

Flora of the Indian Institute of Science campus

H. S. SURESH* AND HARISH R. BHAT

Centre for Ecological Sciences (CES), Indian Institute of Science (IISc), Bangalore 560 012, India.

email: suresh@ces.iisc.ernet.in, harish@ces.iisc.ernet.in; Phones: 91-80-3600985/3092506; Fax: 91-80-360 1428.

Abstract

Floristic inventory of the Indian Institute of Science campus was undertaken to enumerate the biodiversity of the campus which harbors part of the natural vegetation of Bangalore city. The inventory yielded 112 species of woody (trees) and 265 species of nonwoody (shrubs/herbs/grasses) plants. Species were analysed for nativity and utility and were also enumerated. Analysis of woody species revealed that 44.5% of trees were native (indigenous) and 55.5% were exotic in origin. Family *Fabaceae* dominated the tree flora and *Poaceae* (grasses) dominated the nonwoody flora. Utilitarian aspects of herbaceous plants were also studied.

Keywords: Flora, biodiversity.

1. Introduction

The most probable natural vegetation of Bangalore is tropical thorn scrub and dry deciduous forest type. The remnants of this past vegetation are found in Bannerghatta National Park. The deciduous forests are characterized by trees, which remain leafless during summer and have open canopy. *Anogeissus latifolia*, *Cochlospermum religiosum*, *Terminalia crenulata*, *Shorea roxburghii* and *Tectona grandis* are the common trees in these forests. Ground flora is seasonal. Stands of *Phoenix sylvestris* can be seen in the shallow valleys. However, constant anthropogenic pressure would reduce this forest formation to drier formation with plants having tiny leaves and spines as an adaptation to xeric condition. The Indian Institute of Science (IISc) harbors a variety of habitats supporting distinct group of plant species, viz., 1. Remnants of natural vegetation, 2. Swamps, 3. Plantation and 4. Avenues.

The IISc campus (13° 2' N and 77° 32' E) is one of the richest zones of plant diversity in the city of Bangalore. The campus sprawls over 179.28 hectares in Malleswaram, the then outskirts of Bangalore city.

The remnants of the natural vegetation of Bangalore are still found on the campus, near the airstrip, close to the National Institute of Advanced Studies (NIAS). The vegetation formation represents xeric formation of deciduous forest type. Many species have tiny leaflets and spines as an adaptation. This part of the campus is rich in thorny species like *Acacia* and *Ziziphus*. Species like *Phoenix* (Date palm), *Bauhinia* and *Santalum album* (sandalwood) are also found here along with species of grass typical to dry forests such as *Themeda triandra* and *Heteropogon contortus*. Yet another natural habitat on the campus is the swampy ground near the Centre for Electronics Design Technology (CEDT). Important species of the swamp are *Asteracantha*

*Author for correspondence.

longifolia, *Polygonum chinensis*, *Eriocaulon* sp. and a typical plant of marshy areas, *Typha angustata*.

The only plantation on the campus is of *Acacia auriculiformis* and this is found in the Jubilee Garden area. There are several avenues on the campus named after trees, For example, Nilgiri Marg (*Eucalyptus* sp.), Mandara Marg (*Bauhinia* sp.), Silver Oak Marg (*Grevillea* sp.), etc. Other avenue trees in some of the important lanes of the campus are *Peltophorum pterocarpum* (copper pod tree), *Samanea saman* (rain tree), and *Delonix regia* (Gul Mohar).

2. Floristic analysis

IISc campus has rich assemblages of plant species. There are 112 species of trees belonging to 32 families and 265 species of herbs belonging to 52 families. Grasses alone, the most dominant family on the campus, account for 45 species. Thus, the species richness of the campus is comparable with other floristically rich centres of Bangalore. For example, Cubbon Park has an estimated richness of 300 species while Lalbagh has approximately 400 species, mostly exotics.

