>Fragaria ×ananassa</i> Duchesne ex Rozier
fraisier commun (French)	<i>Fragaria vesca</i> L.
fraisier des bois (French)	<i>Fragaria vesca</i> L.
fraisier du Chili (French)	<i>Fragaria chiloensis</i> (L.) Mill.
French plantain (English)	<i>Musa ×paradisiaca</i> L.
fresa (Spanish)	<i>Fragaria ×ananassa</i> Duchesne ex Rozier
fresa ananás (Spanish)	<i>Fragaria ×ananassa</i> Duchesne ex Rozier
fresa chilena (Spanish)	<i>Fragaria chiloensis</i> (L.) Mill.
fresa silvestre (Spanish)	<i>Fragaria vesca</i> L.
fresal común (Spanish)	<i>Fragaria vesca</i> L.
frijol de costa (Spanish)	<i>Vigna unguiculata</i> (L.) Walp. subsp. <i>unguiculata</i> Unguiculata Group
frijol de luna (Spanish)	<i>Phaseolus lunatus</i> L.
frijol mungo (Spanish)	<i>Vigna mungo</i> (L.) Hepper var. <i>mungo</i> <i>Vigna radiata</i> (L.) R. Wilczek var. <i>radiata</i>
fruta-de-condessa (Portuguese-Brazil)	<i>Annona reticulata</i> L.
fruta-do-conde (Portuguese-Brazil)	<i>Annona reticulata</i> L.
fruta de condesa (Spanish)	<i>Annona squamosa</i> L.
fruta del conde (Spanish)	<i>Annona squamosa</i> L.
frutilla (Spanish)	<i>Annona squamosa</i> L.
fumeira (Portuguese-Brazil)	<i>Fragaria chiloensis</i> (L.) Mill. <i>Solanum mauritianum</i> Scop.

fumo-bravo (Portuguese-Brazil)
Futtermelone (German)

Solanum mauritianum Scop.
Citrullus amarus Schrad.

G

gage (English)
gaji (transcribed Korean)
gamja (transcribed Korean)
gan ju (transcribed Chinese)
gan lan (transcribed Chinese)
gandapura (Indonesian)
gandul (Spanish)
gardalu (English)
garden plum (English)
garden radish (English)
garden strawberry (English)
Gartenerdbeere (German)
gas (transcribed Korean)
gboma (English)
gboma (French)
gboma eggplant (English)
gedang klutuk (Indonesian-Java)
gelbe Grenadille (German)
Gemüse-Kürbis (German)
Gemüse-Melone (German)

Gemüsepaprika (German)

gerippte Schwammgurke (German)
getfikon (Swedish)
gewöhnlicher Flaschenkürbis (German)
ghia kaddu (Urdu-Pakistan)
ghia tori (Urdu-Pakistan)
giant granadilla (English)
giant spine gourd (English)
gilo (English)
girasol (Spanish)
girasole (Italian)
girassol (Portuguese)
gochu (transcribed Korean)
goiaba (Portuguese)
goiaba-do-campo (Portuguese)
goiabeira-serrana (Portuguese)
goiabeiro (Portuguese)
golden-apple (English)
golden cushaw (English)
golden gram (English)
golondrina (Spanish)
gombo (French)
gombo (Italian)
gombo (Spanish)
gourde bouteille (French)
gousi (French)

Prunus domestica L. subsp. *domestica*
Solanum melongena L.
Solanum tuberosum L. subsp. *tuberosum*
Citrus reticulata Blanco
Brassica oleracea L. var. *capitata* L.
Abelmoschus moschatus Medik.
Cajanus cajan (L.) Huth
Prunus domestica L. subsp. *domestica*
Prunus domestica L. subsp. *domestica*
Raphanus sativus L.
Fragaria × *ananassa* Duchesne ex Rozier
Fragaria × *ananassa* Duchesne ex Rozier
Brassica juncea (L.) Czern.
Solanum macrocarpon L.
Solanum macrocarpon L.
Solanum macrocarpon L.
Musa acuminata Colla
Passiflora laurifolia L.
Cucurbita pepo L.
Cucumis melo L. subsp. *agrestis* var. *conomon*
(Thunb.) Makino
Capsicum annuum L.
Capsicum annuum L. var. *annuum*
Luffa acutangula (L.) Roxb.
Ficus carica L.
Lagenaria siceraria (Molina) Standl.
Cucurbita pepo L.
Luffa aegyptiaca Mill.
Passiflora quadrangularis L.
Momordica cochinchinensis (Lour.) Spreng.
Solanum aethiopicum L.
Helianthus annuus L.
Helianthus annuus L.
Helianthus annuus L.
Capsicum annuum L.
Psidium guajava L.
Acca sellowiana (O. Berg) Burret
Acca sellowiana (O. Berg) Burret
Psidium guajava L.
Aegle marmelos (L.) Corrêa
Cucurbita moschata Duchesne
Vigna radiata (L.) R. Wilczek var. *radiata*
Euphorbia heterophylla L.
Abelmoschus esculentus (L.) Moench
Abelmoschus esculentus (L.) Moench
Abelmoschus esculentus (L.) Moench
Lagenaria siceraria (Molina) Standl.
Melothria sphaerocarpa (Cogn.) H. Schaef. and
S.S. Renner

goyavier (French)	<i>Psidium guajava</i> L.
granada-china (Spanish)	<i>Passiflora ligularis</i> Juss.
granadilla (Spanish)	<i>Passiflora ligularis</i> Juss.
	<i>Passiflora quadrangularis</i> L.
	<i>Passiflora foetida</i> L.
granadilla de culebra (Spanish)	<i>Passiflora quadrangularis</i> L.
granadilla real (Spanish)	<i>Passiflora ligularis</i> Juss.
granadille (French)	<i>Passiflora subpeltata</i> Ortega
Granadina (Spanish)	<i>Passiflora ligularis</i> Juss.
grenadille douce (French)	<i>Annona muricata</i> L.
grand corossol (French)	<i>Helianthus annuus</i> L.
grand soleil (French)	<i>Vitis vinifera</i> L.
grape (English)	<i>Vitis vinifera</i> L.
grapefruit (English)	<i>Citrus paradisi</i> Macfad.
Grapefruit (German)	<i>Citrus paradisi</i> Macfad.
grapevine (English)	<i>Vitis vinifera</i> L.
graviola (Portuguese)	<i>Annona muricata</i> L.
great pumpkin (English)	<i>Cucurbita maxima</i> Duchesne
green capsicum (English-Australia)	<i>Capsicum annuum</i> L.
	<i>Capsicum annuum</i> L. var. <i>annuum</i>
	<i>Capsicum annuum</i> L.
	<i>Capsicum annuum</i> L. var. <i>annuum</i>
green pepper (English)	<i>Passiflora edulis</i> Sims
	<i>Passiflora quadrangularis</i> L.
grenadella (Afrikaans)	<i>Vigna radiata</i> (L.) R. Wilczek var. <i>radiata</i>
grenadine (English)	<i>Pouteria sapota</i> (Jacq.) H.E. Moore and Stearn
green gram (English)	<i>Opuntia ficus-indica</i> (L.) Mill.
große Sapote (German)	<i>Solanum macrocarpon</i> L.
grootdoringturksvy (Africaans)	<i>Psidium guajava</i> L.
grosse anghive (French)	<i>Psidium guajava</i> L.
guaiaba (Portuguese-Brazil)	<i>Annona muricata</i> L.
guaiava (Portuguese-Brazil)	<i>Annona muricata</i> L.
guanábana (Spanish)	<i>Cajanus cajan</i> (L.) Huth
guanábano (Spanish)	<i>Luffa acutangula</i> (L.) Roxb.
guandú (Portuguese)	<i>Passiflora seemannii</i> Griseb.
guang dong si gua (transcribed Chinese)	<i>Persea americana</i> Mill.
guate guate (Spanish-Panama)	<i>Psidium guajava</i> L.
Guatemalan avocado (English)	<i>Psidium guajava</i> L.
guava (English)	<i>Psidium guajava</i> L.
guava (Swedish)	<i>Psidium guajava</i> L.
Guave (German)	<i>Psidium guajava</i> L.
Guavenbaum (German)	<i>Psidium guajava</i> L.
guayaba (Spanish)	<i>Psidium guajava</i> L.
guayaba brasilera (Spanish)	<i>Acca sellowiana</i> (O. Berg) Burret
guayaba chilena (Spanish)	<i>Acca sellowiana</i> (O. Berg) Burret
guayabo (Spanish)	<i>Psidium guajava</i> L.
Guayave (German)	<i>Psidium guajava</i> L.
guindilla (Spanish)	<i>Capsicum annuum</i> L.
	<i>Capsicum annuum</i> L. var. <i>annuum</i>
	<i>Capsicum frutescens</i> L.
guiro amargo (Spanish)	<i>Lagenaria siceraria</i> (Molina) Standl.
guisante-de-Angola (Portuguese)	<i>Cajanus cajan</i> (L.) Huth
guldbärsskatta (Swedish)	<i>Solanum capsicoides</i> All.
guldgrenadill (Swedish)	<i>Passiflora laurifolia</i> L.
Gumbo (English)	<i>Abelmoschus esculentus</i> (L.) Moench
gwanggyulnamu (transcribed Korean)	<i>Citrus aurantium</i> L.

H

haba lima (Spanish)	<i>Phaseolus lunatus</i> L.
haebaragi (transcribed Korean)	<i>Helianthus annuus</i> L.
halva kaddu (Urdu-Pakistan)	<i>Cucurbita maxima</i> Duchesne
	<i>Cucurbita moschata</i> Duchesne
hana-yasai (Japanese Rōmaji)	<i>Brassica oleracea</i> L. var. <i>botrytis</i> L.
handhal (Arabic)	<i>Citrullus colocynthis</i> (L.) Schrad.
haradali (Swahili)	<i>Brassica juncea</i> (L.) Czern.
haricot de Lima (French)	<i>Phaseolus lunatus</i> L.
haricot doré (French)	<i>Vigna radiata</i> (L.) R. Wilczek var. <i>radiata</i>
haricot du Cap (French)	<i>Phaseolus lunatus</i> L.
haricot indigène (French)	<i>Vigna unguiculata</i> (L.) Walp. subsp. <i>unguiculata</i>
	Unguiculata Group
haricot mungo (French)	<i>Vigna mungo</i> (L.) Hepper var. <i>mungo</i>
	<i>Vigna radiata</i> (L.) R. Wilczek var. <i>radiata</i>
hayoto-uri (Japanese Rōmaji)	<i>Sechium edule</i> (Jacq.) Sw.
heading broccoli (English)	<i>Brassica oleracea</i> L. var. <i>italica</i> Plenck
hechima (Japanese Rōmaji)	<i>Luffa aegyptiaca</i> Mill.
hedgheg cucumber (English)	<i>Cucumis dipsaceus</i> Ehrenb. ex Spach
hedgheg gourd (English)	<i>Cucumis dipsaceus</i> Ehrenb. ex Spach
hedgethorn (English)	<i>Carissa bispinosa</i> (L.) Desf. ex Brenan
Helmbohne (German)	<i>Lablab purpureus</i> (L.) Sweet subsp. <i>purpureus</i>
hierba de leche (Spanish)	<i>Euphorbia heterophylla</i> L.
hierba mora (Spanish)	<i>Solanum nigrum</i> L.
highbush blueberry (English)	<i>Vaccinium corymbosum</i> L.
higo (Spanish)	<i>Ficus carica</i> L.
higuera (Spanish)	<i>Opuntia ficus-indica</i> (L.) Mill.
higuera común (Spanish)	<i>Ficus carica</i> L.
higuerilla (Spanish)	<i>Ricinus communis</i> L.
himawari (Japanese Rōmaji)	<i>Helianthus annuus</i> L.
Hinds's black walnut (English)	<i>Juglans hindsii</i> Jeps. ex R. E. Sm.
Hinds's walnut (English)	<i>Juglans hindsii</i> Jeps. ex R. E. Sm.
hjämböna (Swedish)	<i>Lablab purpureus</i> (L.) Sweet
hobag (transcribed Korean)	<i>Cucurbita moschata</i> Duchesne
hog-plum (English)	<i>Spondias purpurea</i> L.
Holz-Apfel (German)	<i>Malus sylvestris</i> (L.) Mill.
Hommelone (German)	<i>Cucumis metulifer</i> E. Mey. ex Naudin
hondala (Sinhala-Sri Lanka)	<i>Adenia hondala</i> (Gaertn.) W. J. de Wilde
honeydew melon (English)	<i>Cucumis melo</i> L. subsp. <i>melo</i> var. <i>inodorus</i>
	H. Jacq.
Honig-Melone (German)	<i>Cucumis melo</i> L. subsp. <i>melo</i> var. <i>inodorus</i>
	H. Jacq.
Horn-Gurke (German)	<i>Cucumis metulifer</i> E. Mey. ex Naudin
horny cucumber (English)	<i>Cucumis metulifer</i> E. Mey. ex Naudin
hot pepper (English)	<i>Capsicum frutescens</i> L.
hovedkaal (Danish)	<i>Brassica oleracea</i> L. var. <i>capitata</i> L.
hu lu (transcribed Chinese)	<i>Lagenaria siceraria</i> (Molina) Standl.
hu tao (transcribed Chinese)	<i>Juglans regia</i> L.
hua ye cai (transcribed Chinese)	<i>Brassica oleracea</i> L. var. <i>botrytis</i> L.
huang pi (transcribed Chinese)	<i>Clausena lansium</i> (Lour.) Skeels
huevo vegetal (Spanish)	<i>Blighia sapida</i> K. D. Koenig
husk-tomato (English)	<i>Physalis philadelphica</i> Lam.

hyacinth-bean (English)

Lablab purpureus (L.) Sweet

hyōtan (Japanese Rōmaji)

Lablab purpureus (L.) Sweet subsp. *purpureus*
Lagenaria siceraria (Molina) Standl.**I**

Igel-Gurke (German)

Cucumis dipsaceus Ehrenb. ex Spach

ilnyeongam (transcribed Korean)

Solanum lycopersicum L. var. *lycopersicum*

imbu (Portuguese)

Spondias purpurea L.

imbuzeiro (Portuguese)

Spondias purpurea L.

India mustard (English)

Brassica juncea (L.) Czern.

Indian-almond (English)

Terminalia catappa L.

Indian baelfruit (English)

Aegle marmelos (L.) Corrêa

Indian doomba oiltree (English)

Calophyllum inophyllum L.

Indian-fig (English)

Opuntia ficus-indica (L.) Mill.

Indian-fig prickly pear (English)

Opuntia ficus-indica (L.) Mill.

Indian-laurel (English)

Calophyllum inophyllum L.

Indian mango (English)

Mangifera indica L.

Indian mustard (English)

Brassica juncea (L.) Czern.

indische Bittergurke (German)

Momordica cochinchinensis (Lour.) Spreng.

indischer Mandelbaum (German)

Terminalia catappa L.

ingen-mame (Japanese Rōmaji)

Phaseolus vulgaris L.

Irish potato (English)

Solanum tuberosum L. subsp. *tuberosum*

ivy gourd (English)

Coccinia grandis (L.) Voigt.**J**

jabloko (transliterated Russian)

Malus domestica Borkh.

jablonja (transliterated Russian)

Malus domestica Borkh.

jablonja lesnaja (transliterated Russian)

Malus sylvestris (L.) Mill.

jaca (Portuguese)

Artocarpus heterophyllum Lam.

jaca (Spanish)

Artocarpus heterophyllum Lam.

jaca-de-pobre (Portuguese-Brazil)

Annona muricata L.

jaca-do-Pará (Portuguese-Brazil)

Annona muricata L.

jack (English)

Artocarpus heterophyllum Lam.

Jackfruchtbaum (German)

Artocarpus heterophyllum Lam.

jackfruit (English)

Artocarpus heterophyllum Lam.

jackfrukt (Swedish)

Artocarpus heterophyllum Lam.

jacquier (French)

Artocarpus heterophyllum Lam.

jaga-imo (Japanese Rōmaji)

Solanum tuberosum L. subsp. *tuberosum*

jaiba (Spanish-Costa Rica)

Cyclanthera pedata (L.) Schrad.

jak (English)

Artocarpus heterophyllum Lam.

jalapeño (Spanish)

Capsicum annuum L.

