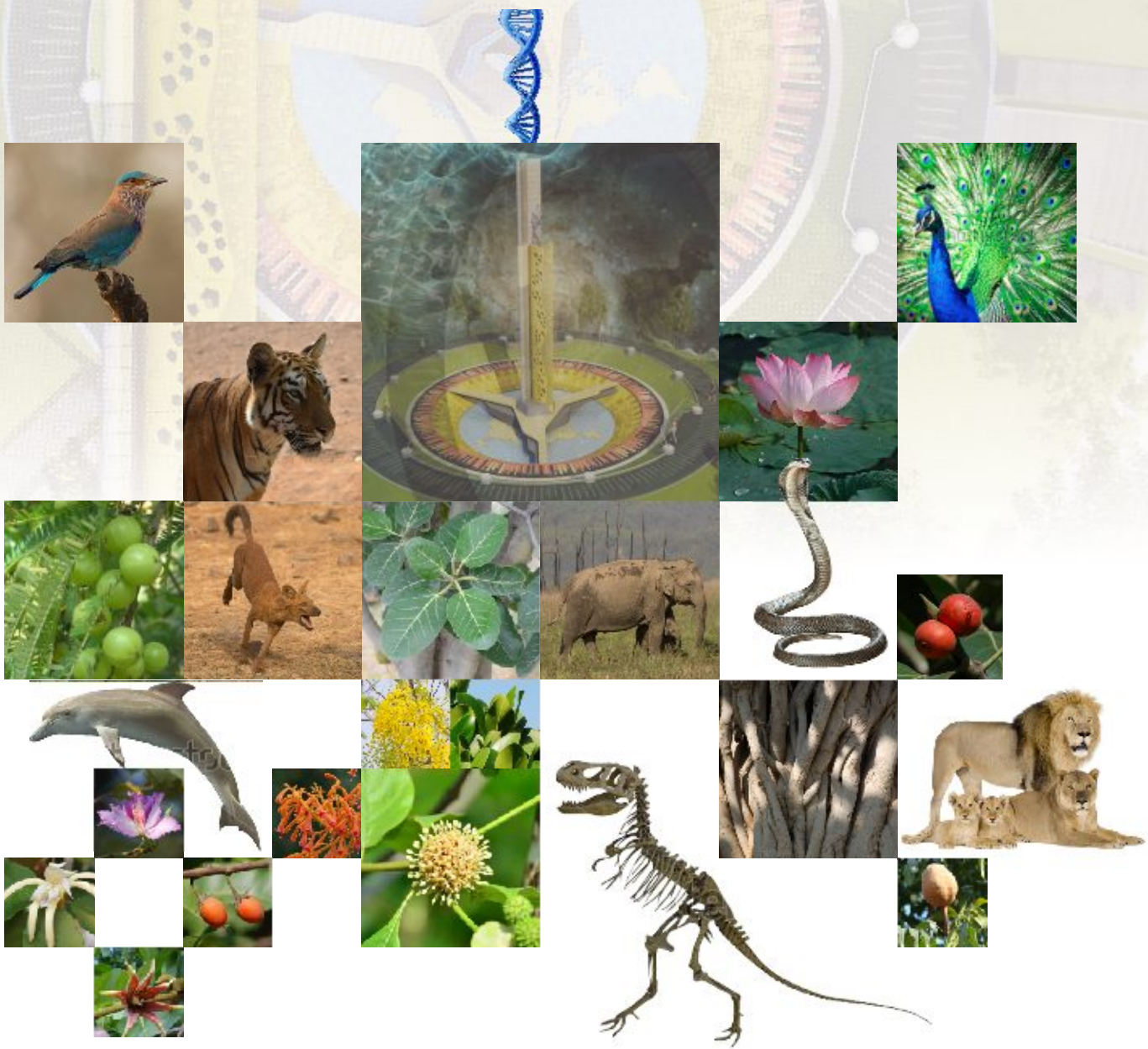


Commemoration of CoP-11 to CBD

October 01-19, 2012

BIODIVERSITY COMPLEX

HYDERABAD, INDIA



NATIONAL BIODIVERSITY, AUTHORITY
MINISTRY OF ENVIRONMENT, FORESTS & CLIMATE CHANGE, GOVERNMENT OF INDIA
ANDHRA PRADESH STATE BIODIVERSITY BOARD







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Ministry of Environment and Forests'
Government of India, 2014

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MESSAGE



Ministry of Environment, Forests & Climate Change
Government of India
New Delhi-110 003



Hem K. Pande

Additional Secretary & Chairman
National Biodiversity Authority

To commemorate the mega event the 11th Conference of Parties (CoP-11) to Convention on Biodiversity (CBD), hosted by India, it was decided to create a “Biodiversity Complex” which will house a National Biodiversity Museum of international standard, Commemorative Pylon and a Biodiversity Park.