2.1. Exotics and indigenous (native) species

Many species on the campus are also exotics or introduced. Several of these species are trees and introduced for their attractive foliage or for their ornamental value. Species such as *Spathodea campanulata* (Indian tulip tree), *Millingtonia hortensis* (Indian cork tree) and shrubs like *Calliandra haematocephala* (powder puff) have been planted for their brightly coloured flowers while *Ficus benjamina* and *Tabebuia rosea* have been planted for their foliage. Along with the exotics, there are several indigenous species like *Cassia fistula* (Indian laburnum) and *Saraca asoca* (Ashoka tree).

2.2. Common and rare species of the campus

Some of the common trees on the campus are *Polyalthia longifolia* (Avenue Ashoka), *Broussonetia papyrifera* (Paper mulberry), *Acacia auriculiformis* (Australian acacia) and *Santalum album* (Sandalwood tree). On the other hand, species like *Shorea roxburghii* (Dhoop) near the Civil Engineering Department, *Cerotonia siliqua* (St. John's bread) near basketball court and *Crescentia cujete* (Calabash tree) have only a single specimen or tree on the campus. Other rare species include *Filicium decipiens* (Fern tree), *Feronia elephantum* (Wood apple), *Mellettia peguensis*, *Dillenia indica* (Elephant apple), *Pseudobombax ellipticum* and *Chorisia speciosa* that are represented by a few individuals.

2.3. Species of utilitarian value

Some of the species of utility value (list not exhaustive) are: a) fruit-yielding *Mangifera indica* (Mango), *Anona squamosa* (Custard apple), *Artocarpus integrifolius* (Jackfruit) and *Syzygium cumini* (Jamun), b) ornamental: *Spathodea campanulata* (Indian tulip tree), *Lagerstroemia reginae*, *Michelia champaka* (Champak tree), *Tabebuia* sp., *Plumeria alba* and *P. rubra* (Temple tree), c) other utilities: *Bombax ceiba* (Silk cotton tree), *Saraca asoka* (Sacred tree), *Santa-*

lum album (Sandalwood), *Ficus* sp. ('Key stone species'), *Azadirachta indica* (Neem tree) and *Anthocephalus chinensis* which is a sacred tree.

3. Familial analysis of flora

Fabaceae is the most speciose family on the campus with 32 species. Other speciose families include *Bignoniaceae* (10 species), *Moraceae* (11 species), *Myrtaceae*, *Meliaceae* and *Palmae* with 5 species each. Analysis of the woody species reveals that a total of 44.5% species are indigenous and 55.5% are introduced. Families like *Fabaceae*, *Bignoniaceae* and *Moraceae* are represented by both introduced as well as indigenous species. On the other hand, families like *Proteaceae*, *Lecythidaceae*, *Casuarinaceae*, *Araliaceae*, *Musaceae*, *Moringaceae* and *Elaeocarpaceae* are represented only by exotic species. *Santalaceae*, *Sapindaceae*, *Lythraceae*, *Rutaceae*, *Magnoliaceae* and *Dipterocarpaceae* are families represented only by indigenous species.

Interestingly, *Elaeocarpaceae*, an arborescent family being represented by several species in the dense forests of Western Ghats, is represented on the campus by an introduced species, *Muntingia calabura*. In the same way, family *Araliaceae* represented by trees and stragglers in the Western Ghats and forming an association species of evergreen and montane forests is represented by an introduced species, *Brassia actinophylla* on the campus. Another interesting feature is the representation of the family *Euphorbiaceae*, one of the most speciose families of angiosperms in the world, being represented by an introduced species, *Aleurites fordii*.

Nonwoody flora (including shrubs, herbs and grasses) of the campus are also quite interesting. They have representation in all habitats existing within the campus. There are 60 species of shrubs (bushy plants), 165 species of herbs (small plants) and 45 species of grasses. Some of the larger families of herbaceous species are *Acanthaceae* (16 species), *Asteraceae* (15 species), *Euphorbiaceae* (22 species) and *Poaceae* (Graminae) (45 species) with ample representation on the campus. *Menispermaceae* (1 species), *Portulacaceae* (1 species) and *Plumbaginaceae* (2 species) are families with less representation. The common and rare species (refer to restricted distribution with fewer individuals) within the campus are given in Table I. Some of the exotic herbaceous species with their origin are listed in Table II.