Jamaica-honeysuckle (English)

Capsicum annuum L. var. *annuum*

jamaracá (Portuguese)

Passiflora laurifolia L.

jambo ayer (French)

Opuntia ficus-indica (L.) Mill.

jamboa (Portuguese)

Syzygium aqueum (Burm. f.) Alston

jamboes (Afrikaans)

Citrus maxima (Burm.) Merr.

jambos (English)

Syzygium jambos (L.) Alston

jambosier (French)

Syzygium jambos (L.) Alston

jamboissier rouge (French)

Syzygium jambos (L.) Alston

jambu air (Malay)

Syzygium malaccense (L.) Merr. and L. M. Perry

jambu bol (Indonesian)

Syzygium aqueum (Burm. f.) Alston*Syzygium malaccense* (L.) Merr. and L. M. Perry

jambu bol (Malay)	<i>Syzygium malaccense</i> (L.) Merr. and L. M. Perry
jangli karela (Urdu-Pakistan)	<i>Momordica balsamina</i> L.
Japanese apricot (English)	<i>Prunus mume</i> Siebold and Zucc.
Japanese-medlar (English)	<i>Eriobotrya japonica</i> (Thunb.) Lindl.
Japanese poinsettia (English)	<i>Euphorbia heterophylla</i> L.
japanische Aprikose (German)	<i>Prunus mume</i> Siebold and Zucc.
japanische Mispel (German)	<i>Eriobotrya japonica</i> (Thunb.) Lindl.
japanische Wollmispel (German)	<i>Eriobotrya japonica</i> (Thunb.) Lindl.
japansk mispel (Swedish)	<i>Eriobotrya japonica</i> (Thunb.) Lindl.
japansk aprikos (Swedish)	<i>Prunus mume</i> Siebold and Zucc.
jaqueira (Portuguese-Brazil)	<i>Artocarpus heterophyllus</i> Lam.
jaqueiro (Spanish)	<i>Artocarpus heterophyllus</i> Lam.
jarak (Indonesian)	<i>Ricinus communis</i> L.
jättepumpa (Swedish)	<i>Cucurbita maxima</i> Duchesne
Java-Apfel (German)	<i>Syzygium samarangense</i> (Blume) Merr. and L. M. Perry
Java-apple (English)	<i>Syzygium samarangense</i> (Blume) Merr. and L. M. Perry
javaäpple (Swedish)	<i>Syzygium samarangense</i> (Blume) Merr. and L. M. Perry
jelly melon (English)	<i>Cucumis metulifer</i> E. Mey. ex Naudin
Jerusalem-cherry (English)	<i>Solanum pseudocapsicum</i> L.
Jerusalemkersie (Afrikaans)	<i>Solanum pseudocapsicum</i> L.
Jerusalemkirsche (German)	<i>Solanum pseudocapsicum</i> L.
jian ye qiu kui (transcribed Chinese)	<i>Abelmoschus moschatus</i> Medik.
jiang dou (transcribed Chinese)	<i>Vigna unguiculata</i> (L.) Walp. subsp. <i>unguiculata</i> Unguiculata Group
jia yan ye shu (transcribed Chinese)	<i>Solanum erianthum</i> D. Don
jie cai (transcribed Chinese)	<i>Brassica juncea</i> (L.) Czern.
jilo (Portuguese-Brazil)	<i>Solanum aethiopicum</i> L.
jocote (Spanish-Mexico)	<i>Spondias purpurea</i> L.
judía de Lima (Spanish)	<i>Phaseolus lunatus</i> L.
judía mung (Spanish)	<i>Vigna radiata</i> (L.) R. Wilczek var. <i>radiata</i>
jujube (English)	<i>Ziziphus jujuba</i> Mill.
Jujube (German)	<i>Ziziphus jujuba</i> Mill.
jujubier commun (French)	<i>Ziziphus jujuba</i> Mill.
juldangkong (transcribed Korean)	<i>Phaseolus vulgaris</i> L.
junco tapatío (Spanish)	<i>Hylocereus undatus</i> (Haw.) Britton and Rose
jurumbeba (Portuguese)	<i>Opuntia ficus-indica</i> (L.) Mill.

K

Ka fei huang kui (transcribed Chinese)	<i>Abelmoschus esculentus</i> (L.) Moench
kabachki (Russian)	<i>Cucurbita moschata</i> Duchesne
kacang bendi (Malay)	<i>Abelmoschus esculentus</i> (L.) Moench
Kaffeestrauch (German)	<i>Coffea arabica</i> L.
Kaffir lime (English)	<i>Citrus hystrix</i> DC.
Kaffir-orange (English)	<i>Strychnos spinosa</i> Lam.
Kafir-Limette (German)	<i>Citrus hystrix</i> DC.
kai choy (Malay)	<i>Brassica juncea</i> (L.) Czern.
kaisei-tō (Japanese Rōmaji)	<i>Citrus aurantium</i> L.
kakri (India)	<i>Cucumis melo</i> L. subsp. <i>agrestis</i> (Naudin) Pangalo var. <i>conomon</i> (Thunb.) Makino
kaksa (India)	<i>Momordica dioica</i> Roxb. ex Willd

kål (Swedish)	<i>Brassica oleracea</i> L.
kale (English)	<i>Brassica oleracea</i> L.
Kalebasse (German)	<i>Lagenaria siceraria</i> (Molina) Standl.
kalifornische Walnuß (German)	<i>Juglans hindsii</i> Jeps. ex R. E. Sm.
kamani (Hawaiian)	<i>Calophyllum inophyllum</i> L.
kanduri (Urdu-Pakistan)	<i>Coccinia grandis</i> (L.) Voigt.
kaneelappel (Dutch)	<i>Annona squamosa</i> L.
Kanonkulpumpa (Swedish)	<i>Lagenaria sphaerica</i> (Sond.) Naudin
kanran (Japanese Rōmaji)	<i>Brassica oleracea</i> L.
kanta chaulai (India-Hindi)	<i>Amaranthus spinosus</i> L.
Kantalupe (German)	<i>Cucumis melo</i> L. subsp. <i>melo</i> var. <i>cantalupo</i> Ser
kante math (India-Malathi)	<i>Amaranthus spinosus</i> L.
kantgurka (Swedish)	<i>Luffa acutangula</i> (L.) Roxb.
kapusta cvetnaja (transliterated Russian)	<i>Brassica oleracea</i> L. var. <i>botrytis</i> L.
karambola (Swedish)	<i>Averrhoa carambola</i> L.
Karambole (German)	<i>Averrhoa carambola</i> L.
karifurawā (Japanese Rōmaji)	<i>Brassica oleracea</i> L. var. <i>botrytis</i> L.
karashi-na (Japanese Rōmaji)	<i>Brassica juncea</i> (L.) Czern.
karela (India)	<i>Momordica charantia</i> L.
Kartoffel (German)	<i>Solanum tuberosum</i> L. subsp. <i>tuberosum</i>
Kartofel' (transliterated Russian)	<i>Solanum tuberosum</i> L. subsp. <i>tuberosum</i>
Kaschubaum (German)	<i>Anacardium occidentale</i> L.
kasterolieboom (Afrikaans)	<i>Ricinus communis</i> L.
kasturi (Indonesian)	<i>Abelmoschus moschatus</i> Medik.
Katappenbaum (German)	<i>Terminalia catappa</i> L.
kathal (India)	<i>Artocarpus heterophyllus</i> Lam.
Kaugummibaum (German)	<i>Manilkara zapota</i> (L.) P. Royen
kayote (Swedish)	<i>Sechium edule</i> (Jacq.) Sw.
kazari-kabocha (Japanese Rōmaji)	<i>Cucurbita pepo</i> L. subsp. <i>ovifera</i> (L.) D. S. Decker var. <i>ovifera</i> (L.) Harz
kechapi (English)	<i>Sandoricum koetjape</i> (Burm. f.) Merr.
ketimun (Indonesian)	<i>Cucumis sativus</i> L.
kharwa'a (Arabic)	<i>Ricinus communis</i> L.
khatta (India)	<i>Citrus aurantium</i> L.
khira (India)	<i>Cucumis sativus</i> L.
khushkhash (Israel)	<i>Citrus aurantium</i> L.
kidachi-tō-garashi (Japanese Rōmaji)	<i>Capsicum frutescens</i> L.
ki-mame (Japanese Rōmaji)	<i>Cajanus cajan</i> (L.) Huth
kikuza-kabocha (Japanese Rōmaji)	<i>Cucurbita moschata</i> Duchesne
kinesisk jujube (Swedish)	<i>Ziziphus jujuba</i> Mill.
King of Siam (English)	<i>Citrus nobilis</i> Lour.
king orange (English)	<i>Citrus nobilis</i> Lour.
Kirschtomate (German)	<i>Solanum lycopersicum</i> L. var. <i>cerasiforme</i> (Alef.) Fosberg
kiwano (English)	<i>Cucumis metulifer</i> E. Mey. ex Naudin
Kiwano (German)	<i>Cucumis metulifer</i> E. Mey. ex Naudin
kkachikong (transcribed Korean)	<i>Lablab purpureus</i> (L.) Sweet subsp. <i>purpureus</i>
knol kohl (India)	<i>Brassica oleracea</i> L. var. <i>gongylodes</i> L.
kočanaja kapusta (transliterated Russian)	<i>Brassica oleracea</i> L. var. <i>capitata</i> L.
koejawel (Afrikaans)	<i>Psidium guajava</i> L.
koffieboom (Afrikaans)	<i>Coffea arabica</i> L.
Kohl (German)	<i>Brassica oleracea</i> L.
kohlrabi (English)	<i>Brassica oleracea</i> L. var. <i>gongylodes</i> L.
Kohlrabi (German)	<i>Brassica oleracea</i> L. var. <i>gongylodes</i> L.

kolokvint (Swedish)
 Koloquinte (German)
 kol'rabi (transliterated Russian)
 Königs-Grenadille (German)
 Kopfbrokkoli (German)
 kopi arab (Indonesian)
 korallbär (Swedish)
 Korallenstrauch (German)
 Korila (German)
 korila (Swedish)
 Kormovoj arbuz (transliterated Russian)
 körsbärsmyrten (Swedish)
 ku gua (transcribed Chinese)
 Kultur-Apfel (German)
 Kulturerdbeere (German)
 kumba (English)
 kundor (Malay)
 kundree (India)
 kundur (Indonesian)
 kundur (Urdu-Pakistan)
 kunenbo (Japanese Rōmaji)
 kupala (Hawaiian)
 kvitten (Swedish)
 kyabetsu (Japanese Rōmaji)

L

la liao (transcribed Chinese)
 laban el-homara (Arabic)
 labeinah (Arabic)
 lablab-bean (English)
 Lablab-Bohne (German)
 lacayote (Spanish)
 lady-of-the-night (English)
 lady's-fingers (English)
 lady's-slipper (English)
 lahung (transcribed Thai)
 langdorniger Orangenbaum (German)
 laranja-amarga (Portuguese-Brazil)
 laranja-azeda (Portuguese)
 laranja-azeda (Portuguese-Brazil)
 laranja-bigarade (Portuguese-Brazil)
 laranja-da-terra (Portuguese-Brazil)
 laranja-de-sevilha (Portuguese-Brazil)
 laranja-doce (Portuguese)
 laranjeira (Portuguese)
 laranjeira-doce (Portuguese)
 large-flowered tomatillo (English)
 lauki (Pakistan)
 laurelwood (English)
 leaf mustard (English)
 lechosa (Spanish)
 leechee (English)

Citrullus colocynthis (L.) Schrad.
Citrullus colocynthis (L.) Schrad.
Brassica oleracea L. var. *gongylodes* L.
Passiflora quadrangularis L.
Brassica oleracea L. var. *botrytis* L.
Abelmoschus esculentus (L.) Moench
Solanum pseudocapsicum L.
Solanum pseudocapsicum L.
Cyclanthera pedata (L.) Schrad.
Cyclanthera pedata (L.) Schrad.
Citrullus amarus Schrad.
Eugenia uniflora L.
Momordica charantia L.
Malus domestica Borkh.
Fragaria × *ananassa* Duchesne ex Rozier
Solanum aethiopicum L.
Benincasa hispida (Thunb.) Cogn.
Coccinia grandis (L.) Voigt.
Benincasa hispida (Thunb.) Cogn.
Coccinia grandis (L.) Voigt.
Citrus nobilis Lour.
Sicyos pachycarpus Hook. and Arn.
Cydonia oblonga Mill.
Brassica oleracea L. var. *capitata* L.

Capsicum annuum L.
Euphorbia heterophylla L.
Euphorbia heterophylla L.
Lablab purpureus (L.) Sweet
Lablab purpureus (L.) Sweet subsp. *purpureus*
Lablab purpureus (L.) Sweet subsp. *purpureus*
Cucurbita moschata Duchesne
Cestrum nocturnum L.
Abelmoschus esculentus (L.) Moench
Cyclanthera pedata (L.) Schrad.
Ricinus communis L.
Citrus hystrix DC.
Citrus sinensis (L.) Osbeck
Citrus aurantium L.
Citrus sinensis (L.) Osbeck
Citrus sinensis (L.) Osbeck
Citrus sinensis (L.) Osbeck
Citrus sinensis (L.) Osbeck
Citrus sinensis (L.) Osbeck
Citrus sinensis (L.) Osbeck
Citrus sinensis (L.) Osbeck
Physalis philadelphica Lam.
Lagenaria siceraria (Molina) Standl.
Calophyllum inophyllum L.
Brassica juncea (L.) Czern.
Euphorbia heterophylla L.
Litchi chinensis Sonn.

leiteira (Portuguese-Brazil)	<i>Euphorbia heterophylla</i> L.
lemon (English)	<i>Citrus limon</i> (L.) Burm. f.
lemon guava (English)	<i>Psidium guajava</i> L.
li meng (transcribed Chinese)	<i>Citrus limon</i> (L.) Burm. f.
liane saba (French)	<i>Saba senegalensis</i> (A. DC.) Pichon
lichia (Portuguese-Brazil)	<i>Litchi chinensis</i> Sonn.
lici (Italian)	<i>Litchi chinensis</i> Sonn.
Lima bean (English)	<i>Phaseolus lunatus</i> L.
Limabohne (German)	<i>Phaseolus lunatus</i> L.
limaböna (Swedish)	<i>Phaseolus lunatus</i> L.
limão (Portuguese)	<i>Citrus limon</i> (L.) Burm. f.
limão-eureka (Portuguese-Brazil)	<i>Citrus limon</i> (L.) Burm. f.
limão-gênova (Portuguese-Brazil)	<i>Citrus limon</i> (L.) Burm. f.
limão-siciliano (Portuguese-Brazil)	<i>Citrus limon</i> (L.) Burm. f.
limão-verdadeiro (Portuguese-Brazil)	<i>Citrus limon</i> (L.) Burm. f.
limau (Indonesian)	<i>Citrus maxima</i> (Burm.) Merr.
limeberry (English)	<i>Triphasia trifolia</i> (Burm. f.) P. Wilson
limeberry (Swedish)	<i>Triphasia trifolia</i> (Burm. f.) P. Wilson
limoeiro (Portuguese-Brazil)	<i>Citrus limon</i> (L.) Burm. f.
limoeiro-azedo (Portuguese)	<i>Citrus limon</i> (L.) Burm. f.
limón (Spanish)	<i>Citrus limon</i> (L.) Burm. f.
limone (Italian)	<i>Citrus limon</i> (L.) Burm. f.
limonero (Spanish)	<i>Citrus limon</i> (L.) Burm. f.
limonier (French),	<i>Citrus limon</i> (L.) Burm. f.
limum (transliterated Arabic)	<i>Citrus limon</i> (L.) Burm. f.
lipupu (Portuguese)	<i>Melothria sphaerocarpa</i> (Cogn.) H. Schaef. and S.S. Renner
litchi (English)	<i>Litchi chinensis</i> Sonn.
Litchi (German)	<i>Litchi chinensis</i> Sonn.
litchi (Swedish)	<i>Litchi chinensis</i> Sonn.
litchi de Chine (French)	<i>Litchi chinensis</i> Sonn.
litchia (Portuguese)	<i>Litchi chinensis</i> Sonn.
Litchibaum (German)	<i>Litchi chinensis</i> Sonn.
Litchipflanze (German)	<i>Litchi chinensis</i> Sonn.
little gourd (English)	<i>Coccinia grandis</i> (L.) Voigt.
liusboom (Afrikaans)	<i>Solanum mauritianum</i> Scop.
ljufa (transliterated Russian)	<i>Luffa acutangula</i> (L.) Roxb.
lök (Swedish)	<i>Allium cepa</i> L.
lollipop-climber (English)	<i>Diplocyclos palmatus</i> (L.) C. Jeffrey
lombarda (Spanish)	<i>Brassica oleracea</i> L. var. <i>capitata</i> L.
long pepper (English)	<i>Capsicum annuum</i> L.
longan (English)	<i>Capsicum annuum</i> L. var. <i>annuum</i> <i>Dimocarpus longan</i> Lour. <i>Dimocarpus longan</i> Lour. subsp. <i>longan</i> <i>Dimocarpus longan</i> Lour. <i>Dimocarpus longan</i> Lour. <i>Dimocarpus longan</i> Lour. <i>Dimocarpus longan</i> Lour. <i>Dimocarpus longan</i> Lour. <i>Dimocarpus longan</i> Lour.
longán (Spanish)	
longan (Swedish)	
Longanbaum (German)	
Longanbeere (German)	
longanier (French)	
long melon (India)	<i>Cucumis melo</i> L. subsp. <i>agrestis</i> (Naudin) Pangalo var. <i>conomon</i> (Thunb.) Makino
loofah (English)	<i>Luffa aegyptiaca</i> Mill.
loquat (English)	<i>Eriobotrya japonica</i> (Thunb.) Lindl.
love-apple (English)	<i>Solanum aculeatissimum</i> Jacq.

