
Traditional Use of A'kub (*Gundelia tournefortii*, Asteraceae), in Israel and the Palestinian Authority Area

Author(s): Simcha Lev-Yadun and Shahal Abbo

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NOTES ON ECONOMIC PLANTS

Traditional use of A'kub (*Gundelia tournefortii*, Asteraceae), in Israel and the Palestinian Authority area.—*Gundelia tournefortii* L., a perennial spiny herb of Irano-Turanian origin, (A'kub or Ka'ub-*Arabic*), may also be found in segetal and post segetal open plant formations of the Mediterranean regions of Israel and surrounding countries (1), (2), (3) and (4). A'kub plants develop a rosette following the autumn (October–November) rains and bolt during February–April. The young heads, while still at ground level are consumed as a fresh or cooked artichoke-like vegetable by several ethnic groups in the Palestinian Authority, Israel and surrounding countries (Muslims, Christians, Druse and Spharadi Jews). The decline of *G. tournefortii* populations caused by an increased demand due to human population growth, and by modern transportation (as aid for gatherers) threatens this wild plant (5). As a result, the picking of this plant in Israel is now restricted by law to domestic use only (5).

The use of this plant is probably quite ancient (more than 2000 years old) (6) and (7). Despite the fact that this old tradition still prevails in the Middle-East, the only mention, we are aware of, regarding the use of A'kub as human food in the economic botany literature is a four lines article in Sturtevant's Notes on Edible Plants (8). Therefore, we hereby provide a short description of the way in which A'kub is currently utilized in Israel and the Palestinian Authority area.

As hemicryptophytes, *G. tournefortii* plants have a thick perennial rootstock from which new growth arises each season. Following the autumn rains and during the winter to late spring, according to the rainfall and temperature profile of the season, the plants develop a new rosette. The lobed leaves are characterized by their spines and have either a red, yellow or purple central vein. The leaves are usually smooth, but we have found several tomentose populations in several locations across Israel and the Palestinian Authority area. The rosette diameter may reach 50–60 cm. On Mt. Hermon, at elevations of ca. 2000 m above sea level, in sectors covered by snow during the winter, *G. tournefortii* plants begin their rosette development when the Negev

populations are near flowering. During late winter to early spring, after the rosette is established, the plants develop a central stem bearing about a dozen inflorescence branches. In large specimens, the total plant height, including this branched inflorescence, may reach 50 cm. Each of the inflorescence branches ends with a compound spiny ovoid head 4–8 cm in diameter (5, 9). Upon maturation, the above-ground parts of the plant dry, and later in the season (late-spring to early summer) they become detached from the root, and disperse their fruits as they are rolled by the wind over large distances (a tumbleweed) (10). We visited a large number of A'kub populations before, during and after the clipping season. In a number of locations, fully mature plants ready to disperse their fruit (and few already rolling in the wind) were observed side by side with relatively green plants bearing immature fruit. No habitat variation could account for the wide phenological range observed at any one location. We suppose that a short but intensive clipping pressure, operating for millennia during the mid-spring, may have served as a selection agent favoring both very early-bolting and very late-bolting genotypes. Under such a clipping regime, genotypes with extreme phenology are more likely to disperse their fruits.

The young inflorescence heads are removed before bolting by inserting a knife, and clipping the stem base a bit below ground level. The fresh heads, and occasionally also the bases of the rosette leaves (13), are trimmed to remove the (still short and soft) head thorns (Fig. 1) and are marketed on the very same day. No refrigerated delivery is known to us. Due to intensive clipping around Arab villages and a decline of *G. tournefortii* populations, groups of gatherers drive distances of more than 100 km to find locations where this wild plant is still abundant. Commercial picking takes place during the early morning, to ensure arrival at the local village market during the afternoon. Our observations indicate that, in Israel and the Palestinian Authority, A'kub collection is done mainly by groups of women from Arab villages. Occasionally we have met elderly Druse (men) collecting A'kub alone in the Golan.



Fig. 1. *Gundelia tournefortii* heads, fresh above, simmering in sauce, below.

According to Kaplan et al. (5), a group of five to nine collectors may gather 4000–12 000 heads. Kaplan et al. (5) did not mention the time required to collect this number of heads, therefore we attempted to evaluate their figures. A team of three inexperienced collectors gathered 84 heads (2.5 Kg) in 3.5 hours in an area where previous groups had removed a considerable

number of heads. After cleaning and trimming the inedible parts (mainly spines and stem bases), 1.1 kg of the collected 84 heads remained ready for cooking. In the Wadi-Nisnas market in Haifa, and in Arab villages of northern Israel, the price of A'kub heads may amount to U.S. \$ 4.00 per kg. According to local sources, the price of A'kub heads in the Hebron district (Pa-

lestinian Authority) is less than U.S. \$ 1.50 per kg. With such prices and with a short clipping season A'kub does not have a significant role in the economy of the Arab villagers in Israel and the Palestinian Authority, but rather serves as a traditional supplement to the diet and may contribute some cash seasonally.

In desert parts of Israel mature A'kub plants are sometimes used as fodder for camels (11), and in Central Anatolia, plants are also collected and dried for winter fodder (12). In Iranian Kurdistan, *G. tournefortii* straw was reported to have been used in preparing dung cakes (11). A'kub achenes contain edible seeds (12). During the late sixties, following the 1967 war, some export of fresh A'kub heads from Israel to the Gulf emirates developed (13). In Jordan A'kub is sold along highways in the northern part of the country as well as in certain stores in Amman (1). In Syria A'kub is a seasonal commodity in the Hamadia Sook of Damascus (1) and most probably in other major cities and along country roads as well. The time-consuming collection, the relatively short season (at any one location) and the need for fast delivery to target markets all dictate a short commerce season. The most popular (in northern Israel) A'kub dish is prepared as follows: the clean heads are covered with mincemeat, fried briefly in oil, and then, later on simmered in a lemon juice based sauce (Fig. 2). Additional traditional cooking recipes have recently been published in Israel (13, 15). A recent modern use of dry A'kub plants in Israel is as an ornamental plant, and as such the dry plants are sometime dyed in different colors.

The economic value of A'kub might increase should spineless types be available for planting. A considerable variation in the spine size exists in populations growing across Israel and the Palestinian Authority, however, at present, no data is available regarding its environmental and genetic components. We have initiated a selection and breeding program aimed at identifying such types. We assume that commercial cultivation of spineless A'kub could provide a source of income to many small farmers in a rather low investment. Such initiative might contribute to the well being of many households in Israel, the Palestinian Authority, and probably in Jordan and Syria as well. In addition to its economic potential, A'kub cultivation may assist in conserving this ancient tradition as well as contribute to nature protection by minimizing clipping from the

wild. However, due to the perennial habit of A'kub no quick results could be expected from such an initiative.

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—Simcha Lev-Yadun, Department of Natural Resources, Agricultural Research Organization, The Volcani Center, P.O. Box 6, Bet Dagan 50250, Israel; Shahal Abbo, Department of Field Crops, Vegetables and Genetics, Faculty of Agricultural, Food and Environmental Quality Sciences, The Hebrew University of Jerusalem, Rehovot 76100, Israel.