Table I
Most common and rare species

Sl no.	Common species	Sl no.	Rare species
1.	<i>Peristrophe bicalyculata</i>	1.	<i>Thunbergia mysorensis</i>
2.	<i>Achyranthes aspera</i>	2.	<i>Euphorbia leucocephala</i>
3.	<i>Bidens biternata</i>	3.	<i>Entada pusaetha</i>
4.	<i>Eupatorium odoratum</i>	4.	<i>Withania somnifera</i>
5.	<i>Parthenium hysterophorus</i>	5.	<i>Clerodendrum calmitorum</i>
6.	<i>Wedelia biflora</i>		
7.	<i>Synedrella nodiflora</i>		
8.	<i>Ipomoea muricata</i>		
9.	<i>Euphorbia heterophylla</i>		
10.	<i>Lantana camara</i>		

Table II
Common exotic species and their origin

Sl no.	Common name	Botanical name	Native (Origin)
1.	Golden bamboo	<i>Bambusa vulgaris</i>	Java
2.	St. Augustine grass	<i>Stenotaphrum dimidiatum</i>	Tropical America
3.	Mascarene grass	<i>Zoysia tenuifolia</i>	Korea
4.	Japanese lawn grass	<i>Zoysia japonica</i>	Korea
5.	4'O clock plant	<i>Mirabilis jalapa</i>	Tropical America
6.	Morning glory	<i>Ipomoea purpurea</i>	Tropical America
7.	Lantana	<i>Lantana camera</i>	Tropical America
8.	Glory bower	<i>Clerodendrum thomsoniae</i>	West Africa
9.	Lady-of-the night	<i>Brunfelsia americana</i>	West Indies
10.	Coral plant	<i>Russelia equisetiformis</i>	Mexico
11.	Cardinab guard	<i>Pachystachys lutea</i>	West Indies
12.	Mexican clover	<i>Richardia scabra</i>	South America
13.	Parthenium	<i>Parthenium hysterophorus</i>	Mexico
14.	Eupatorium	<i>Eupatorium odoratum</i>	Mexico

Based on their utility value, the herbaceous plants can be categorized into four groups, a) medicinal, b) domestic, c) ornamental and d) weeds.

There are many plants on the campus, which are used for curing common stomach ache to kidney disorder and venomous stings (Table III). The domestic use of some plants includes use of grasses such as *Cymbopogon* sp., *Pennisetum pedicellatum* and all lawn grasses as fodder and *Aristida setacea* and *Chrysopogon* sp. for making brooms. Some woody shrubs like *Lantana camara*, *Triumfetta rhomboidea*, *Solanum torvum* and *Hibiscus furcatus* are used as fuel-wood.

There are quite a good number of ornamental herbaceous plants which can be categorized as climbers (*Thunbergia mysorensis*, *Thunbergia grandiflora*, *Ipomoea purpurea*, *Ipomoea pinnata*, *Quisqualis indica*), hedges (*Clerodendrum inerme*, *Duranta repens*, *Plumbago rosea*, *Brunfelsia americana*) and lawns (*Zoysia tenuifolia*, *Zoysia japonica*, *Stenotaphrum dimidiatum*).

Species such as *Eupatorium odoratum* (Mexico), *Parthenium* (South America) and *Lantana camera* (South America) are termed as weeds due to their uncontrolled proliferation. Some of them are known to cause allergy. Their pollen is supposed to be allergenic, causing bronchial disorders.

Most species on the campus are insect-pollinated. Some like *Butea monosperma* (flame of the forest), *Erythrina stricta* (Coral tree) and *Bombax ceiba* have bright and showy flowers, flowering during the dry season when leaves are shed and are adapted for bird pollination. Figs (*Ficus* sp.) have specific pollinators (wasps); their biology 'fig-wasp association' is quite interesting. Most palms are wind-pollinated. Unisexual species like *Brousonetia papyrifera* release dust of pollen during flowering season which is wind-pollinated. Some hemi-parasitic families like *Loranthaceae* plants have species like *Dendrophthoe falcata* and depend on birds (sunbird) for their pollination and dispersal.