love-in-a-mist (English)
 love-in-a-mist passionflower (English)
 lu hua cai (transcribed Chinese)
 lukwart (Afrikaans)
 luo bo (transcribed Chinese)
 luo le (transcribed Chinese)
 lychee (English)

M

ma qian zi (transcribed Chinese)
 machiche-francês (Portuguese-Brazil)
 machomphu-pa (transcribed Thai)
 machucho (Portuguese-Brazil)
 macieira (Portuguese)
 mad (French-Senegal)
 màdd (Wolof-Africa)
 made (French-Senegal)
 Madeira-cherry (English)
 Madeira walnut (English)
 Madeira winter-cherry (English)
 maesilnamu (transcribed Korean)
 main dou (transcribed Chinese)
 makopa (Spanish)

Makrut-Limette (German)
 Malabar-almond (English)
 Malabar-plum (English)
 Malabarspinat (German)
 malajäpple (Swedish)
 Malakka-Apfel (German)
 Malayapfel (German)
 Malay-apple (English)
 mamán (Spanish)
 mamão (Portuguese-Brazil)
 mamey (Spanish)
 mamey colorado (Spanish)
 mameysapote (Swedish)
 mamón (Spanish)
 mamoneiro (Portuguese)
 mammee sapote (English)
 mandarin (English)
 mandarin orange (English)
 mandarina (Italian)
 mandarina (Portuguese)
 mandarina (Spanish)
 mandarine orange (English)
 Mandarinen (German)
 Mandarinenbaum (German)
 mandarinier (French)
 mandarinier king (French)
 manga (Portuguese)
 manga (Spanish)
 mango (English)

Passiflora foetida L.
Passiflora foetida L.
Brassica oleracea L. var. *italica* Plenck
Eriobotrya japonica (Thunb.) Lindl.
Raphanus sativus L.
Ocimum basilicum L.
Litchi chinensis Sonn.

Strychnos nux-vomica L.
Sechium edule (Jacq.) Sw.
Syzygium aqueum (Burm. f.) Alston
Sechium edule (Jacq.) Sw.
Malus domestica Borkh.
Saba senegalensis (A. DC.) Pichon
Saba senegalensis (A. DC.) Pichon
Saba senegalensis (A. DC.) Pichon
Solanum pseudocapsicum L.
Juglans regia L.
Solanum pseudocapsicum L.
Prunus mume Siebold and Zucc.
Phaseolus lunatus L.
Syzygium samarangense (Blume) Merr. and
 L. M. Perry
Citrus hystrix DC.
Terminalia catappa L.
Syzygium jambos (L.) Alston
Amaranthus spinosus L.
Syzygium malaccense (L.) Merr. and L. M. Perry
Syzygium malaccense (L.) Merr. and L. M. Perry
Syzygium malaccense (L.) Merr. and L. M. Perry
Syzygium malaccense (L.) Merr. and L. M. Perry
Annona reticulata L.
Carica papaya L.
Pouteria sapota (Jacq.) H.E. Moore and Stearn
Pouteria sapota (Jacq.) H.E. Moore and Stearn
Pouteria sapota (Jacq.) H.E. Moore and Stearn
Carica papaya L.
Ricinus communis L.
Pouteria sapota (Jacq.) H.E. Moore and Stearn
Citrus reticulata Blanco
Citrus reticulata Blanco
Citrus reticulata Blanco
Citrus reticulata Blanco
Citrus reticulata Blanco
Citrus reticulata Blanco
Citrus reticulata Blanco
Citrus reticulata Blanco
Citrus reticulata Blanco
Citrus nobilis Lour.
Mangifera indica L.
Mangifera indica L.
Mangifera indica L.

Mango (German)	<i>Mangifera indica</i> L.
mango (Swedish)	<i>Mangifera indica</i> L.
Mangobaum (German)	<i>Mangifera indica</i> L.
Mangopalme (German)	<i>Mangifera indica</i> L.
mangue (French)	<i>Mangifera indica</i> L.
mangueira (Portuguese)	<i>Mangifera indica</i> L.
manguier (French)	<i>Mangifera indica</i> L.
manjeriçao (Portuguese)	<i>Ocimum basilicum</i> L.
manzana (Spanish)	<i>Malus domestica</i> Borkh.
manzana de agua (Spanish)	<i>Syzygium malaccense</i> (L.) Merr. and L. M. Perry
manzana rosa (Spanish)	<i>Syzygium jambos</i> (L.) Alston
manzano (Spanish)	<i>Malus domestica</i> Borkh.
mao gua (transcribed Chinese)	<i>Solena heterophylla</i> Lour.
maracujá (Portuguese)	<i>Passiflora edulis</i> Sims forma <i>flavicarpa</i> O. Deg.
maracujá (Portuguese-Brazil)	<i>Passiflora edulis</i> Sims
	<i>Passiflora ligularis</i> Juss.
maracuja (Swedish)	<i>Passiflora edulis</i> Sims forma <i>flavicarpa</i> O. Deg.
maracujá-açú (Portuguese-Brazil)	<i>Passiflora quadrangularis</i> L.
maracujá-comum (Portuguese-Brazil)	<i>Passiflora edulis</i> Sims
maracujá-de-comer (Portuguese-Brazil)	<i>Passiflora edulis</i> Sims
maracujá-de-ponche (Portuguese-Brazil)	<i>Passiflora edulis</i> Sims
maracujá-do-mato (Portuguese-Brazil)	<i>Passiflora edulis</i> Sims
maracujá-doce (Portuguese-Brazil)	<i>Passiflora edulis</i> Sims
maracujá-mamão (Portuguese-Brazil)	<i>Passiflora quadrangularis</i> L.
maracujá-melão (Portuguese-Brazil)	<i>Passiflora quadrangularis</i> L.
maracujá-mirim (Portuguese-Brazil)	<i>Passiflora edulis</i> Sims
maracujá-peroba (Portuguese-Brazil)	<i>Passiflora edulis</i> Sims
maracujá-preto (Portuguese-Brazil)	<i>Passiflora edulis</i> Sims
maracujá-redondo (Portuguese-Brazil)	<i>Passiflora edulis</i> Sims
maracujá-uaçu (Portuguese-Brazil)	<i>Passiflora quadrangularis</i> L.
maracuyá amarillo (Spanish)	<i>Passiflora edulis</i> Sims forma <i>flavicarpa</i> O. Deg.
marañón (Spanish)	<i>Anacardium occidentale</i> L.
maranziana (Italian)	<i>Solanum melongena</i> L.
Marie-Gougeat (French)	<i>Passiflora foetida</i> L.
margose (French)	<i>Momordica charantia</i> L.
Marille (German)	<i>Prunus armeniaca</i> L.
marmalade-plum (English)	<i>Pouteria sapota</i> (Jacq.) H.E. Moore and Stearn
marmalade-tree (English)	<i>Pouteria sapota</i> (Jacq.) H.E. Moore and Stearn
marmelo (Portuguese)	<i>Cydonia oblonga</i> Mill.
marrow (English)	<i>Cucurbita pepo</i> L.
	<i>Cucurbita pepo</i> L. subsp. <i>pepo</i>
mash (India)	<i>Vigna mungo</i> (L.) Hepper var. <i>mungo</i>
mash kalai (India)	<i>Vigna mungo</i> (L.) Hepper var. <i>mungo</i>
mastadi (Swahili)	<i>Brassica juncea</i> (L.) Czern.
masuko (Africa – Uganda)	<i>Warburgia ugandensis</i> Sprague
mata cucaracha (Spanish)	<i>Solanum capsicoides</i> All.
mata kucing (Malay)	<i>Dimocarpus longan</i> Lour.
matasano (Spanish)	<i>Casimiroa edulis</i> La Llave and Lex.
Mauritius papeda (English)	<i>Citrus hystrix</i> DC.
maxixe (Portuguese-Brazil)	<i>Cucumis anguria</i> L.
maxixe-bravo (Portuguese-Brazil)	<i>Cucumis anguria</i> L.
maxixe-do-mato (Portuguese-Brazil)	<i>Cucumis anguria</i> L.
mbarika (Swahili)	<i>Ricinus communis</i> L.
mbono mdogo (Swahili)	<i>Ricinus communis</i> L.

me-bōki (Japanese Rōmaji)	<i>Ocimum basilicum</i> L.
Mehlbanane (German)	<i>Musa ×paradisiaca</i> L.
mei (transcribed Chinese)	<i>Prunus mume</i> Siebold and Zucc.
mela canella (Italian)	<i>Annona squamosa</i> L.
melancia (Portuguese)	<i>Citrullus lanatus</i> (Thunb.) Matsum. and Nakai subsp. <i>lanatus</i>
melangolo (Italian)	<i>Citrus aurantium</i> L.
melanzana (Italian)	<i>Solanum melongena</i> L.
melão (Portuguese)	<i>Cucumis melo</i> L. subsp. <i>melo</i> var. <i>cantalupo</i> Ser
melocotonero (Spanish)	<i>Prunus persica</i> (L.) Batsch var. <i>persica</i>
melon (English)	<i>Cucumis melo</i> L.
melon (Swedish)	<i>Cucumis melo</i> L. subsp. <i>melo</i>
melon d'eau (French)	<i>Cucumis melo</i> L. subsp. <i>melo</i>
Melone (German)	<i>Citrullus lanatus</i> (Thunb.) Matsum. and Nakai subsp. <i>lanatus</i>
Melonenbaum (German)	<i>Cucumis melo</i> L.
Melone (Italian)	<i>Cucumis melo</i> L. subsp. <i>melo</i>
mélon (French)	<i>Carica papaya</i> L.
mélongène (French)	<i>Cucumis melo</i> L. subsp. <i>melo</i>
membrillero (Spanish)	<i>Cucumis melo</i> L. subsp. <i>melo</i> var. <i>cantalupo</i> Ser.
membrillo (Spanish)	<i>Solanum melongena</i> L.
mercy (Spanish)	<i>Cydonia oblonga</i> Mill.
meron (Japanese Rōmaji)	<i>Cydonia oblonga</i> Mill.
Mexican-apple (English)	<i>Anacardium occidentale</i> L.
Mexican fireplant (English)	<i>Cucumis melo</i> L. subsp. <i>melo</i>
mexikanische Blasenkirscbe (German)	<i>Casimiroa edulis</i> La Llave and Lex.
milkweed (English)	<i>Euphorbia heterophylla</i> L.
miltomate (Spanish)	<i>Physalis philadelphica</i> Lam.
milva (Spanish)	<i>Euphorbia heterophylla</i> L.
mission cactus (English)	<i>Physalis philadelphica</i> Lam.
mission prickly-pear (English)	<i>Aegle marmelos</i> (L.) Corrêa
mitha kaddu (Urdu-Pakistan)	<i>Opuntia ficus-indica</i> (L.) Mill.
mnyonyo (Swahili)	<i>Opuntia ficus-indica</i> (L.) Mill.
moetdaechunamu (transcribed Korean)	<i>Cucurbita maxima</i> Duchesne
mombin rouge (French)	<i>Ricinus communis</i> L.
momo (Japanese Rōmaji)	<i>Ziziphus jujuba</i> Mill. var. <i>jujuba</i>
momo (Japanese Rōmaji)	<i>Spondias purpurea</i> L.
momordique (French)	<i>Prunus persica</i> (L.) Batsch
Mondbohne (German)	<i>Prunus persica</i> (L.) Batsch var. <i>persica</i>
monkey-orange (English)	<i>Momordica charantia</i> L.
moong (India)	<i>Phaseolus lunatus</i> L.
moonlight cactus (English)	<i>Strychnos spinosa</i> Lam.
morangueiro (Portuguese)	<i>Vigna mungo</i> (L.) Hepper var. <i>mungo</i>
morangueiro-bravo (Portuguese)	<i>Hylocereus undatus</i> (Haw.) Britton and Rose
moranguiero-do-Chile (Portuguese)	<i>Fragaria ×ananassa</i> Duchesne ex Rozier
morelle noire (French)	<i>Fragaria vesca</i> L.
Moschus-Bisameibisch (German)	<i>Fragaria chiloensis</i> (L.) Mill.
Moschuskürbis (German)	<i>Solanum nigrum</i> L.
mossy passionflower (English)	<i>Abelmoschus moschatus</i> Medik.
mostarda-indiana (Portuguese)	<i>Cucurbita moschata</i> Duchesne
mostarda-vermelha (Portuguese)	<i>Passiflora foetida</i> L.
mostaza india (Spanish)	<i>Brassica juncea</i> (L.) Czern.
	<i>Brassica juncea</i> (L.) Czern.
	<i>Brassica juncea</i> (L.) Czern.

mountain-apple (English)
 moutarde brune (French)
 moutarde de Chine (French)
 moutarde de Sarepta (French)
 moutarde frisée (French)
 moutarde indienne (French)
 mu bie zi (transcribed Chinese)
 mu dou (transcribed Chinese)
 mu ju (transcribed Chinese)
 mu tong (Transcribed Chinese)
 muhwagwanamu (transcribed Korean)
 mulignana (Italian)
 mume (Japanese Rōmaji)
 mung-bean (English)
 Mungbohne (German)
 mungböna (Swedish)
 muricie (French)
 musk-mallow (English)
 musk okra (English)
 muskmelon (English)
 muthiga (Unknown-Africa)
 myskokra (Swedish)

N

nagapiry (Spanish)
 nakhl (Arabic)
 nan gua (transcribed Chinese)
 Nangka (German)
 nanição (Portuguese-Brazil)
 naranja (Spanish)
 naranja agria (Spanish)
 naranja amarga (Spanish)
 naranja mateca (Spanish)
 naranjo duce (Spanish)
 naseberry (English)
 nasu (Japanese Rōmaji)
 Natal-orange (English)
 nātannona (Swedish)
 natsume (Japanese Rōmaji)
 nattskatta (Swedish)
 navel (French)
 navel orange (English)
 nectarine (English)

 needle burr (English)
 néflier du Japon (French)
 nektarin (Swedish)

 Nektarine (German)

 Nektarinenbaum (German)

 nespereira (Portuguese)

Syzygium malaccense (L.) Merr. and L. M. Perry
Brassica juncea (L.) Czern.
Brassica juncea (L.) Czern.
Brassica juncea (L.) Czern.
Brassica juncea (L.) Czern.
Brassica juncea (L.) Czern.
Momordica cochinchinensis (Lour.) Spreng.
Cajanus cajan (L.) Huth
Aegle marmelos (L.) Corrêa
Akebia quinata (Thunb. Ex Hoult.) Decne.
Ficus carica L.
Solanum melongena L.
Prunus mume Siebold and Zucc.
Vigna radiata (L.) R. Wilczek var. *radiata*
Vigna radiata (L.) R. Wilczek var. *radiata*
Vigna radiata (L.) R. Wilczek var. *radiata*
Momordica cochinchinensis (Lour.) Spreng.
Abelmoschus moschatus Medik.
Abelmoschus moschatus Medik.
Cucumis melo L. subsp. *melo* var. *cantalupo* Ser
Warburgia ugandensis Sprague
Abelmoschus moschatus Medik.