It is indeed a proud privilege to establish a Commemorative Pylon, unveiled by Dr Manmohan Singh, the then Prime Minister of India, on the historic event of CoP-11 to CBD held in Hyderabad during October 2012, which was attended by more than 11,254 delegates from 175 countries around the world.

I am glad to learn that the Pylon was constructed in a record time of two months in 15 acres of land situated in Gachibowli, which symbolizes the Biodiversity and depicts the story of evolution of species. The design and concept was evolved based on the conceptual categorization of organisms in the cell size. This 46 feet high monument will become another landmark of Hyderabad, after the famous Charminar, a massive and impressive structure in Hyderabad.

The Pylon contains several features of 5 elements at the base. Three sloping walls depict 3 levels of Biodiversity i.e., Eco System, Species and Gene. Another section contains the prominent species of plants planted by participating foreign delegates in an area of about 2 acres. The Commemorative Pylon of CoP-11 to CBD and the National Biodiversity Museum depict the panoramic view of Biodiversity presented in an exclusively first of its kind, state of the art structure in Hyderabad

I am extremely happy that such a marvelous monument in the city of Hyderabad has been developed, which will impart more knowledge on Biodiversity to the people, especially to the children and students. It is created in such a manner that the visitor would visualize and understand the importance and relevance of Biodiversity conservation, sustainable development and their uses.

The resilience of the community of life and the well-being of humanity depend upon preserving a healthy biosphere with all its ecological systems, a rich variety of plants and animals, fertile soils, pure waters, and clean air. The global environment with its finite resources is a common concern of all people. The protection of Earth's vitality, diversity, and beauty is a sacred trust. Making use of the opportunity provided, let us all commemorate the occasion by preserving mother nature and building awareness on the values of biodiversity involving public at large.

24-09-2014
New Delhi

(Hem K. Pande)



PREFACE

The spectacular scientific and technological developments during last five decades and increased global population growth trends of 21st century have dramatically reshaped the world and posed number of environmental challenges of unprecedented nature and severity. Deforestation, degradation of forests, grassland and wetland ecosystems, erosion and depletion of global biodiversity, widespread desertification, decline in agricultural productivity due to soil health, marine and fresh water pollution, depletion of global marine fisheries, environmental pollution, and global climate change are among the major environmental issues that requires solution at various levels viz., local, national, regional and international levels. Global biodiversity, a good indicator of the net effects of environmental change and degradation of ecosystem on the health of the biosphere, is of critical importance and has relevance to the future of mankind for both food security and human health.

Biodiversity undoubtedly is the foundation for the well-being of all organisms including humans. Biodiversity can indeed help alleviate hunger and poverty, promote better health, and be the basis for ensuring freedom and equity for all. The Convention on Biological Diversity (CBD) recognises that human needs must be taken into account when conserving natural resources, and provide important justification for the conservation of both flora fauna and various ecosystems. The concept of linking natural resources vis-a-vis human needs was expressed over 30 years ago at the UN Conference on the Human Environment in Stockholm, Sweden. Since then, it has been increasingly apparent that traditional approaches to conservation, and to development, have not achieved their aims, and it is now widely recognised that conservation and development needs to be linked for desirable results.

Opened for signature at the Earth Summit in Rio de Janeiro in 1992, and entering into force in December 1993, the Convention on Biological Diversity is an international treaty for the conservation of biodiversity, the sustainable use of the components of biodiversity and the equitable sharing of the benefits derived from the use of genetic resources. With 193 nations (Parties), the Convention has near universal participation among countries. The Convention seeks to address all threats to biodiversity and ecosystem services, including threats from climate change, through scientific assessments, the development of tools, incentives and processes, the transfer of technologies and good practices. Additionally, active involvement of relevant stakeholders including indigenous and local communities, youth, NGOs, women and the business community has also been envisaged.

The 11th meeting of the Conference of the Parties (CoP11) to the Convention on Biological Diversity (CBD) took place from 8-19th October, 2012 in Hyderabad, India. The high-level Ministerial Segment was held from 16-19th October and a number of other events and meetings took place parallel to CoP11. Approximately 12000 delegates representing Parties, other governments, NGO's, international organizations, UN agencies, indigenous and local community representatives, academia and the private sector were in attendance. CoP11 adopted 33 decisions on a range of issues in the agenda.