Table III
Medicinal plants

Sl no.	Common name	Botanical name	Medicinal use
1.	Prickley chaff-flower	<i>Achyranthes aspera</i>	Stomach ache, boils, skin wounds
2.	Astmabayda	<i>Aerva lanata</i>	Diuretic
3.	King of bitter	<i>Andrographis paniculata</i>	Stomach ache, intermittent fever
4.	Shathaavari	<i>Asparagus racemosus</i>	Rheumatism, diarrhoea
5.	Spreading hogweed	<i>Boerhavia diffusa</i>	Oedema, anemia, eye diseases
6.	Gigantic swallow-wort	<i>Calotropis gigantea</i>	Achnes, piles, asthma
7.	Foetid cassia	<i>Cassia tora</i>	Leprosy, itches, inflammation
8.	Dog mustard	<i>Cleome viscosa</i>	Roundworms, ear ache
9.	Garden quinine	<i>Clerodendrum inerme</i>	Intermittent fevers, rheumatism
10.	Bermuda grass	<i>Cynodon dactylon</i>	Cuts, dysentery, scorpion sting
11.	Thorn apple	<i>Datura metal</i>	Poisonous bites, ulcers
12.	Indian sarsaparilla	<i>Hemidesmus indicus</i>	Rheumatism, kidney disorders
13.	True indigo	<i>Indigofera tinctoria</i>	Venomous stings
14.	Ceylon lead wort	<i>Plumbago zeylanica</i>	Skin diseases

*Medicinal uses are listed from *Indian Materia Medica*.⁴

Being food plants of many butterflies is another important ecological role of these herbaceous plants (Table III). The loss of some plants will lead to the disappearance of certain butterflies within the campus.

We also admit that this listing of plants may not be an exhaustive treatise as many students are active in greening the campus. A variety of saplings being planted under various eco-awareness programs might certainly have not been documented in this paper.

Table IV
Food plants of butterflies

Sl no.	Plants	Butterflies
1.	<i>Calotropis gigantea</i>	Plain tiger
2.	<i>Calotropis procera</i>	Plain tiger
3.	<i>Hemidesmus indicus</i>	Common Indian crow
4.	<i>Bambusa arundinacea</i>	Evening brown
5.	<i>Zizyphus jujuba</i>	Pierrot
6.	<i>Triumfetta rhomboidea</i>	Common sailor
7.	<i>Asteracantha longifolia</i>	Yellow pansy
8.	<i>Barleria</i> sp.	Peacock pansy
9.	<i>Sida rhombifolia</i>	Lemon pansy
10.	<i>Indigofera</i> sp.	Zebra blue
11.	<i>Cassia occidentalis</i>	Grass yellow
12.	<i>Cassia tora</i>	Grass yellow
13.	<i>Cassia auriculata</i>	Grass yellow
14.	<i>Abrus precatorius</i>	Common cerulean
15.	<i>Lantana camara</i>	Grass blue

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Check list of trees

ANACARDIACEAE

Mangifera indica L.
Spondias mangifera Willd.

ANNONACEAE

Anona squamosa L.
Anona reticulata L.
Cananga odorata Hook.f. & Thomson
Polyalthia longifolia (Sonnerat) Thwaites

APOCYANACEAE

Alstonia scholaris R. Br.
Nerium oleander L.
Plumeria alba L.
Plumeria rubra L.
Wrightia tinctoria (Roxb.) R. Br.

ARALIACEAE

Brassia actinophylla Endl.

BIGNONIACEAE

Crescentia cujete L.
Dolichandrone falcata (DC) Seem.
Jacaranda mimosifolia D. Don
Kigelia pinnata (Jacq.) DC.
Millingtonia hortensis L.f.
Spathodea campanulata Beauv.
Tabebuia rosea (Bertol.) DC.
Tabebuia argentea Britt.
Tabebuia avalanidae
Tecoma stans (L.) Kunth.