Eugenia uniflora L.
Phoenix dactylifera L.
Cucurbita moschata Duchesne
Artocarpus heterophyllus Lam.
Musa acuminata Colla
Citrus sinensis (L.) Osbeck
Citrus aurantium L.
Citrus aurantium L.
Citrus aurantium L.
Citrus sinensis (L.) Osbeck
Manilkara zapota (L.) P. Royen
Solanum melongena L.
Strychnos spinosa Lam.
Annona reticulata L.
Ziziphus jujuba Mill.
Solanum nigrum L.
Citrus sinensis (L.) Osbeck
Citrus sinensis (L.) Osbeck
Prunus persica (L.) Batsch var. *nucipersica*
 (Suckow) C. K. Schneid.
Amaranthus spinosus L.
Eriobotrya japonica (Thunb.) Lindl.
Prunus persica (L.) Batsch var. *nucipersica*
 (Suckow) C. K. Schneid.
Prunus persica (L.) Batsch var. *nucipersica*
 (Suckow) C. K. Schneid.
Prunus persica (L.) Batsch var. *nucipersica*
 (Suckow) C. K. Schneid.
Eriobotrya japonica (Thunb.) Lindl.

netted melon (English)
 níspero (Spanish)

níspero del Japón (Spanish)
 nispolero (Spanish)
 Netzannone (German)
 niébé (French)

Nierenbaum (German)
 night-blooming cereus (English)
 night-jessamine (English)
 ning meng (transcribed Chinese)
 nogal común (Spanish)
 nogal europeo (Spanish)
 nogal inglés (Spanish)
 nogdu (transcribed Korean)
 nogueira-comum (Portuguese)
 nogueira-européia (Portuguese-Brazil)
 nopal de Castilla (Spanish)
 nopal pelón (Spanish)
 northern California walnut (English)
 northern California black walnut (English)
 noyer commun (French)
 nutmeg melon (English)
 nux-vomica (English)
 nux-vomica-tree (English)

O

obota (French)
 ocra (Italian)
 Ochsenherz (German)
 Ocker (German)
 oeil de dragon (French)
 ögonböna (Swedish)
 ogpa (transcribed Korean)
 okra (English)
 okra (French)
 okra (Swedish)
 ol-msogoni (Unknown-Africa)
 onion (English)
 oranda-ichigo (Japanese Rōmaji)
 orange (English)
 Orange (German)
 orange douce (French)
 Orangenbaum (German)
 oranger (French)
 oranger amer (French)
 oranger doux (French)
 orelha-de-onça (Portuguese)
 Oriental mustard (English)
 Oriental pickling melon (English)

Orinoco-apple (English)

Cucumis melo L. subsp. *melo* var. *cantalupo* Ser
Eriobotrya japonica (Thunb.) Lindl.
Manilkara zapota (L.) P. Royen
Eriobotrya japonica (Thunb.) Lindl.
Eriobotrya japonica (Thunb.) Lindl.
Annona reticulata L.
Vigna unguiculata (L.) Walp. subsp. *unguiculata*
 Unguiculata Group
Anacardium occidentale L.
Hylocereus undatus (Haw.) Britton and Rose
Cestrum nocturnum L.
Citrus limon (L.) Burm. f.
Juglans regia L.
Juglans regia L.
Juglans regia L.
Vigna radiata (L.) R. Wilczek var. *radiata*
Juglans regia L.
Juglans regia L.
Opuntia ficus-indica (L.) Mill.
Opuntia ficus-indica (L.) Mill.
Juglans hindsii Jeps. ex R. E. Sm.
Juglans hindsii Jeps. ex R. E. Sm.
Juglans regia L.
Cucumis melo L. subsp. *melo* var. *cantalupo* Ser
Strychnos nux-vomica L.
Strychnos nux-vomica L.

Mammea Africana Sabine
Abelmoschus esculentus (L.) Moench
Annona reticulata L.
Abelmoschus esculentus (L.) Moench
Dimocarpus longan Lour.
Vigna unguiculata (L.) Walp.
Allium cepa L.
Abelmoschus esculentus (L.) Moench
Abelmoschus esculentus (L.) Moench
Abelmoschus esculentus (L.) Moench
Warburgia ugandensis Sprague
Allium cepa L.
Fragaria ×ananassa Duchesne ex Rozier
Citrus sinensis (L.) Osbeck
Citrus sinensis (L.) Osbeck
Citrus sinensis (L.) Osbeck
Citrus sinensis (L.) Osbeck
Citrus sinensis (L.) Osbeck
Citrus aurantium L.
Citrus sinensis (L.) Osbeck
Opuntia ficus-indica (L.) Mill.
Brassica juncea (L.) Czern.
Cucumis melo L. subsp. *agrestis* var. *conomon*
 (Thunb.) Makino
Solanum sessiliflorum Dunal

ornamental gourd (English)

Otaheite-apple (English)

ovo (Spanish)

ox-heart (English)

oysternut (English)

P

padang (English)

painted euphorbia (English)

painted spurge (English)

paintedleaf (English)

paitha (India)

pallar (Spanish)

palma-christi (English)

Palma Christi (German)

palma-de-gado (Portuguese)

palma-gigante (Portuguese)

palmera datilera (Spanish)

palmier dattier (French)

palo de Santa María (Spanish)

palo María (Spanish)

palto (Spanish)

palwal (India)

Pampelmuse (German)

pamplemousse (French)

pamplemoussier (French)

pandan laut (Indonesia)

pandan laut (Malay)

pandan pasir (Indonesian-Java)

papa (Spanish)

papaia (Portuguese-Brazil)

papaja (Swedish)

Papajabaum (German)

Papajapflanze (German)

papaya (English)

papayer (French)

papayero (Spanish)

papeda (Swedish)

paprika (English)

Paradies-Apfel (German)

Paradisapfel (German)

paradise apple (English)

parcha (Spanish)

paria (Indonesian)

paroka (French)

päron (Swedish)

parwal (India)

pascuilla (Spanish)

passionsfrukt (Swedish)

pasiflora hedionda (Spanish)

Cucurbita pepo L. subsp. *pepo*

Cucurbita pepo L. subsp. *ovifera* (L.) D. S. Decker
var. *ovifera* (L.) Harz

Syzygium malaccense (L.) Merr. and L. M. Perry

Spondias purpurea L.

Annona reticulata L.

Telfairia occidentalis Hook. f.

Pandanus fascicularis Lam.

Euphorbia heterophylla L.

Euphorbia heterophylla L.

Euphorbia heterophylla L.

Benincasa hispida (Thunb.) Cogn.

Phaseolus lunatus L.

Ricinus communis L.

Ricinus communis L.

Opuntia ficus-indica (L.) Mill.

Opuntia ficus-indica (L.) Mill.

Phoenix dactylifera L.

Phoenix dactylifera L.

Calophyllum inophyllum L.

Calophyllum inophyllum L.

Persea americana Mill.

Trichosanthes dioica Roxb.

Citrus maxima (Burm.) Merr.

Citrus maxima (Burm.) Merr.

Citrus maxima (Burm.) Merr.

Pandanus fascicularis Lam.

Pandanus fascicularis Lam.

Pandanus fascicularis Lam.

Solanum tuberosum L. subsp. *tuberosum*

Carica papaya L.

Carica papaya L.

Carica papaya L.

Carica papaya L.

Carica papaya L.

Carica papaya L.

Carica papaya L.

Citrus hystrix DC.

Capsicum annuum L.

Capsicum annuum L. var. *annuum*

Malus pumila Mill.

Citrus paradisi Macfad.

Malus pumila Mill.

Passiflora laurifolia L.

Momordica charantia L.

Momordica charantia L.

Pyrus communis L.

Trichosanthes dioica Roxb.

Euphorbia heterophylla L.

Passiflora edulis Sims

Passiflora foetida L.

pasilla (Spanish)	<i>Capsicum annuum</i> L.
	<i>Capsicum annuum</i> L. var. <i>annuum</i>
paste (Spanish)	<i>Luffa aegyptiaca</i> Mill.
pastèque (French)	<i>Citrullus lanatus</i> (Thunb.) Matsum. and Nakai subsp. <i>lanatus</i>
pastèque de Chine (French)	<i>Benincasa hispida</i> (Thunb.) Cogn.
pâtisson (French)	<i>Cucurbita moschata</i> Duchesne
Patisson (German)	<i>Cucurbita pepo</i> L. subsp. <i>pepo</i>
pattypan squash (English)	<i>Cucurbita pepo</i> L. subsp. <i>ovifera</i> (L.) D. S. Decker var. <i>ovifera</i> (L.) Harz
pawpaw (English-Australia)	<i>Carica papaya</i> L.
pea (English)	<i>Pisum sativum</i> L.
peach (English)	<i>Prunus persica</i> (L.) Batsch
peach (English)	<i>Prunus persica</i> (L.) Batsch var. <i>persica</i>
peach-tomato (English)	<i>Solanum sessiliflorum</i> Dunal
pear (English)	<i>Pyrus communis</i> L.
pêcher (French)	<i>Prunus persica</i> (L.) Batsch var. <i>persica</i>
penino hueco (Spanish)	<i>Cyclanthera pedata</i> (L.) Schrad.
pepasan (Maylay)	<i>Coccinia grandis</i> (L.) Voigt.
peperoncino (Italian)	<i>Capsicum annuum</i> L.
	<i>Capsicum annuum</i> L. var. <i>annuum</i>
peperone (Italian)	<i>Capsicum annuum</i> L.
	<i>Capsicum annuum</i> L. var. <i>annuum</i>
peperone dolce (Italian)	<i>Capsicum annuum</i> L.
	<i>Capsicum annuum</i> L. var. <i>annuum</i>
pepinito (Spanish)	<i>Cucumis anguria</i> L.
pepino (Spanish)	<i>Cucumis anguria</i> L.
pepino-castanha (Portuguese-Brazil)	<i>Cucumis anguria</i> L.
pepino cimarrón (Spanish)	<i>Coccinia grandis</i> (L.) Voigt.
	<i>Cucumis anguria</i> L.
pepino de comer (Spanish)	<i>Cyclanthera pedata</i> (L.) Schrad.
pepino de rellenar (Spanish-Columbia)	<i>Cyclanthera pedata</i> (L.) Schrad.
pepino diablito (Spanish)	<i>Cucumis dipsaceus</i> Ehrenb. ex Spach
pepino-espinhoso (Portuguese-Brazil)	<i>Cucumis anguria</i> L.
pepper-bark-tree (English)	<i>Warburgia ugandensis</i> Sprague
pera (Italian)	<i>Pyrus communis</i> L.
pera (Spanish)	<i>Pyrus communis</i> L.
peral (Spanish)	<i>Pyrus communis</i> L.
pereira (Portuguese)	<i>Pyrus communis</i> L.
pero (Italian)	<i>Pyrus communis</i> L.
peria (Malay)	<i>Momordica charantia</i> L.
perita costeña (Spanish)	<i>Syzygium aqueum</i> (Burm. f.) Alston
Persian melon (English)	<i>Cucumis melo</i> L. subsp. <i>melo</i> var. <i>cantalupo</i> Ser
Persian walnut (English)	<i>Juglans regia</i> L.
persika (Swedish)	<i>Prunus persica</i> (L.) Batsch
pêssego (Portuguese-Brazil)	<i>Prunus persica</i> (L.) Batsch
pessegueiro (Portuguese)	<i>Prunus persica</i> (L.) Batsch var. <i>persica</i>
petha (India)	<i>Benincasa hispida</i> (Thunb.) Cogn.
pétole (French)	<i>Luffa aegyptiaca</i> Mill.
petrociana (Italian)	<i>Solanum melongena</i> L.
Pfirsich (German)	<i>Prunus persica</i> (L.) Batsch var. <i>persica</i>
Pfirsichbaum (German)	<i>Prunus persica</i> (L.) Batsch var. <i>persica</i>
Pflaume (German)	<i>Prunus domestica</i> L. subsp. <i>domestica</i>
Pflaumenbaum (German)	<i>Prunus domestica</i> L. subsp. <i>domestica</i>

phoot (English)	<i>Cucumis melo</i> L. subsp. <i>agrestis</i> var. <i>momordica</i> (Roxb.) Duthie and J. B. Fuller
phut (India)	<i>Cucumis melo</i> L. subsp. <i>agrestis</i> var. <i>momordica</i> (Roxb.) Duthie and J. B. Fuller
pi ba (transcribed Chinese)	<i>Eriobotrya japonica</i> (Thunb.) Lindl.
pickling melon (English)	<i>Cucumis melo</i> L. subsp. <i>agrestis</i> var. <i>conomon</i> (Thunb.) Makino
pie lan (transcribed Chinese)	<i>Brassica oleracea</i> L. var. <i>gongyloides</i> L.
piesangdilla (Afrikaans)	<i>Passiflora tripartita</i> (Juss.) Poir. var. <i>mollissima</i> (Kunth) Holm-Niels. and P. Jørg.
pigeon-pea (English)	<i>Cajanus cajan</i> (L.) Huth
pimaja (transcribed Korean)	<i>Ricinus communis</i> L.
piment annuel (French)	<i>Capsicum annuum</i> L.
piment doux (French)	<i>Capsicum annuum</i> L.
pimentão (Portuguese)	<i>Capsicum annuum</i> L. var. <i>annuum</i>
	<i>Capsicum annuum</i> L.
	<i>Capsicum annuum</i> L. var. <i>annuum</i>
pimenta-de-galinha (Portuguese-Brazil)	<i>Solanum nigrum</i> L.
pimenta-malagueta (Portuguese)	<i>Capsicum frutescens</i> L.
pimento pepper (English)	<i>Capsicum annuum</i> L.
	<i>Capsicum annuum</i> L. var. <i>annuum</i>
	<i>Capsicum annuum</i> L.
	<i>Capsicum annuum</i> L. var. <i>annuum</i>
pimiento (Spanish)	<i>Acca sellowiana</i> (O. Berg) Burret
Pineapple-guava (English)	<i>Malus domestica</i> Borkh.
ping guo (transcribed Chinese)	<i>Annona squamosa</i> L.
pinha (Portuguese)	<i>Syzygium malaccense</i> (L.) Merr. and L. M. Perry
pink satin-ash (English)	<i>Sechium edule</i> (Jacq.) Sw.
pipinela (Spanish)	<i>Capsicum annuum</i> L.
piquin (Spanish)	<i>Musa acuminata</i> Colla
pisang batu (Indonesian)	<i>Pisum sativum</i> L.
Pisello (Italian)	<i>Cajanus cajan</i> (L.) Huth
pisello del Tropico (Italian)	<i>Hylocereus undatus</i> (Haw.) Britton and Rose
pitaya (French)	<i>Hylocereus undatus</i> (Haw.) Britton and Rose
pitahaya (Spanish)	<i>Hylocereus undatus</i> (Haw.) Britton and Rose
pitahaya dulce (Spanish)	<i>Hylocereus undatus</i> (Haw.) Britton and Rose
pitahaya orejona (Spanish)	<i>Hylocereus undatus</i> (Haw.) Britton and Rose
pitahaya rouge (French)	<i>Hylocereus undatus</i> (Haw.) Britton and Rose
pitanga (Spanish)	<i>Eugenia uniflora</i> L.
pitanga-da-praia (Portuguese)	<i>Eugenia uniflora</i> L.
pitanga-mulata (Portuguese-Brazil)	<i>Eugenia uniflora</i> L.
pitanga-roxa (Portuguese-Brazil)	<i>Eugenia uniflora</i> L.
pitanga-vermelha (Portuguese-Brazil)	<i>Eugenia uniflora</i> L.
plantain (English)	<i>Musa ×paradisiaca</i> L.
plátano (Spanish)	<i>Musa acuminata</i> Colla
plum (English)	<i>Prunus domestica</i> L. subsp. <i>domestica</i>
poblano (Spanish)	<i>Capsicum annuum</i> L.
	<i>Capsicum annuum</i> L. var. <i>annuum</i>
podo (transcribed Korean)	<i>Vitis vinifera</i> L.
Poinsettien-Wolfsmilch (German)	<i>Euphorbia heterophylla</i> L.
pointed gourd (English)	<i>Trichosanthes dioica</i> Roxb.
poirier (French)	<i>Pyrus communis</i> L.
pois à vaches (French)	<i>Vigna unguiculata</i> (L.) Walp. subsp. <i>unguiculata</i>
	Unguiculata Group
pois d'Angole (French)	<i>Cajanus cajan</i> (L.) Huth