After the adoption of the "Nagoya Protocol" back at the very successful CoP-10 two years ago, CoP-11 marked a move in the Convention from negotiations to

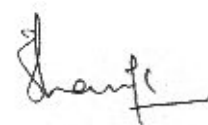
implementation. In many ways, this CoP was also an opportunity to correct and fine-tune issues that are found ineffective, insufficient or problematic in the implementation of the Strategic Plan for Biodiversity 2011-2020 and its Aichi Targets.

As a part of CoP-11 to CBD, Hon'ble Prime Minister of India dedicated a BIODIVERSITY COMPLEX to the CBD on 16th November, 2012. This Biodiversity Complex is located in Gachibowli area of Hyderabad, India. It spans over 15 acres of land encompassing a Pylon, a Biodiversity Park and a proposed National Biodiversity Museum.

The theme of the Pylon is to showcase the origin of life on this earth from water and its subsequent evolution from the microbes to the plants and Homo sapiens (with the DNA and its nucleotides as the core element) through changes in gene frequency in the population from one generation to the next. Fundamental to the process of this transition from the simple to the most complex form of life in tandem with the change in earth's climate is genetic variation upon which selective forces have acted for the evolution to proceed. Over millions of years, organic evolution led to origin and variation of tremendous diversity in various forms of life. The Pylon portrays the myriads of microorganisms and depicts as to how evolution is responsible for both the remarkable similarities across all life and the amazing diversity of that life, in other words unity in diversity of life.

The basic objective of this part of the book is anchored with the rehabilitation approach of endemic and threatened plant species. As a part of global biodiversity conservation strategy through creation of ex-situ germplasm assemblage centre, a Biodiversity Park was established inside the Biodiversity complex. Most of the participating country's representatives of 193 participating countries planted saplings of variety of species representing the wide spectrum of plant biodiversity. The foundation stone of this Biodiversity Park was laid by Dr. Manmohan Singh, the then Hon'ble Prime Minister of India by planting a Banyan tree (*Ficus benghalensis*) - the National Tree of India.

On the eve of 12th meeting of the Conference of the Parties (CoP12) to the Convention on Biological Diversity (CBD), this Commemoration Book has been prepared. This book has got three Sections: a) Pylon – depicting the evolution of life from simple microbes to myriads of life forms; b) Biodiversity Park - representing the plant biodiversity; and c) Biodiversity Museum – building up a platform for awareness and public engagement. Elaborate description about the concept embodied in the Pylon is provided in the text. Similarly, the Biodiversity Park section provides illustrations and details of every species about planted with its field diagnostic features, distribution, threat status and local health traditions associated with it. The third section provides the blue print of the proposed Biodiversity Museum to be located in the same complex.



September 25, 2014
Hyderabad, India

Dr. Manoranjan Bhanja
Addl. Prl. Chief Conservator of Forests
Forest Department, Andhra Pradesh

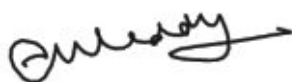
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We would like to express our sincere gratitude to Sri Hem Pande, Addl. Secretary, MoEF, Govt. of India and the Chairman, National Biodiversity Authority who inspired us to bring out this publication. We are extremely grateful to Dr. Manoranjan Bhanja, Addl. Prl. Chief Conservator of Forests, Andhra Pradesh Forest Department, for writing the script for the plants in 'Biodiversity Park'. Similarly we acknowledge the help rendered by Prof. Bir Bahadur for critically going through the text of the plants described in the 'Biodiversity Park' section. Also, special thanks to Sri C. Achalender Reddy, Managing Director, Forest Development Corporation Ltd., Goa, India for the constant support and encouragement. We express our thanks to Sri Subrata Sen, Managing Director, Creative Museum Designer, Kolkatha for contributing the script on the Biodiversity Museum. This work was supported by National Biodiversity Authority. Finally, we express our indebtedness to all the persons who helped to bring out this book.



Dr. R. Hampaiah

Chairman, Andhra Pradesh
State Biodiversity Board.



N. Chandra Mohan Reddy

Member Secretary
Andhra Pradesh State Biodiversity Board.



PYLON

The 'Monument to Biodiversity' is an attempt to tell the story of our place in nature and delicately balanced eco-system in which we live. Five major mass extinctions are reported to have occurred since life began on Earth. Each catastrophic event has led to a large and sudden drop in biodiversity and colossal loss of plant and animal life.