BIXACEAE

Bixa orellana L.
Cochlospermum religiosum (L) Alston

BOMBACACEAE

Bombax ceiba L.
Ceiba pentandra (L.) Gaertner
Chorisia speciosa St-Hil.
Pseudobombax ellipticum (HBK) Dug.

CASUARINACEAE

Casuarina equisetifolia Forster & Forster.f.

COMBRETACEAE

Terminalia catapa L.

DIPTEROCARPACEAE

Shorea roxburghii G. Don

DILLENIACEAE

Dillenia indica L.

ELAEOCARPACEAE

Muntingia calabura L.

EUPHORBIACEAE

Aleurites fordii Hemsl.

FABACEAE (includes all sub-families)

Acacia auriculiformis A. Cunn. ex Benth.
Acacia farnesiana (L.) Willd
Acacia polyacantha Willd
Acacia sinuata (Lour.) Merrill
Adenanthera pavoniana L.
Albizia lebbek (L.) Bentham
Bauhinia purpurea L.
Bauhinia tomentosa L.
Bauhinia variegata L.
Butea monosperma (Lam.) Taubert
Calliandra haematocephala
Cassia auriculata L.
Cassia fistula L.
Cassia javanica L.
Cassia roxburghii DC.
Cassia spectabilis DC.
Castanospermum australe Cunn.
Caesalpinia bonduc (L.) Roxb.
Caesalpinia pulcherrima (L.) Sw.
Cerotonia siliqua L.
Delonix regia (W.Hook) Raf.
Erythrina stricta Roxb.
Gliricidia sepium (Jacq.)Kunth ex Walp.
Leucaena leucocephala (Lam.) de Wit.
Parkia biglandulosa Wight & Arn.
Peltophorum pterocarpum Backer.
Pithecellobium dulce (Roxb.) Benth.
Pongamia pinnata (L.) Pierre.
Samanea saman (Jacq.) Merr.
Saraca asoca (Roxb.) de Wilde
Tamarindus indica L.

LECYTHIDACEAE

Couroupita guianensis Al.

LYTHRACEAE

Lagerstroemia reginae Roxb.
Lawsonia inermis L.

MALVACEAE*Thespesia populleana* (L.) Sol. ex Corr.**MAGNOLIACEAE***Michelia champaka* L.**MELIACEAE***Azadirachta indica* A. Juss.*Melia azadirachta* L.*Melia dubia* Cav.*Swietenia macrophylla* King*Cederella toona* Roxb.**MORACEAE***Artocarpus heterophyllus* Lam.*Artocarpus hirsutus* Lam.*Broussonetia papyrifera**Ficus benghalensis* L.*Ficus benjamina* L.*Ficus carica* L.*Ficus elastica* Roxb.*Ficus mysorensis* Heyne.*Ficus racemosa* L.*Ficus religiosa* L.*Morus* sp.**MORINGACEAE***Moringa oleifera* Lam.**MUSACEAE***Ravenala madagascariensis***MYRTACEAE***Callistemon speciosus* (Sims) DC.*Eucalyptus citriodora* Hook*Psidium guajava* L.*Syzygium cumini* (L.) Skeels*Syzygium hemisphericum* (Wight) Alston**PALMAE***Arecastrum romanoffianum* Becc.*Cocos nucifera* L.*Caryota urens* L.*Phoenix sylvestris* (L.) Roxb.*Roystonea regia***PROTEACEAE***Grevillea robusta* A. Cunn ex R. Br.**RUBIACEAE***Anthocephalus chinensis***RUTACEAE***Citrus decumana* Murr.*Feronia elephantum* Corr.**SAPINDACEAE***Filicium decipiens* (Wight & Arn.)**SAPOTACEAE***Manilkara zapota* (L.) Royen*Mimusops elengii* L.**SANTALACEAE***Santalum album* L.**STERCULIACEAE***Firmiana colarata* (Roxb.) R. Br.*Pterospermum acerifolium* Willd.*Guazuma ulmifolia* Lam.**VERBENACEAE***Callicarpa tomentosa* (L.) Murray*Tectona grandis* L.*Vitex altissima* L.F.