poirier de Malaque (French)	<i>Syzygium malaccense</i> (L.) Merr. and L. M. Perry
pois du Cap (French)	<i>Phaseolus lunatus</i> L.
poisonberry (English)	<i>Solanum nigrum</i> L.
poivre d'Espagne	<i>Capsicum annuum</i> L. var. <i>annuum</i>
poivre de Cayenne (French)	<i>Capsicum annuum</i> L.
	<i>Capsicum annuum</i> L. var. <i>annuum</i>
poivre rouge (French)	<i>Capsicum frutescens</i> L.
poivron (French)	<i>Capsicum annuum</i> L.
poivron doux (French)	<i>Capsicum annuum</i> L.
	<i>Capsicum annuum</i> L. var. <i>annuum</i>
polkagrisreva (Swedish)	<i>Diplocyclos palmatus</i> (L.) C. Jeffrey
pomarrosa (Spanish)	<i>Syzygium jambos</i> (L.) Alston
pomarrosa de Malaca (Spanish)	<i>Syzygium malaccense</i> (L.) Merr. and L. M. Perry
pomelo (French)	<i>Citrus paradisi</i> Macfad.
pomelo (Portuguese)	<i>Citrus paradisi</i> Macfad.
pomelo (Spanish)	<i>Citrus paradisi</i> Macfad.
pomelo (English)	<i>Citrus maxima</i> (Burm.) Merr.
Pomelo (German)	<i>Citrus maxima</i> (Burm.) Merr.
pomerac (English)	<i>Syzygium malaccense</i> (L.) Merr. and L. M. Perry
Pomeranze (German)	<i>Citrus aurantium</i> L.
pomme canelle (French)	<i>Annona squamosa</i> L.
pomme canelle du Sénégal (French)	<i>Annona senegalensis</i> Pers.
pomme d'or (French)	<i>Passiflora laurifolia</i> L.
pomme de merveille (French)	<i>Momordica balsamina</i> L.
pomme de terre (French)	<i>Solanum tuberosum</i> L. subsp. <i>tuberosum</i>
pomme malac (French)	<i>Syzygium malaccense</i> (L.) Merr. and L. M. Perry
pomme mexicaine (French)	<i>Casimiroa edulis</i> La Llave and Lex.
Pomme rose (French)	<i>Syzygium jambos</i> (L.) Alston
pommier commun(French)	<i>Malus domestica</i> Borkh.
pommier paradis (French)	<i>Malus pumila</i> Mill.
pommier sauvage (French)	<i>Malus sylvestris</i> (L.) Mill.
pomo canella (Italian)	<i>Annona squamosa</i> L.
pomodoro (Italian)	<i>Solanum lycopersicum</i> L. var. <i>lycopersicum</i>
pompelmo (Italian)	<i>Citrus maxima</i> (Burm.) Merr.
pompelmus (Swedish)	<i>Citrus maxima</i> (Burm.) Merr.
ponkan (Japanese Rōmaji)	<i>Citrus reticulata</i> Blanco
potahonda (Sinhala-Sri Lanka)	<i>Adenia hondala</i> (Gaertn.) W. J. de Wilde
potatis (Swedish)	<i>Solanum tuberosum</i> L. subsp. <i>tuberosum</i>
potato (English)	<i>Solanum tuberosum</i> L.
	<i>Solanum tuberosum</i> L. subsp. <i>tuberosum</i>
potato-tree (English)	<i>Solanum erianthum</i> D. Don
preserving-melon (English)	<i>Citrullus amarus</i> Schrad.
prickly amaranth (English)	<i>Amaranthus spinosus</i> L.
prickly calulu (English)	<i>Amaranthus spinosus</i> L.
prickly-pear (English)	<i>Opuntia ficus-indica</i> (L.) Mill.
Prince-of-Wales feather (English)	<i>Amaranthus spinosus</i> L.
prune d'Espagne (French)	<i>Spondias purpurea</i> L.
prune plum (English)	<i>Prunus domestica</i> L. subsp. <i>domestica</i>
prunier (French)	<i>Prunus domestica</i> L. subsp. <i>domestica</i>
prunier commun (French)	<i>Prunus domestica</i> L. subsp. <i>domestica</i>
Pumelo (German)	<i>Citrus maxima</i> (Burm.) Merr.
pummelo (English)	<i>Citrus maxima</i> (Burm.) Merr.
pumpa (Swedish)	<i>Cucurbita pepo</i> L.
pumpkin (English)	<i>Cucurbita maxima</i> Duchesne

punnaga (India)
purple cauliflower (English)
purple granadilla (English)
purple mombin (English)

Q

qie (transcribed Chinese)
queen-of-the-night (English)
quiabo (Portuguese-Brazil)
quince (English)
Quitte (German)
Quittenbaum (German)

R

rabiza (Spanish)

radish (English)

rag gourd (English)
Rahmapfel (German)
rävkaketräd (Swedish)
Rebe (German)
red angle tampoi (English)
red cabbage (English)
red capsicum (English)
red chili (English)
red cone pepper (English)

red gourd (English)
red gourd (English-Pakistan)
red gram (English)
red mombin (English)
red pepper (English)

red pitaya (English)
red santol (English)
Reeve's pea (English)
reihan (Arabic)
reina de la noche (Spanish)
Reisen-Kürbis (German)
repolho (Portuguese)
repollo (Spanish)
ribbed gourd (English)
ribbed loofah (English)
ricin (French)
ricin (Swedish)
ricino (Italian)
ricino (Portuguese)
ridge gourd (English)

Cucurbita moschata Duchesne
Cucurbita pepo L.
Cucurbita pepo L. subsp. *pepo*
Calophyllum inophyllum L.
Brassica oleracea L. var. *italica* Plenck
Passiflora edulis Sims
Spondias purpurea L.

Solanum melongena L.
Hylocereus undatus (Haw.) Britton and Rose
Abelmoschus esculentus (L.) Moench
Cydonia oblonga Mill.
Cydonia oblonga Mill.
Cydonia oblonga Mill.

Vigna unguiculata (L.) Walp. subsp. *unguiculata*
Unguiculata Group
Raphanus sativus L.
Raphanus sp.
Luffa aegyptiaca Mill.
Annona squamosa L.
Strychnos nux-vomica L.
Vitis vinifera L.
Baccaurea angulata Merr.
Brassica oleracea L. var. *capitata* L.
Capsicum annuum L.
Capsicum frutescens L.
Capsicum annuum L.
Capsicum annuum L. var. *annuum*
Cucurbita maxima Duchesne
Cucurbita moschata Duchesne
Cajanus cajan (L.) Huth
Spondias purpurea L.
Capsicum annuum L.
Capsicum annuum L. var. *annuum*
Hylocereus undatus (Haw.) Britton and Rose
Sandoricum koetjape (Burm. f.) Merr.
Vigna unguiculata (L.) Walp.
Ocimum basilicum L.
Hylocereus undatus (Haw.) Britton and Rose
Cucurbita maxima Duchesne
Brassica oleracea L. var. *capitata* L.
Brassica oleracea L. var. *capitata* L.
Luffa acutangula (L.) Roxb.
Luffa acutangula (L.) Roxb.
Ricinus communis L.
Ricinus communis L.
Ricinus communis L.
Ricinus communis L.
Luffa acutangula (L.) Roxb.

- ridged gourd (English)
 Riesen-Grenadille (German)
 ringo (Japanese Rōmaji)
 Rizinus (German)
 rock melon (English-Australia)
 röd aubergin (Swedish)
 röd mombinspondias (Swedish)
 röd pitahaya (Swedish)
 roi de Siam (French)
 round gourd (English)
- round-melon (English)
- rose-apple (English)
- Rosenapfelbaum (German)
 rosenäpple (Swedish)
 rote Mombinpflaume (German)
 Rotkohl (German)
 Round gourd (India)
- running pop (English)
 Ruten-Kohl (German)
- S**
- sabotan (Philippine)
 sagwanamu (transcribed Korean)
 sandía (Spanish)
- sandía de ratón (Spanish-Guatemala)
 Sandoribaum (German)
 sandorique (French)
 sanguine (French)
 santara (India)
 santol (Filipino)
 sapodilla (English)
 Sapodillbaum (German)
 sapote (English)
 sapote (Spanish)
 Sapote (German)
 sapote blanche (French)
 sapote negro (Spanish)
 sapoti (Portuguese)
 sapotier (French)
 sapotillier (French)
 sapotillplommon (Swedish)
 saramuyo (Spanish)
 sareptasenap (Swedish)
 Sarepta-Senf (German)
 sasage (Japanese Rōmaji)
- satin touriga (English)
- Luffa acutangula* (L.) Roxb.
Passiflora quadrangularis L.
Malus domestica Borkh.
Ricinus communis L.
Cucumis melo L. subsp. *melo* var. *cantalupo* Ser
Solanum aethiopicum L.
Spondias purpurea L.
Hylocereus undatus (Haw.) Britton and Rose
Citrus nobilis Lour.
Benincasa fistulosa (Stocks) H. Schaef. and
 S. S. Renner
Benincasa fistulosa (Stocks) H. Schaef. and
 S. S. Renner
Syzygium jambos (L.) Alston
Syzygium malaccense (L.) Merr. and L. M. Perry
Syzygium jambos (L.) Alston
Syzygium jambos (L.) Alston
Spondias purpurea L.
Brassica oleracea L. var. *capitata* L.
Benincasa fistulosa (Stocks) H. Schaef. and
 S. S. Renner
Passiflora foetida L.
Brassica juncea (L.) Czern.
- Pandanus fascicularis* Lam.
Malus domestica Borkh.
Citrullus lanatus (Thunb.) Matsum. and Nakai
Citrullus lanatus (Thunb.) Matsum. and Nakai
 subsp. *lanatus*
Cucumis anguria L.
Sandoricum koetjape (Burm. f.) Merr.
Sandoricum koetjape (Burm. f.) Merr.
Citrus sinensis (L.) Osbeck
Citrus reticulata Blanco
Sandoricum koetjape (Burm. f.) Merr.
Manilkara zapota (L.) P. Royen
Manilkara zapota (L.) P. Royen
Manilkara zapota (L.) P. Royen
Pouteria sapota (Jacq.) H.E. Moore and Stearn
Manilkara zapota (L.) P. Royen
Casimiroa edulis La Llave and Lex.
Diospyros digyna Jacq.
Casimiroa edulis La Llave and Lex.
Manilkara zapota (L.) P. Royen
Manilkara zapota (L.) P. Royen
Manilkara zapota (L.) P. Royen
Annona squamosa L.
Brassica juncea (L.) Czern.
Brassica juncea (L.) Czern.
Vigna unguiculata (L.) Walp. subsp. *unguiculata*
 Unguiculata Group
Calophyllum inophyllum L.

satinleaf (English)	<i>Chrysophyllum oliviforme</i> L.
Sauersack (German)	<i>Annona muricata</i> L.
sawi (Indonesian)	<i>Brassica juncea</i> (L.) Czern.
sawi pahit (Malay)	<i>Brassica juncea</i> (L.) Czern.
scallop squash (English)	<i>Cucurbita pepo</i> L. subsp. <i>ovifera</i> (L.) D. S. Decker var. <i>ovifera</i> (L.) Harz
scarlet egg (English)	<i>Solanum aethiopicum</i> L.
scarlet wistaria-tree (English)	<i>Sesbania grandiflora</i> (L.) Pers.
scharlakansgurka (Swedish)	<i>Coccinia grandis</i> (L.) Voigt.
Schnapp-Melone (German)	<i>Cucumis melo</i> L. subsp. <i>agrestis</i> var. <i>momordica</i> (Roxb.) Duthie and J. B. Fuller
Schuppenannone (German)	<i>Annona squamosa</i> L.
Schwammgurke (German)	<i>Luffa aegyptiaca</i> Mill.
schwarze Sapote (German)	<i>Diospyros digyna</i> Jacq.
schwarzer Nachtschatten (German)	<i>Solanum nigrum</i> L.
sea-almond (English)	<i>Terminalia catappa</i> L.
seiyō-nashi (Japanese Rōmaji)	<i>Pyrus communis</i> L.
semangka	<i>Citrullus lanatus</i> (Thunb.) Matsum. and Nakai
Semarang rose-apple (English)	<i>Syzygium samarangense</i> (Blume) Merr. and L. M. Perry
senape indiana (Italian)	<i>Brassica juncea</i> (L.) Czern.
sentol (English)	<i>Sandoricum koetjape</i> (Burm. f.) Merr.
sentul (Malay)	<i>Sandoricum koetjape</i> (Burm. f.) Merr.
sentul (Swedish)	<i>Sandoricum koetjape</i> (Burm. f.) Merr.
sequaloa (Spanish)	<i>Cucurbita moschata</i> Duchesne
serigüela (Portuguese-Brazil)	<i>Spondias purpurea</i> L.
serpent-cucumber (English)	<i>Trichosanthes cucumerina</i> L. var. <i>anguina</i> (L.) Haines
serpent gourd (English)	<i>Trichosanthes cucumerina</i> L. var. <i>anguina</i> (L.) Haines
serpent melon (English)	<i>Cucumis melo</i> L. subsp. <i>melo</i> var. <i>flexuosus</i> (L.) Naudin
serrano (Spanish)	<i>Capsicum annuum</i> L.
seso vegetal (Spanish)	<i>Capsicum annuum</i> L. var. <i>annuum</i>
sesawi (Indonesian)	<i>Blighia sapida</i> K. D. Koenig
Seville orange (English)	<i>Brassica juncea</i> (L.) Czern.
Shaddock (English)	<i>Citrus aurantium</i> L.
shadek (French)	<i>Citrus maxima</i> (Burm.) Merr.
shallot (English)	<i>Citrus maxima</i> (Burm.) Merr.
Shetland cabbage (English)	<i>Allium cepa</i> L.
shirō-uri (Japanese Rōmaji)	<i>Brassica oleracea</i> L. var. <i>capitata</i> L.
shum (English)	<i>Cucumis melo</i> L. subsp. <i>agrestis</i> var. <i>conomon</i> (Thunb.) Makino
Sieva bean (English)	<i>Solanum aethiopicum</i> L.
si gua (transcribed Chinese)	<i>Phaseolus lunatus</i> L.
Siberian apricot (English)	<i>Luffa aegyptiaca</i> Mill.
silky gourd (English)	<i>Prunus armeniaca</i> L.
silver rattlepod (English)	<i>Luffa acutangula</i> (L.) Roxb.
Sinaasappel (Dutch)	<i>Crotalaria incana</i> L.
Sitaphal (India)	<i>Citrus sinensis</i> (L.) Osbeck
slender watervine (English)	<i>Cucurbita moschata</i> Duchesne
slipper goard (English)	<i>Cayratia trifolia</i> (L.) Domin
småcitrus (Swedish)	<i>Cyclanthera pedata</i> (L.) Schrad.
	<i>Citrus reticulata</i> Blanco

smooth loofah (English)	<i>Luffa aegyptiaca</i> Mill.
smooth mountain prickly-pear (English)	<i>Opuntia ficus-indica</i> (L.) Mill.
smooth prickly-pear (English)	<i>Opuntia ficus-indica</i> (L.) Mill.
smultron (Swedish)	<i>Fragaria vesca</i> L.
smultranguava (Swedish)	<i>Psidium cattleyanum</i> Sabine
snake-bean (English)	<i>Vigna unguiculata</i> (L.) Walp.
snake cucumber (English)	<i>Cucumis melo</i> L. subsp. <i>agrestis</i> var. <i>conomon</i> (Thunb.) Makino
snake gourd (English)	<i>Trichosanthes cucumerina</i> L. <i>Trichosanthes cucumerina</i> L. var. <i>anguina</i> (L.) Haines
snake melon (English)	<i>Trichosanthes pilosa</i> Lour. <i>Cucumis melo</i> L. subsp. <i>melo</i> var. <i>flexuosus</i> (L.) Naudin
snap melon (English)	<i>Cucumis melo</i> L. subsp. <i>agrestis</i> var. <i>momordica</i> (Roxb.) Duthie and J. B. Fuller
sockerannona (Swedish)	<i>Annona squamosa</i> L.
solros (Swedish)	<i>Helianthus annuus</i> L.
Sonnenblume (German)	<i>Helianthus annuus</i> L.
sötgrenadill (Swedish)	<i>Passiflora ligularis</i> Juss.
sour orange (English)	<i>Citrus aurantium</i> L.
soursop (English)	<i>Annona muricata</i> L.
southern-pea (English)	<i>Vigna unguiculata</i> (L.) Walp. subsp. <i>unguiculata</i> Unguiculata Group
spaghetti squash (English)	<i>Cucurbita pepo</i> L. subsp. <i>pepo</i>
spanischer Pfeffer (German)	<i>Capsicum annuum</i> L.
Spanish gourd (English-Pakistan)	<i>Capsicum annuum</i> L. var. <i>annuum</i>
Spanish-plum (English)	<i>Cucurbita moschata</i> Duchesne
spanskpeppar (Swedish)	<i>Spondias purpurea</i> L.
Spargelkohl (German)	<i>Capsicum annuum</i> L.
Speise-Kürbis (German)	<i>Brassica oleracea</i> L. var. <i>italica</i> Plenck
spine gourd (English)	<i>Cucurbita maxima</i> Duchesne
spineless cactus (English)	<i>Momordica dioica</i> Roxb. ex Willd
spiny amaranth (English)	<i>Opuntia ficus-indica</i> (L.) Mill.
spiny pigweed (English)	<i>Amaranthus spinosus</i> L.
spiny bitter-cucumber (English)	<i>Amaranthus spinosus</i> L.
spiny monkey ball	<i>Momordica cochinchinensis</i> (Lour.) Spreng.
sponge gourd (English)	<i>Strychnos spinosa</i> Lam.
Sprossenbrokkoli (German)	<i>Luffa aegyptiaca</i> Mill.
sprouting broccoli (English)	<i>Brassica oleracea</i> L. var. <i>italica</i> Plenck
spur pepper (English)	<i>Brassica oleracea</i> L. var. <i>italica</i> Plenck
squash (English)	<i>Capsicum frutescens</i> L.
squash gourd (English-Pakistan)	<i>Cucurbita maxima</i> Duchesne
squash-melon (English)	<i>Cucurbita moschata</i> Duchesne <i>Cucurbita pepo</i> L. <i>Cucurbita moschata</i> Duchesne
Stachelannone (German)	<i>Benincasa fistulosa</i> (Stocks) H. Schaef. and S. S. Renner
Stachelgurke (German)	<i>Annona muricata</i> L.
star-apple (English)	<i>Sechium edule</i> (Jacq.) Sw.
starfruit (English)	<i>Chrysophyllum cainito</i> L.
stjärnäpple (Swedish)	<i>Averrhoa carambola</i> L.
stem turnip (English)	<i>Chrysophyllum cainito</i> L. <i>Brassica oleracea</i> L. var. <i>gongylodes</i> L.