With the advancement of human civilizations, the ongoing Biodiversity reduction has escalated along with the loss of genetic diversity. Lack of awareness multiplied with human greed has resulted in increased scope for artificial extinction.

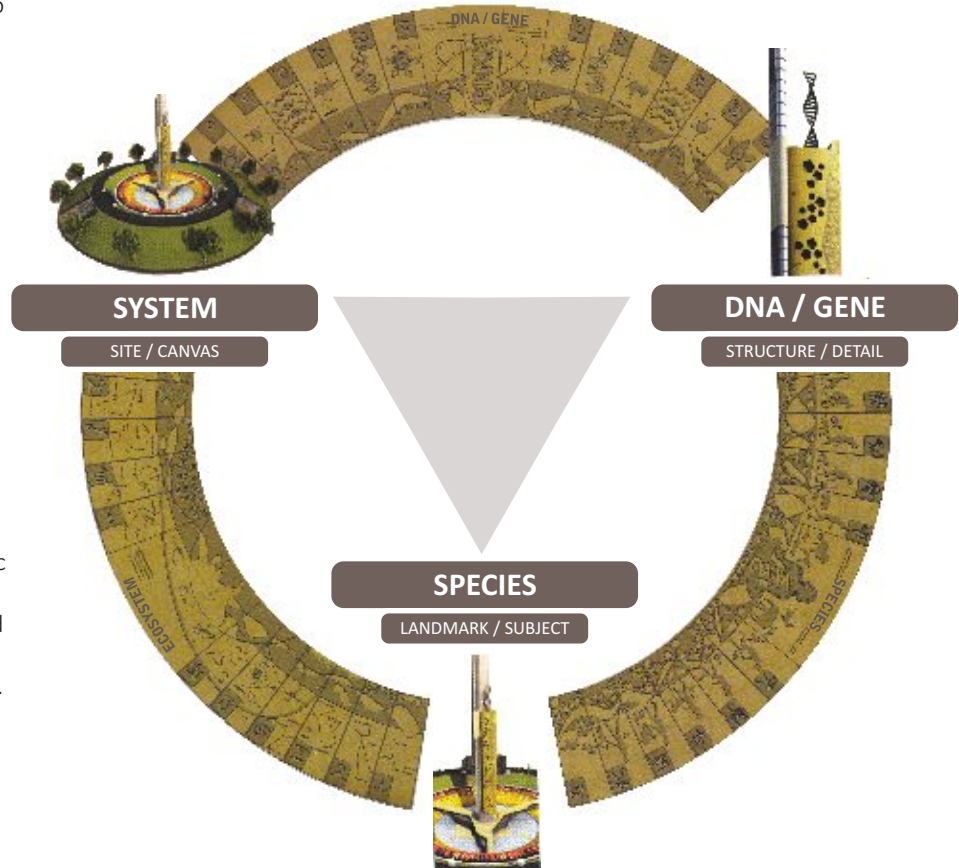
We therefore have a responsibility to respect the wisdom handed down the ages and have at the same time have a vision for the future and a dream for our children.

Architecturally, the Biodiversity Monument depicts the story of evolution and its diversity with an artistic amalgam of scientific symbology on a mythological canvas.

The Monument for Biodiversity is an artistic expression of the great mystery of creation and life on earth.

The Monument is an artistic expression of the bond between man and the rest of the animate world.

The Pylon is a blend of quintessential Indianness and a modern understanding of Biodiversity.



Biodiversity has many interpretations.

It is most commonly used to replace species diversity and species richness. Biologists most often define 'Biodiversity' as the 'Totality of genes, species and ecosystems of a region'.



ECOSYSTEM



SPECIES



GENE

The species that exist in system and resonates with an inherent structure that befits its existence, a monument too should sit in a site reciprocating with its context and should pulsate with that lends a meaning to its existence.

Pylon Base

The base of the Pylon is composed of concentric representing the five elements - Earth, Air, Water, Fire and Ether.

We are aware of matter in solid(solid), liquid(water) and gaseous(air) states. Extending the explanation we can add two more states which are beyond, namely the plasma (fire) and light(ether) which are progressively subtler. The monument symbolizes the diverse forces of creation and five elements of nature or biodiversity.