Check list of non-trees
(includes herbs, shrubs and grasses)

ACANTHACEAE*Andrographis paniculata**Asteracantha longifolia**Asystasia gangetica**Barleria prionitis**Crossandra undulaefolia**Eranthemum bicolor**Justicia betonica**Justicia montana**Justicia simplex**Pachystachys lutea**Peristrophe bicalyculata**Rungia parviflora**Thunbergia alata**Thunbergia erecta**Thunbergia grandiflora**Thunbergia mysorensis***AGAVACEAE***Agave americana***AIZOACEAE***Mollugo pentaphylla***AMARANTHACEAE***Achyranthes aspera**Aerva lanata**Alternanthera sessilis**Amaranthus spinosus*

Amaranthus viridis
Celosia argentia
Celosia cristata
Cyathula prostrata
Gomphrena globosa

AMARYLIDACEAE

Crinum asiaticum
Haemanthus katherinae

ANTIGONACEAE

Antigonon leptopus

APIACEAE

Foeniculum vulgare

APOCYNACEAE

Allamanda cathartica
Catharanthus roseus
Ervatamia coronaria
Ervatamia heyneana
Hemidesmus indicus

Nerium odorum

ARACEAE

Alocacia indica
Alocasia lowii
Amorphophallus campanulatus
Amorphophallus dubius
Amorphophallus mysorensis
Anthurium andracorum
Caladium hortulanum
Caladium humboldtii
Epipremnum pinnatum
Monstera pertusa
Syngonium podophyllum

ARALIACEAE

Polyscias crispatum

ASCLEPIADACEAE

Calotropis gigantea
Ceropegia tuberosa
Marsdenia volubilis
Tylophora indica

ASTERACEAE

Acanthospermum hispidum
Ageratum conyzoides
Bidens biternata
Blumea lacera
Chrysanthemum indicum
Emilia sonchifolia
Eupatorium odoratum
Lagasca mollis
Solidago nemoralis
Synedrella nodiflora

Tagetes erecta
Tridax procumbens
Vernonia cinerea
Wedelia biflora
Zinnia elegans

BALSAMNACEAE

Impatiens chinensis
Impatiens kleinii

BEGONIACEAE

Begonia valdensium

BROMELIACEAE

Ananas sativus

CACTACEAE

Cereus hexagonus
Opuntia dillenii

CANNACEAE

Canna generalis
Canna indica

COMBRETACEAE

Combretum coccineum
Quisqualis indica

COMELINACEAE

Aneilema paniculatum

CONVOLVULACEAE

Ipomoea grandiflora
Ipomoea muricata
Ipomoea palmata
Ipomoea purpurea
Ipomoea quamoclit
Merremia hastata
Merremia tridentata

CRASSULACEAE

Kalanchoe blossfeldiana
Kalanchoe pinnata

CUCURBITACEAE

Diplocyclus palmatus
Melothria heterophylla
Trichosanthes palmata
Lycopersicum esculentum
Momordica charantia

ERIOCAULACEAE

Eriocaulon xeranthemum

EUPHORBIACEAE

Acalypha hispida
Acalypha indica
Acalypha wilkesiana

Breynia nivosa
Breynia rhamnoides
Euphorbia acaulis
Euphorbia antiquorum
Euphorbia erythroclada
Euphorbia heterophylla
Euphorbia hirta
Euphorbia laeta
Euphorbia leucocephala
Euphorbia pulcherrima
Euphorbia tirucalli
Jatropha curcas
Manihot esculenta
Pedilanthus tithymaloides
Phyllanthus amarus
Phyllanthus debilis
Phyllanthus urinaria
Synadenium grantii
Tragia involucrata

FABACEAE

Abrus precatorius
Alysicarpus bupleurifolius
Cassia alata
Cassia tora
Clitoria ternatea
Crotalaria juncea
Crotalaria retusa
Desmodium laxiflorum
Desmodium triflorum
Entada pusaetha
Indigofera linnaei
Indigofera tinctoria
Mimosa pudica
Prosopis cineraria
Tephrosia purpurea