Sternapfel (German)	<i>Chrysophyllum cainito</i> L.
Sternfrucht (German)	<i>Averrhoa carambola</i> L.
stinkende Grenadille (German)	<i>Passiflora foetida</i> L.
stinking granadilla (English)	<i>Passiflora foetida</i> L.
stinking passionflower (English)	<i>Passiflora foetida</i> L.
stinking passionfruit (English)	<i>Passiflora foetida</i> L.
stock-melon (English)	<i>Citrullus amarus</i> Schrad.
straightneck squash (English)	<i>Cucurbita pepo</i> L. subsp. <i>ovifera</i> (L.) D. S. Decker var. <i>ovifera</i> (L.) Harz
strainervine (English)	<i>Luffa acutangula</i> (L.) Roxb.
Straucherbse (German)	<i>Cajanus cajan</i> (L.) Huth
Sträv mukreva (Swedish)	<i>Cucumis maderaspatanus</i> L.
strawberry (English)	<i>Fragaria ×ananassa</i> Duchesne ex Rozier
strawberry guava (English)	<i>Psidium cattleianum</i> Sabine
	<i>Psidium cattleianum</i> Sabine var. <i>littorale</i> (Raddi) Fosberg
strawberry-pear (English)	<i>Hylocereus undatus</i> (Haw.) Britton and Rose
striped-cucumber (English)	<i>Diplocyclos palmatus</i> (L.) C. Jeffrey
stuffing-cucumber (English)	<i>Cyclanthera pedata</i> (L.) Schrad.
stuffing gourd (English)	<i>Cyclanthera pedata</i> (L.) Schrad.
strychninetree (English)	<i>Strychnos nux-vomica</i> L.
suan cheng (transcribed Chinese)	<i>Citrus aurantium</i> L.
suan zao (transcribed Chinese)	<i>Ziziphus jujuba</i> Mill.
subag (transcribed Korean)	<i>Citrullus lanatus</i> (Thunb.) Matsum. and Nakai
süße Grenadille (German)	<i>Passiflora ligularis</i> Juss.
Süßsack (German)	<i>Annona squamosa</i> L.
sugar-apple (English)	<i>Annona squamosa</i> L.
sugar bean (English)	<i>Phaseolus lunatus</i> L.
suika (Japanese Rōmaji)	<i>Citrullus lanatus</i> (Thunb.) Matsum. and Nakai
summer crookneck squash (English)	<i>Cucurbita pepo</i> L. subsp. <i>ovifera</i> (L.) D. S. Decker var. <i>ovifera</i> (L.) Harz
sunflower (English)	<i>Helianthus annuus</i> L.
sun gua (transcribed Chinese)	<i>Cucurbita maxima</i> Duchesne
Surinam-cherry (English)	<i>Eugenia uniflora</i> L.
Surinam-Kirschmyrte (German)	<i>Eugenia uniflora</i> L.
Surinamkirsche (German)	<i>Eugenia uniflora</i> L.
susemioi (transcribed Korean)	<i>Luffa aegyptiaca</i> Mill.
svart sapote (Swedish)	<i>Diospyros digyna</i> Jacq.
swamp blueberry (English)	<i>Vaccinium corymbosum</i> L.
Swatow orange (English)	<i>Citrus reticulata</i> Blanco
sweet basil (English)	<i>Ocimum basilicum</i> L.
sweetcup (English)	<i>Passiflora laurifolia</i> L.
sweet granadilla (English)	<i>Passiflora ligularis</i> Juss.
sweet gourd (English)	<i>Momordica cochinchinensis</i> (Lour.) Spreng.
	<i>Cucurbita moschata</i> Duchesne
sweet melon (English)	<i>Cucumis melo</i> L. subsp. <i>agrestis</i> var. <i>conomon</i> (Thunb.) Makino
sweet orange (English)	<i>Citrus sinensis</i> (L.) Osbeck
sweet pepper (English)	<i>Capsicum annuum</i> L.
	<i>Capsicum annuum</i> L. var. <i>annuum</i>
sweet prickly-pear (English)	<i>Opuntia ficus-indica</i> (L.) Mill.
sweetsop (English)	<i>Annona squamosa</i> L.

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Tabasco pepper (English)	<i>Capsicum frutescens</i> L.
tabascopeppar (Swedish)	<i>Capsicum frutescens</i> L.
table queen squash (English)	<i>Cucurbita pepo</i> L. subsp. <i>ovifera</i> (L.) D. S. Decker var. <i>ovifera</i> (L.) Harz
tacamahac-tree (English)	<i>Calophyllum inophyllum</i> L.
tacso (French)	<i>Passiflora tripartita</i> (Juss.) Poir. var. <i>mollissima</i> (Kunth) Holm-Niels. and P. Jørg.
tacso (Spanish)	<i>Passiflora tripartita</i> (Juss.) Poir. var. <i>mollissima</i> (Kunth) Holm-Niels. and P. Jørg.
tacso de Castilla (Spanish-Ecuador)	<i>Passiflora tripartita</i> (Juss.) Poir. var. <i>mollissima</i> (Kunth) Holm-Niels. and P. Jørg.
taggamarant (Swedish)	<i>Amaranthus spinosus</i> L.
taggannonna (Swedish)	<i>Annona muricata</i> L.
taggig bittergurka (Swedish)	<i>Momordica cochinchinensis</i> (Lour.) Spreng.
tallote (Spanish)	<i>Sechium edule</i> (Jacq.) Sw.
tamareira (Portuguese)	<i>Phoenix dactylifera</i> L.
tamarillo (Spanish)	<i>Solanum betaceum</i> Cav.
tambis (Spanish)	<i>Syzygium aqueum</i> (Burm. f.) Alston
tamiá de cipõ (Portuguese)	<i>Cyclanthera pedata</i> (L.) Schrad.
tamiá de comer (Portuguese)	<i>Cyclanthera pedata</i> (L.) Schrad.
tangerina (Portuguese-Brazil)	<i>Citrus reticulata</i> Blanco
tangerine (English)	<i>Citrus reticulata</i> Blanco
Tangerine (German)	<i>Citrus reticulata</i> Blanco
tangor (English)	<i>Citrus nobilis</i> Lour.
tao (transcribed Chinese)	<i>Prunus persica</i> (L.) Batsch
tar (India)	<i>Cucumis melo</i> L. subsp. <i>agrestis</i> (Naudin) Pangalo var. <i>conomon</i> (Thunb.) Makino
tasajo (Spanish)	<i>Hylocereus undatus</i> (Haw.) Britton and Rose
teasel gourd (English)	<i>Cucumis dipsaceus</i> Ehrenb. ex Spach
teen (Arabic)	<i>Ficus carica</i> L.
thorny amaranth (English)	<i>Amaranthus spinosus</i> L.
thorny pigweed (English)	<i>Amaranthus spinosus</i> L.
three-leaf cayratia (English)	<i>Cayratia trifolia</i> (L.) Domin
tian cheng (transcribed Chinese)	<i>Citrus sinensis</i> (L.) Osbeck
tian gua (transcribed Chinese)	<i>Cucumis melo</i> L. subsp. <i>melo</i>
Tibetan apricot (English)	<i>Prunus armeniaca</i> L.
tinda (French)	<i>Benincasa fistulosa</i> (Stocks) H. Schaef. and S. S. Renner
tinda (India-Hindi)	<i>Benincasa fistulosa</i> (Stocks) H. Schaef. and S. S. Renner
tindamelon (Swedish)	<i>Benincasa fistulosa</i> (Stocks) H. Schaef. and S. S. Renner
Tindola (German)	<i>Coccinia grandis</i> (L.) Voigt.
tindora (India)	<i>Coccinia grandis</i> (L.) Voigt.
tindori (India)	<i>Coccinia grandis</i> (L.) Voigt.
tobacco-tree (English)	<i>Solanum erianthum</i> D. Don
tobacco-wood (English)	<i>Solanum mauritianum</i> Scop.
tōgan (Japanese Rōmaji)	<i>Benincasa hispida</i> (Thunb.) Cogn.
tō-garashi (Japanese Rōmaji)	<i>Capsicum annuum</i> L.
tokado-hechima (Japanese Rōmaji)	<i>Capsicum annuum</i> L. var. <i>annuum</i>
tomat (Swedish)	<i>Luffa acutangula</i> (L.) Roxb.
	<i>Solanum lycopersicum</i> L. var. <i>lycopersicum</i>

tomat (transliterated Russian)	<i>Solanum lycopersicum</i> L. var. <i>lycopersicum</i>
tomate (French)	<i>Solanum lycopersicum</i> L. var. <i>lycopersicum</i>
Tomate (German)	<i>Solanum lycopersicum</i> L. var. <i>lycopersicum</i>
tomate (Spanish)	<i>Physalis philadelphica</i> Lam.
	<i>Solanum lycopersicum</i> L. var. <i>lycopersicum</i>
tomate chauve souris (French)	<i>Solanum sessiliflorum</i> Dunal
tomate de árbol (Spanish)	<i>Solanum betaceum</i> Cav.
tomate-de-árvore (Portuguese)	<i>Solanum betaceum</i> Cav.
tomate de cáscara (Spanish)	<i>Physalis philadelphica</i> Lam.
tomate de La Paz (French)	<i>Solanum betaceum</i> Cav.
tomate en arbre (French)	<i>Solanum betaceum</i> Cav.
tomate fraise (French)	<i>Physalis philadelphica</i> Lam.
tomate-francês (Portuguese-Brazil)	<i>Solanum betaceum</i> Cav.
tomate serrano (Spanish)	<i>Solanum betaceum</i> Cav.
tomate verde (Spanish)	<i>Physalis philadelphica</i> Lam.
tomateiro (Portuguese)	<i>Solanum lycopersicum</i> L. var. <i>lycopersicum</i>
tomateiro-arbusto (Portuguese-Brazil)	<i>Solanum betaceum</i> Cav.
tomatera (Spanish)	<i>Solanum lycopersicum</i> L. var. <i>lycopersicum</i>
tomatillo (Spanish)	<i>Physalis philadelphica</i> Lam.
	<i>Solanum lycopersicum</i> L. var. <i>cerasiforme</i> (Alef.) Fosberg
tomatillo (Swedish)	<i>Physalis philadelphica</i> Lam.
tomatillo ground-cherry (English)	<i>Physalis philadelphica</i> Lam.
tomato (English)	<i>Solanum lycopersicum</i> L.
	<i>Solanum lycopersicum</i> L. var. <i>lycopersicum</i>
tomato (transcribed Korean)	<i>Solanum lycopersicum</i> L. var. <i>lycopersicum</i>
tomato-fruit eggplant (English)	<i>Solanum aethiopicum</i> L.
tomato cerise (French)	<i>Solanum lycopersicum</i> L. var. <i>cerasiforme</i> (Alef.) Fosberg
	<i>Solanum sessiliflorum</i> Dunal
topiro (Spanish)	<i>Solanum sessiliflorum</i> Dunal
topiro (Swedish)	<i>Luffa aegyptiaca</i> Mill.
torai (India)	<i>Luffa acutangula</i> (L.) Roxb.
Tori (India)	<i>Citrus maxima</i> (Burm.) Merr.
toronja (Spanish)	<i>Citrus paradisi</i> Macfad.
toronja (Spanish)	<i>Helianthus annuus</i> L.
tournesol (French)	<i>Solanum betaceum</i> Cav.
trädtomat (Swedish)	<i>Solanum betaceum</i> Cav.
tree-tomato (English)	<i>Triphasia trifolia</i> (Burm. f.) P. Wilson
triphasia (India)	<i>Triphasia trifolia</i> (Burm. f.) P. Wilson
trifoliate limeberry (India)	<i>Terminalia catappa</i> L.
tropical-almond (English)	<i>Abelmoschus moschatus</i> Medik.
tropical jewel-hibiscus (English)	<i>Terminalia catappa</i> L.
tropisk mandel (Swedish)	<i>Citrullus amarus</i> Schrad.
tsamma-melon (English)	<i>Cucumis melo</i> L. subsp. <i>agrestis</i> var. <i>conomon</i> (Thunb.) Makino
tsuke-uri (Japanese Rōmaji)	<i>Fragaria ×ananassa</i> Duchesne ex Rozier
	<i>Opuntia ficus-indica</i> (L.) Mill.
ttalgi (transcribed Korean)	<i>Citrullus colocynthis</i> (L.) Schrad.
tuberous prickly-pear (English)	<i>Passiflora tripartita</i> (Juss.) Poir. var. <i>mollissima</i> (Kunth) Holm-Niels. and P. Jørg.
tumba (India)	<i>Opuntia ficus-indica</i> (L.) Mill.
tumbo (Spanish)	<i>Opuntia ficus-indica</i> (L.) Mill.
	<i>Opuntia ficus-indica</i> (L.) Mill.
tuna (Spanish)	
tuna cactus (English)	
tuna de Castilla (Spanish)	

tuna mansa (Spanish)
 turnip cabbage (English)
 turnip kale (English)
 turkey pepper (English)
 tuver (India)

U

ume (Japanese Rōmaji)
 undi (Spanish)
 upo (Tagalog)
 urd-bean (English)
 Urbohne (German)
 urdböna (Swedish)
 uva (Portuguese-Brazil)

V

Valencia orange (English)
 valnöt (Swedish)
 vattenäpple (Swedish)
 vattenmelon (Swedish)
 vaxpumpa (Swedish)
 vegetable-hummingbird (English)
 vegetable marrow (English)
 vegetable mustard (English)
 vegetable-pear (English)
 vegetable-sponge (English)
 videira (Portuguese-Brazil)
 vigna cinese (Italian)

vin (Swedish)
 vine-of-Sodom (English)
 viper's gourd (English)

vit nattjasmin (Swedish)
 vit sapote (Swedish)

W

Wachskürbis (German)
 Waiawi (Hawaiian)
 Walderdbeere (German)
 walnut (English)
 wampee (American Indian-Algonquin)
 wampi (English)
 wampi (Swedish)
 wan dou (transcribed Chinese)
 wandu (transcribed Korean)
 wani-nashi (Japanese Rōmaji)
 Wasserjambuse (German)
 Wasserlimone (German)

Opuntia ficus-indica (L.) Mill.
Brassica oleracea L. var. *gongylodes* L.
Brassica oleracea L. var. *gongylodes* L.
Capsicum annuum L.
Cajanus cajan (L.) Huth

Prunus mume Siebold and Zucc.
Calophyllum inophyllum L.
Lagenaria siceraria (Molina) Standl.
Vigna mungo (L.) Hepper var. *mungo*
Vigna mungo (L.) Hepper var. *mungo*
Vigna mungo (L.) Hepper var. *mungo*
Vitis vinifera L.