GENTIANACEAE

Canscora diffusa

GESNERIACEAE

Chrysothemis pulchella
Episcia cupreata

HUGONIACEAE

Hugonia mystax

LAMIACEAE

Coleus rehneltianus
Leucas aspera
Leucas biflora
Ocimum basilicum
Ocimum americanum
Ocimum sanctum
Pogostemon patchouly

LILIACEAE

Allium cepa
Aloe vera
Asparagus densiflorus
Asparagus officinalis
Asparagus racemosus
Asparagus setaceus
Chlorophytum capense
Cordyline terminalis
Dracaena concinna
Dracaena marginata
Sansevieria cylindrica
Sansevieria roxburghiana

LORANTHACEAE

Dendrophthoe falcata
Helicanthes elastica

MALVACEAE

Abelmoschus esculentus
Abelmoschus moschatus
Hibiscus aculeatus
Hibiscus mutabilis
Hibiscus rosa-sinensis
Sida acuta
Sida glutinosa
Sida rhombifolia

MARANTACEAE

Calathea zebrina

MENISPERMACEAE

Cyclea peltata

MUSACEAE

Heliconia rostrata
Musa paradisiaca

NYCTAGINACEAE

Boerhavia diffusa
Boerhavia chinensis
Mirabilis jalapa

OLEACEAE

Jasminum grandiflorum
Jasminum officinale
Jasminum sambac

OXALIDACEAE

Biophytum sensitivum
Oxalis braziliensis
Oxalis corniculata

PALMACEAE

Phoenix acaulis
Syagrus weddelliana
Licuala grandis

PASSIFLORACEAE

Passiflora foetida

PLUMBAGINACEAE

Plumbago rosea

Plumbago zeylanica

POLYGONACEAE

Polygonum chinense

PORTULACACEAE

Portulaca oleracea

RHAMNACEAE

Zizyphus jujuba

Zizyphus oenoplia

ROSACEAE

Rosa indica

RUBIACEAE

Gardenia jasminoides

Hamelia patens

Ixora macrothyrsa

Mussaenda erythrophylla

Mussaenda laxa

Oldenlandia corymbosa

Pentas lanceolata

Richardia scabra

SAXIFRAGACEAE

Hydrangea macrophylla

SCROPHULARIACEAE

Angelonia grandiflora

SOLANACEAE

Capsicum annuum

Cestrum elegans

Datura matel

Lycianthes laevis

Physalis minima

Solanum stramonifolium

Solanum violaceum

Solanum nigrum

Solanum saeforthianum

Solanum torvum

Withania somnifera

TILIACEAE

Corchorus capsularis

Triumfetta rhomboidea

URTICACEAE

Pilea microphylla

VERBENACEAE

Clerodendrum calamitosum

Clerodendrum inerme

Clerodendrum thomsoniae

Duranta repens

Holmskioldia sanguinea

Lantana camara

Petrea volubilis

Scoparia dulcis

Stachytarpheta indica

Verbena venosa

Vitex negundo

GRAMINAE (POACEAE)

Apluda mutica

Aristida setacea

Arthraxon sp

Arundinella metzii

Arundinella purpurea

Bambusa vulgaris

Brachiaria milliformis

Centotheca latifolia

Chloris barbata

Chloris mutica

Chrysopogon aciculatus

Cymbopogon citratus

Cymbopogon martinii

Cynodon dactylon

Digitaria bicornis

Dimeria ornithopoda

Eleusine coracana

Eleusine indica

Eragrostia bifaria

Eragrostis tenuifolia

Eragrostis uniloides

Eulalia trispicata

Heteropogon contortus

Isachne globosa

Ischaemum indicum

Jansnella grifathiana

Oplismenus burmanii

Oplismenus compositus

Panicum flavidum

Panicum notatum

Paspalum compactum

Pennisetum pedicellatum

Pennisetum polystachyon

Perotis indica

Pseudanthistiria hispida

Rynchelytrum repens

Saccharum spontaneum

Sacciolepis indica

Setaria intermedia

Setaria pallide-fusca

Sporobolus diander

Stenotaphrum dimidiatum

Themeda tremula

Themeda triandra

Zoysia tenuifolia

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