Citrus sinensis (L.) Osbeck
Juglans regia L.
Syzygium aqueum (Burm. f.) Alston
Citrullus lanatus (Thunb.) Matsum. and Nakai
Benincasa hispida (Thunb.) Cogn.
Sesbania grandiflora (L.) Pers.
Cucurbita pepo L. subsp. *pepo*
Brassica juncea (L.) Czern.
Sechium edule (Jacq.) Sw.
Luffa aegyptiaca Mill.
Vitis vinifera L.
Vigna unguiculata (L.) Walp. subsp. *unguiculata*
 Unguiculata Group
Vitis vinifera L.
Citrullus colocynthis (L.) Schrad.
Trichosanthes cucumerina L. var. *anguina* (L.)
 Haines
Cestrum nocturnum L.
Casimiroa edulis La Llave and Lex.

Benincasa hispida (Thunb.) Cogn.
Psidium cattleianum Sabine var. *littorale* (Raddi)
 Fosberg
Fragaria vesca L.
Juglans regia L.
Clausena lansium (Lour.) Skeels
Clausena lansium (Lour.) Skeels
Clausena lansium (Lour.) Skeels
Pisum sativum L.
Pisum sativum L.
Persea americana Mill.
Syzygium aqueum (Burm. f.) Alston
Passiflora laurifolia L.

Wassermelone (German)	<i>Citrullus lanatus</i> (Thunb.) Matsum. and Nakai <i>Citrullus lanatus</i> (Thunb.) Matsum. and Nakai subsp. <i>lanatus</i>
water-apple (English)	<i>Syzygium aqueum</i> (Burm. f.) Alston
water-lemon (English)	<i>Passiflora laurifolia</i> L.
watermelon (English)	<i>Citrullus lanatus</i> (Thunb.) Matsum. and Nakai <i>Citrullus lanatus</i> (Thunb.) Matsum. and Nakai subsp. <i>lanatus</i>
watery rose-apple (English)	<i>Syzygium aqueum</i> (Burm. f.) Alston
wax gourd (English)	<i>Benincasa hispida</i> (Thunb.) Cogn.
wax jambu (English)	<i>Syzygium samarangense</i> (Blume) Merr. and L. M. Perry
weiße Passionblume (German)	<i>Passiflora subpeltata</i> Ortega
weiße Sapote (German)	<i>Casimiroa edulis</i> La Llave and Lex.
Weißkohl (German)	<i>Brassica oleracea</i> L. var. <i>capitata</i> L.
wen po (transcribed Chinese)	<i>Cydonia oblonga</i> Mill.
West Indian-pea (English)	<i>Sesbania grandiflora</i> (L.) Pers.
westindische Nierenboom (Dutch)	<i>Anacardium occidentale</i> L.
white cabbage (English)	<i>Brassica oleracea</i> L. var. <i>capitata</i> L.
white-flower gourd (English)	<i>Lagenaria siceraria</i> (Molina) Standl.
white-seed-melon (English)	<i>Melothria sphaerocarpa</i> (Cogn.) H. Schaef. and S.S. Renner
white gourd (English)	<i>Benincasa hispida</i> (Thunb.) Cogn.
white potato (English)	<i>Solanum tuberosum</i> L. subsp. <i>tuberosum</i>
white-pumpkin (English)	<i>Benincasa hispida</i> (Thunb.) Cogn.
white passionflower (English)	<i>Passiflora subpeltata</i> Ortega
white passionfruit (English)	<i>Passiflora subpeltata</i> Ortega
white sapote (English)	<i>Casimiroa edulis</i> La Llave and Lex.
white star-apple (English)	<i>Chrysophyllum albidium</i> G. Don
Wild-Apfel (German)	<i>Malus sylvestris</i> (L.) Mill.
wild cabbage (English)	<i>Brassica oleracea</i> L.
wild cucumber (English)	<i>Cyclanthera pedata</i> (L.) Schrad.
wild custard-apple (English)	<i>Annona senegalensis</i> Pers.
wild gourd (English)	<i>Citrullus colocynthis</i> (L.) Schrad.
wild mustard (English)	<i>Brassica</i> spp.
wild passionfruit (English)	<i>Passiflora foetida</i> L.
wild passionvine (English)	<i>Passiflora subpeltata</i> Ortega
wild star-apple (English)	<i>Passiflora subpeltata</i> Ortega
wild strawberry (English)	<i>Chrysophyllum oliviforme</i> L.
wild tobacco (English)	<i>Fragaria vesca</i> L.
wild tobacco (English)	<i>Solanum erianthum</i> D. Don
wild tobacco-bush (English)	<i>Solanum mauritianum</i> Scop.
wild tobacco-tree (English)	<i>Solanum mauritianum</i> Scop.
wild turnip (English)	<i>Solanum mauritianum</i> Scop.
wild water-lemon (English)	<i>Brassica</i> spp.
winter broccoli (English)	<i>Passiflora foetida</i> L.
winter-cherries (English)	<i>Brassica oleracea</i> L. var. <i>italica</i> Plenck
winter-cherry (English)	<i>Solanum pseudocapsicum</i> L.
winter crookneck squash (English)	<i>Solanum pseudocapsicum</i> L.
winter-melon (English)	<i>Cucurbita moschata</i> Duchesne
winter melon (English)	<i>Benincasa hispida</i> (Thunb.) Cogn.
winter squash (English)	<i>Cucumis melo</i> L. subsp. <i>melo</i> var. <i>inodorus</i> H. Jacq.
	<i>Cucurbita maxima</i> Duchesne

woodland strawberry (English)
 woolly rattlepod (English)
 wu hua guo (transcribed Chinese)
 Wunderbaum (German)

Fragaria vesca L.
Crotalaria incana L.
Ficus carica L.
Ricinus communis L.

X

xi gua (transcribed Chinese)
 xi hu lu (transcribed Chinese)
 xi yang li (transcribed Chinese)
 xiao que gua (transcribed Chinese)
 xing (transcribed Chinese)
 xuxú (Portuguese-Brazil)

Citrullus lanatus (Thunb.) Matsum. and Nakai
Cucurbita pepo L.
Pyrus communis L.
Cyclanthera pedata (L.) Schrad.
Prunus armeniaca L.
Sechium edule (Jacq.) Sw.

Y

yambo (Spanish)
 yanbaru-nasubi (Japanese Rōmaji)
 yang yu (transcribed Chinese)
 yangpa (transcribed Korean)
 yao Guo (transcribed Chinese)
 yasei-kanran (Japanese Rōmaji)
 ye cao mei (transcribed Chinese)
 ye gan lan (transcribed Chinese)
 yellow Cattley guava (English)

Syzygium jambos (L.) Alston
Solanum erianthum D. Don
Solanum tuberosum L. subsp. *tuberosum*
Allium cepa L.
Anacardium occidentale L.
Brassica oleracea L.
Fragaria vesca L.
Brassica oleracea L.
Psidium cattleianum Sabine var. *littorale* (Raddi)
 Fosberg

yellow dhal (English)
 yellow guava (English)
 yellow granadilla (English)
 yellow passionfruit (English)
 yellow sapote (English)
 yellow strawberry guava (English)

Cajanus cajan (L.) Huth
Psidium guajava L.
Passiflora laurifolia L.
Passiflora edulis Sims forma *flavicarpa* O. Deg.
Pouteria campechiana (Kunth) Baehni
Psidium cattleianum Sabine
Psidium cattleianum Sabine var. *littorale* (Raddi)
 Fosberg

yeoju (transcribed Korean)
 you (transcribed Chinese)
 yuan you (transcribed Chinese)

Momordica charantia L.
Citrus maxima (Burm.) Merr.
Citrus paradisi Macfad.

Z

zabon (Japanese Rōmaji)
 zacamb (Spanish)
 zao (transcribed Chinese)

Citrus maxima (Burm.) Merr.
Hylocereus undatus (Haw.) Britton and Rose
Ziziphus jujuba Mill.
Ziziphus jujuba Mill. var. *jujuba*
Cucurbita moschata Duchesne
Manilkara zapota (L.) P. Royen
Pouteria sapota (Jacq.) H.E. Moore and Stearn
Casimiroa edulis La Llave and Lex.
Pouteria sapota (Jacq.) H.E. Moore and Stearn
Diospyros digyna Jacq.
Manilkara zapota (L.) P. Royen
Citrus maxima (Burm.) Merr.
Solanum tuberosum L. subsp. *tuberosum*
Annona squamosa L.

zapallo (Spanish)
 zapote (Spanish)

zapote blanco (Spanish)
 zapote mamey (Spanish)
 zapote negro (Spanish)
 zapotillo (Spanish)
 zhu luan (transcribed Chinese)
 ziemniak (Polish)
 Zimtapfel (German)

Zitrone (German)	<i>Citrus limon</i> (L.) Burm. f.
zucca (Italian)	<i>Cucurbita maxima</i> Duchesne
zucca torta (Italian)	<i>Cucurbita moschata</i> Duchesne
zucchini (English)	<i>Cucurbita pepo</i> L. subsp. <i>pepo</i>
Zucchini (German)	<i>Cucurbita pepo</i> L. subsp. <i>pepo</i>
zucchini (Italian)	<i>Cucurbita pepo</i> L.
Zuckermelone (German)	<i>Cucumis melo</i> L. subsp. <i>melo</i> var. <i>cantalupo</i> Ser.
Zuckerapfel (German)	<i>Annona squamosa</i> L.
zuurzak (Dutch)	<i>Annona muricata</i> L.
Zwergbanane (German)	<i>Musa acuminata</i> Colla
Zwetsche (German)	<i>Prunus domestica</i> L. subsp. <i>domestica</i>
Zwetschge (German)	<i>Prunus domestica</i> L. subsp. <i>domestica</i>
Zwispeln (German)	<i>Prunus domestica</i> L. subsp. <i>domestica</i>



Figure 1. Adult male *Bactrocera cucurbitae* on a corn (*Zea mays* L.) tassel, showing identifying features of black spot on the wing tip and a black band on the wing. Photograph provided by G. T. McQuate (USDA-ARS).



Figure 2. Adult female *Bactrocera cucurbitae* on watermelon fruit, *Citrullus lanatus* (Thunb.) Matsum. & Nakai. Photograph provided by S. Bauer (USDA-ARS).

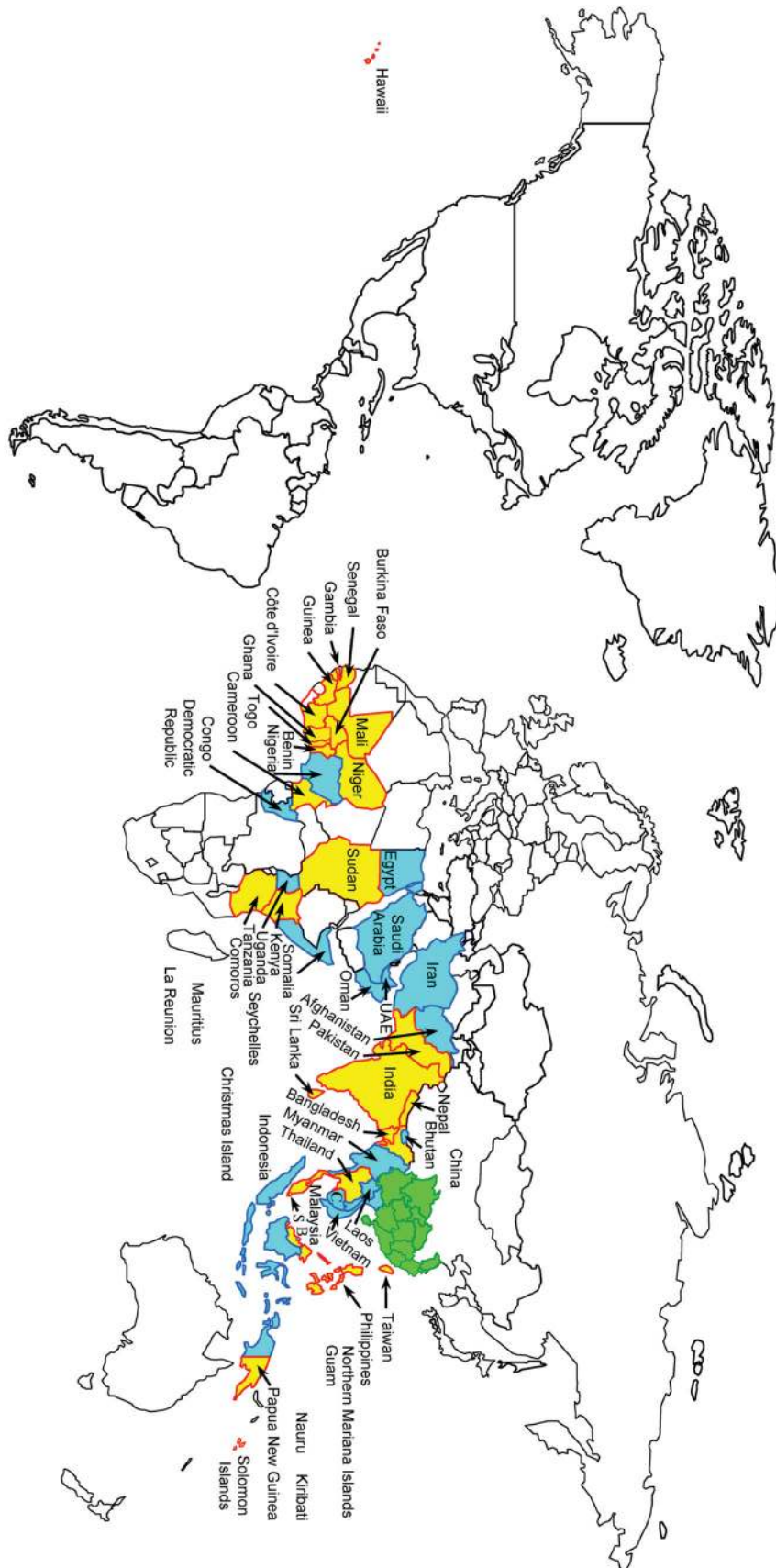


Figure 3. Geographic range of *Bactrocera cucurbitae*. Countries highlighted in yellow and bordered in red are countries within which field infestation of fruits by *B. cucurbitae* has been reported and is summarized in this publication. Countries highlighted in light blue and bordered in dark blue are additional countries where *B. cucurbitae* has been reported as summarized in the online Invasive Species Compendium (CABI 2016). Regions highlighted in light green and bordered in dark green are provinces of China where *B. cucurbitae* is present. This publication does provide some field infestation summaries from China, but such reports are few, and recent population documentation by Xia et al. (2015) provides a better estimation of the current extent of *B. cucurbitae* populations in China. Because of space limitations, some country names were abbreviated, as follows: B - Brunei, C - Cambodia, S - Singapore, and UAE - United Arab Emirates.

Table 1. Summary, listed by plant family, of the suitable host plants of the melon fly, *Bactrocera cucurbitae*, based on confirmed infestation records under natural field conditions.

Plant Family	No. Genera	No. Species	Host Plant Species
Agavaceae	1	1	Dracaena (1) <i>Dracaena curtissi</i>
Anacardiaceae	3	3	Anacardium (1) <i>Anacardium occidentale</i> ; Dracontomelon (1) <i>Dracontomelon dao</i> ; Mangifera (1) <i>Mangifera indica</i>
Annonaceae	1	1	Annona (1) <i>Annona senegalensis</i>
Brassicaceae	2	5	Brassica (4) <i>Brassica juncea</i> , <i>B. oleracea</i> var. <i>botrytis</i> , <i>B. oleracea</i> var. <i>gongylodes</i> , <i>B. oleracea</i> var. <i>italica</i> ; Raphanus (1) <i>Raphanus sativus</i>
Cactaceae	1	1	Hylocereus (1) <i>Hylocereus undatus</i>
Capparaceae	2	3	Capparis (2) <i>Capparis sepiaria</i> , <i>C. thorelii</i> ; Maerua (1) <i>Maerua siamensis</i>
Caricaceae	1	1	Carica (1) <i>Carica papaya</i>
Clusiaceae	1	1	Garcinia (1) <i>Garcinia</i> spp.
Combretaceae	1	1	Terminalia (1) <i>Terminalia catappa</i>
Cucurbitaceae	17	56	Benincasa (2) <i>Benincasa fistulosa</i> , <i>B. hispida</i> ; Citrullus (4) <i>Citrullus amarus</i> , <i>C. colocynthis</i> , <i>C. lanatus</i> , <i>C. lanatus</i> subsp. <i>lanatus</i> ; Coccinia (1) <i>Coccinia grandis</i> ; Cucumis (13) <i>Cucumis anguria</i> , <i>C. dipsaceus</i> , <i>C. maderaspatanus</i> , <i>C. melo</i> , <i>C. melo</i> subsp. <i>agrestis</i> var. <i>conomon</i> , <i>C. melo</i> subsp. <i>agrestis</i> var. <i>momordica</i> , <i>C. melo</i> subsp. <i>melo</i> , <i>C. melo</i> subsp. <i>melo</i> var. <i>cantalupo</i> , <i>C. melo</i> subsp. <i>melo</i> var. <i>flexuosus</i> , <i>C. melo</i> subsp. <i>melo</i> var. <i>inodorus</i> , <i>C. sativus</i> , <i>C. sativus</i> var. <i>sativus</i> , <i>C. spp.</i> ; Cucurbita (6) <i>Cucurbita maxima</i> , <i>C. moschata</i> , <i>C. pepo</i> , <i>C. pepo</i> subsp. <i>ovifera</i> var. <i>ovifera</i> , <i>C. pepo</i> subsp. <i>pepo</i> , <i>C. spp.</i> ; Cyclanthera (1) <i>Cyclanthera pedata</i> ; Diplocyclos (1) <i>Diplocyclos palmatus</i> ; Gymnopetalum (1) <i>Gymnopetalum scabrum</i> ; Lagenaria (2) <i>Lagenaria siceraria</i> , <i>L. sphaerica</i> ; Luffa (3) <i>Luffa acutangula</i> , <i>L. aegyptiaca</i> , <i>L. spp.</i> ; Melothria (1) <i>Melothria sphaerocarpa</i> ; Momordica (8) <i>Momordica balsamina</i> , <i>M. charantia</i> , <i>M. charantia</i> var. <i>pavel</i> , <i>M. cochinchinensis</i> , <i>M. dioica</i> , <i>M. foetida</i> , <i>M. spp.</i> , <i>M. trifoliolata</i> ; Sechium (1) <i>Sechium edule</i> ; Sicyos (2) <i>Sicyos pachycarpus</i> , <i>S. spp.</i> ; Telfairia (1) <i>Telfairia occidentalis</i> ; Trichosanthes (7) <i>Trichosanthes cucumerina</i> , <i>T. cucumerina</i> var. <i>anguina</i> , <i>T. dioica</i> , <i>T. pilosa</i> , <i>T. tricuspidata</i> , <i>T. wallichiana</i> , <i>T. wawraei</i> ; Zehneria (2) <i>Zehneria mucronata</i> , <i>Z. wallichii</i>
Fabaceae	4	7	Lablab (1) <i>Lablab purpureus</i> subsp. <i>purpureus</i> ; Phaseolus (2) <i>Phaseolus lunatus</i> , <i>P. vulgaris</i> ; Sesbania (1) <i>Sesbania grandiflora</i> ; Vigna (3) <i>Vigna unguiculata</i> , <i>V. unguiculata</i> subsp. <i>unguiculata</i> Sesquipedalis Group, <i>V. unguiculata</i> subsp. <i>unguiculata</i> Unguiculata Group
Juglandaceae	1	1	Juglans (1) <i>Juglans hindsii</i>
Lauraceae	1	1	Persea (1) <i>Persea americana</i>
Loganiaceae	1	2	Strychnos (2) <i>Strychnos nux-vomica</i> , <i>S. spinosa</i>
Malvaceae	1	2	Abelmoschus (2) <i>Abelmoschus esculentus</i> , <i>A. moschatus</i>
Moraceae	2	5	Artocarpus (1) <i>Artocarpus heterophyllus</i> ; Ficus (4) <i>Ficus carica</i> , <i>F. chartacea</i> , <i>F. erecta</i> , <i>F. pumila</i>
Musaceae	1	1	Musa (1) <i>Musa xparadisiaca</i>
Myrtaceae	2	3	Psidium (2) <i>Psidium cattleianum</i> , <i>P. guajava</i> ; Syzygium (1) <i>Syzygium samarangense</i>

Oxalidaceae	1	1	Averrhoa (1) <i>Averrhoa carambola</i>
Pandanaceae	1	1	Pandanus (1) <i>Pandanus fascicularis</i>
Passifloraceae	2	4	Adenia (1) <i>Adenia hondala</i> ; Passiflora (3) <i>Passiflora edulis</i> , <i>P. laurifolia</i> , <i>P. spp.</i>
Phyllanthaceae	1	1	Baccaurea (1) <i>Baccaurea angulata</i>
Rhamnaceae	1	1	Ziziphus (1) <i>Ziziphus jujuba</i>
Rosaceae	4	4	Cydonia (1) <i>Cydonia oblonga</i> ; Eriobotrya (1) <i>Eriobotrya japonica</i> ; Fragaria (1) <i>Fragaria vesca</i> ; Prunus (1) <i>Prunus persica</i>
Rubiaceae	1	1	Coffea (1) <i>Coffea arabica</i>
Rutaceae	2	5	Citrus (4) <i>Citrus hystrix</i> , <i>C. maxima</i> , <i>C. reticulata</i> , <i>C. sinensis</i> ; Triphasia (1) <i>Triphasia trifolia</i>
Sapindaceae	1	1	Dimocarpus (1) <i>Dimocarpus longan</i> subsp. <i>longan</i>
Sapotaceae	1	1	Manilkara (1) <i>Manilkara zapota</i>
Solanaceae	3	20	Capsicum (3) <i>Capsicum annuum</i> , <i>C. annuum</i> var. <i>annuum</i> , <i>C. frutescens</i> ; Physalis (1) <i>Physalis philadelphica</i> ; Solanum (16) <i>Solanum aethiopicum</i> , <i>S. anguivi</i> , <i>S. betaceum</i> , <i>S. capsicoides</i> , <i>S. erianthum</i> , <i>S. linnaeanum</i> , <i>S. lycopersicum</i> , <i>S. lycopersicum</i> var. <i>cerasiforme</i> , <i>S. lycopersicum</i> var. <i>lycopersicum</i> , <i>S. macrocarpon</i> , <i>S. mauritianum</i> , <i>S. melongena</i> , <i>S. nigrum</i> , <i>S. pseudocapsicum</i> , <i>S. sessiliflorum</i> , <i>S. trilobatum</i>
Vitaceae	1	1	Tetrastigma (1) <i>Tetrastigma leucostaphylum</i>

Table 2. Highest reported rates of field infestation by the melon fly (*Bactrocera cucurbitae*) in host plants in the plant family Cucurbitaceae, and in other plant families. Wide variation in how data are collected (e.g., environmental conditions, fruit maturity, fruit holding conditions, fruit processing methods) precludes objective quantitative rate comparisons.

Family	Plant Species	Infestation Rate (per kg fruit)		Reference
Cucurbitaceae	<i>Coccinia grandis</i> (L.) Voigt.	1006	adults	Vayssières and Carel 1999
Cucurbitaceae	<i>Cucurbita pepo</i> L.	1000	larvae & pupae	Liquido et al. 1994
		944	adults	Vayssières and Carel 2000
Cucurbitaceae	<i>Cucumis melo</i> L. subsp. <i>melo</i> var. <i>cantalupo</i> Ser.	955.8	pupae	Lee 1972
Cucurbitaceae	<i>Cucumis melo</i> L. subsp. <i>agrestis</i> (Naudin) Pangalo var. <i>conomon</i> (Thunb.) Makino	764.8	pupae	Lee 1972
Cucurbitaceae	<i>Momordica charantia</i> L.	747.1	larvae & pupae	Liquido et al. 1994
Solanaceae	<i>Physalis philadelphica</i> Lam.	42.7	larvae & pupae	Liquido et al. 1994
Malvaceae	<i>Abelmoschus esculentus</i> (L.)	31.0	pupae	Wong et al. 1989
Solanaceae	<i>Solanum lycopersicum</i> L.	30.7	adults	Harris et al. 1986
Anacardiaceae	<i>Mangifera indica</i>	2.0	pupae	Vayssières et al. 2007
Cactaceae	<i>Hylocereus undatus</i> (Haw.) Britton and Rose	1.48	pupae	McQuate 2010

Table 3. Summary, listed by plant family, of the undetermined host plants of the melon fly, *Bactrocera cucurbitae*, based on interception data, laboratory infestation data, and/or listing only references.

Plant Family	No. Genera	No. Species	Host Plant Species
Amaranthaceae	1	1	Amaranthus (1) <i>Amaranthus spinosus</i>
Amaryllidaceae	1	1	Allium (1) <i>Allium cepa</i>
Anacardiaceae	2	3	Mangifera (1) <i>Mangifera</i> sp.; Spondias (2) <i>Spondias purpurea</i> , <i>Spondias</i> sp.
Annonaceae	1	5	Annona (5) <i>Annona biflora cinerea</i> , <i>A. muricata</i> , <i>A. reticulata</i> , <i>A. spp.</i> , <i>A. squamosa</i>
Apocynaceae	4	4	Carissa (1) <i>Carissa bispinosa</i> ; Landolphia (1) <i>Landolphia</i> sp.; Ochrosia (1) <i>Ochrosia</i> sp.; Saba (1) <i>Saba senegalensis</i>
Araceae	1	1	Anthurium (1) <i>Anthurium</i> sp.
Arecaceae	1	2	Phoenix (2) <i>Phoenix dactylifera</i> , <i>P. spp.</i>
Asteraceae	1	1	Helianthus (1) <i>Helianthus annuus</i>
Berberidaceae	2	2	Berberis (1) <i>Berberis lyceum</i> ; Podophyllum (1) <i>Podophyllum</i> sp.
Bignoniaceae	1	1	Crescentia (1) <i>Crescentia</i> spp.
Brassicaceae	2	4	Brassica (3) <i>Brassica oleracea</i> , <i>B. oleracea</i> var. <i>capitata</i> , <i>B. spp.</i> ; Raphanus (1) <i>Raphanus</i> sp.
Cactaceae	1	2	Opuntia (2) <i>Opuntia ficus-indica</i> , <i>O. sp.</i>
Calophyllaceae	2	2	Calophyllum (1) <i>Calophyllum inophyllum</i> ; Mammea (1) <i>Mammea Africana</i>
Canellaceae	1	1	Warburgia (1) <i>Warburgia ugandensis</i>
Convulvulaceae	1	1	Ipomoea (1) <i>Ipomoea batatus</i>
Cucurbitaceae	9	15	Citrullus (1) ; <i>Citrullus</i> spp.; Coccinia (2) <i>Coccinia</i> spp., <i>C. trilobata</i> ; Cucumis (2) <i>Cucumis ficifolius</i> , <i>C. metuliferus</i> ; Kedrostis (2) <i>Kedrostis leloja</i> , <i>K. sp.</i> ; Lagenaria (3) <i>Lagenaria amebicana</i> , <i>L. hispida</i> , <i>L. spp.</i> ; Momordica (1) <i>Momordica rostrata</i> ; Sicyos (1) <i>Sicyos hispidus</i> ; Solena (2) <i>Solena amplexicaulis</i> , <i>S. heterophylla</i> ; Trichosanthes (1) <i>Trichosanthes</i> spp.
Ebenaceae	1	1	Diospyros (1) <i>Diospyros digyna</i>
Ericaceae	1	1	Vaccinium (1) <i>Vaccinium corymbosum</i>
Euphorbiaceae	4	4	Endospermum (1) <i>Endospermum diadenum</i> ; Euphorbia (1) <i>Euphorbia heterophylla</i> ; Jatropha (1) <i>Jatropha</i> sp.; Ricinus (1) <i>Ricinus communis</i>
Fabaceae	7	10	Cajanus (1) <i>Cajanus cajan</i> ; Crotalaria (2) <i>Crotalaria incana</i> , <i>C. sp.</i> ; Lablab (1) <i>Lablab purpureus</i> ; Phaseolus (1) <i>Phaseolus</i> spp.; Pisum (1) <i>Pisum sativum</i> ; Sesbania (1) <i>Sesbania</i> spp.; Vigna (3) <i>Vigna mungo</i> var. <i>mungo</i> , <i>Vigna radiata</i> var. <i>radiata</i> , <i>Vigna</i> spp.
Juglandaceae	1	2	Juglans (2) <i>Juglans regia</i> , <i>J. spp.</i>
Lamiaceae	1	2	Ocimum (2) <i>Ocimum basilicum</i> , <i>O. sp.</i>
Lardizabalaceae	1	1	Akebia (1) <i>Akebia quinata</i>
Lauraceae	1	1	Persea (1) <i>Persea</i> sp.
Malpighiaceae	1	1	Malpighia (1) <i>Malpighia glabra</i>
Meliaceae	1	1	Sandoricum (1) <i>Sandoricum koetjape</i>

Moraceae	1	1	Ficus (1) <i>Ficus</i> spp.
Musaceae	1	2	Musa (2) <i>Musa acuminata</i> , <i>M.</i> spp.
Myrtaceae	4	8	Acca (1) <i>Acca sellowiana</i> ; Eugenia (2) <i>Eugenia</i> spp., <i>Eugenia uniflora</i> ; Psidium (2) <i>Psidium cattleianum</i> var. <i>littorale</i> , <i>P.</i> spp.; Syzygium (3) <i>Syzygium aqueum</i> , <i>S. jambos</i> , <i>S. malaccense</i>
Passifloraceae	2	8	Adenia (1) <i>Adenia heterophylla</i> ; Passiflora (7) <i>Passiflora edulis</i> forma <i>flavicarpa</i> , <i>P. foetida</i> , <i>P. ligularis</i> , <i>P. quadrangularis</i> , <i>P. seemannii</i> , <i>P. subpeltata</i> , <i>P. tripartita</i> var. <i>mollissima</i> .
Poaceae	1	1	Zea (1) <i>Zea mays</i>
Rhamnaceae	1	1	Ziziphus (1) <i>Ziziphus jujuba</i> var. <i>jujuba</i>
Rosaceae	4	14	Fragaria (3) <i>Fragaria ×ananassa</i> , <i>F. chiloensis</i> , <i>F.</i> sp.; Malus (4) <i>Malus domestica</i> , <i>M. pumila</i> , <i>M.</i> spp., <i>M. sylvestris</i> ; Prunus (5) <i>Prunus armeniaca</i> , <i>P. mume</i> , <i>P. persica</i> var. <i>nucipersica</i> , <i>P. persica</i> var. <i>persica</i> , <i>P.</i> spp.; Pyrus (2) <i>Pyrus communis</i> , <i>P.</i> spp.
Rutaceae	4	8	Aegle (1) <i>Aegle marmelos</i> ; Casimiroa (1) <i>Casimiroa edulis</i> ; Citrus (5) <i>Citrus aurantium</i> , <i>C. limon</i> , <i>C. nobilis</i> , <i>C. paradisi</i> , <i>C.</i> spp.; Clausena (1) <i>Clausena lansium</i>
Sapindaceae	3	3	Blighia (1) <i>Blighia sapida</i> ; Dimocarpus (1) <i>Dimocarpus longan</i> ; Litchi (1) <i>Litchi chinensis</i>
Sapotaceae	3	8	Chrysophyllum (4) <i>Chrysophyllum albidum</i> , <i>C. cainito</i> , <i>C. oliviforme</i> , <i>C.</i> sp.; Manilkara (1) <i>Manilkara</i> sp.; Pouteria (3) <i>Pouteria campechiana</i> , <i>P. sapota</i> , <i>P.</i> sp.
Solanaceae	3	9	Capsicum (1) <i>Capsicum</i> spp.; Cestrum (2) <i>Cestrum nocturnum</i> , <i>C.</i> spp.; Solanum (6) <i>Solanum donianum</i> , <i>S. incanum</i> , <i>S.</i> spp., <i>S.</i> subsect. <i>lycopersicon</i> sp., <i>S. tuberosum</i> , <i>S. tuberosum</i> subsp. <i>tuberosum</i>
Sphagnaceae	1	1	Sphagnum (1) <i>Sphagnum</i> sp.
Vitaceae	2	3	Cayratia (1) <i>Cayratia trifolia</i> ; Vitis (2) <i>Vitis</i> spp., <i>V. vinifera</i>