Mural Wall

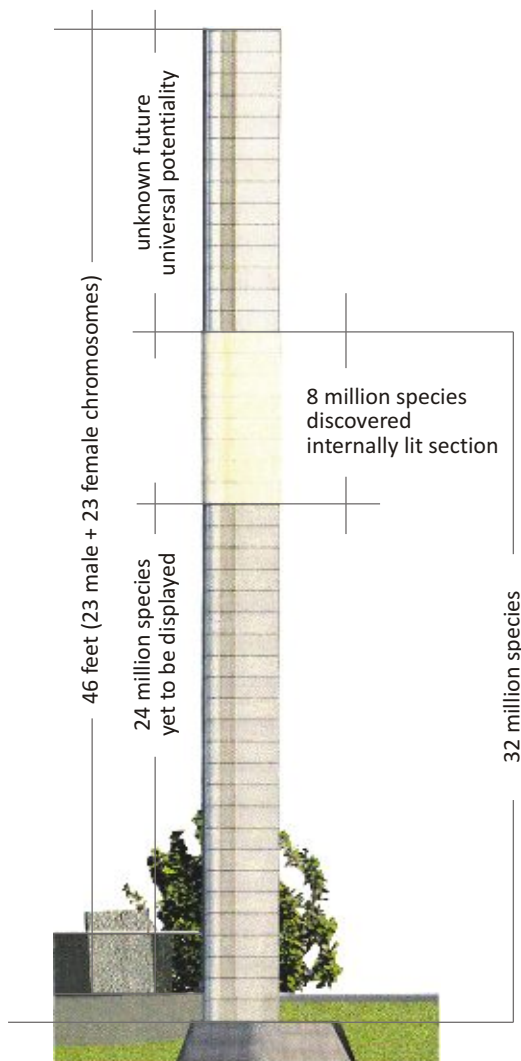
A transition wall slopes down in between the ring of fire and the ring of Water. Symbolically, this wall represents the creation and its diversity sandwiched in between creation(fire) and dissolution(water) In reality the three zones are not separate, they seamlessly merge in to one another. Segregation helps a logical explanation, art helps to blur the division to give a symbiotic expression. This wall is divided into three zones containing murals depicting the three themes of biodiversity. "System", "Species", "Gene".



STRUCTURE PYLON

A 7 feet tall DNA double helix sits on the top of the stone Pylon representing the pylon at a DNA/gene level. In an esoteric sense it symbolizes the seven Chakras and future possibilities of evolution that remain as potentiality. It is worth to note that through conscious there is possibility of changing the information in the DNA structure. Thus the DNA double helix is lit at night to remind us of rich potentialities of life and not a mere density set in stone.

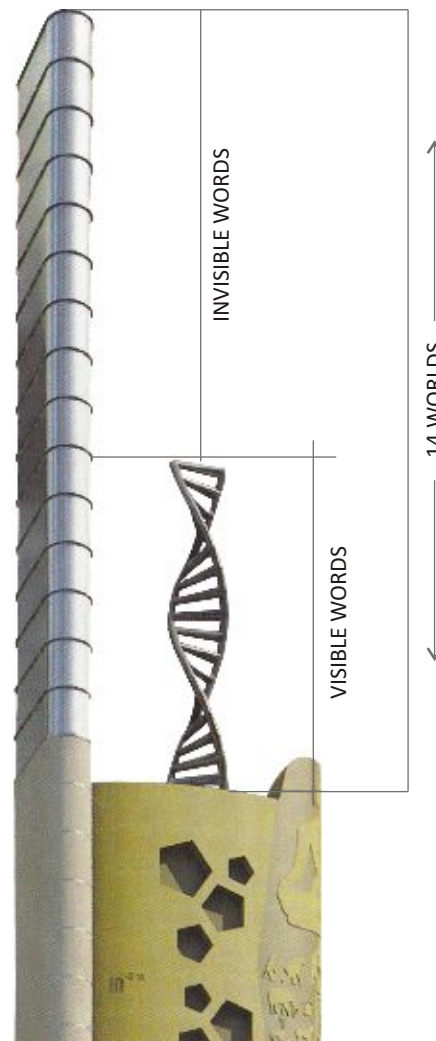
The Pylon itself is composed of the same three divisions of Biodiversity, (System, Species and Gene).



SYSTEM PYLON

The system is represented by a 46 feet tall steel structure that mimics a wire frame. A wire frame is an abstract definition for a space holder in the computer terminology. This structure has 'boomerang'-shaped plan, symbolizing the concept that it never goes away, it always returns to the origin and it is non-perishable. 46 feet represents the 23 male and 23 female chromosomes of human being.

There is an 8 feet section of the tower that is internally lit above the 24 feet datum level upto 32 feet level. Above the light section the steel tower reflects everything around. This 14 feet section represents future possibilities. The bottom 24 feet below the light section in clad with mettles steel represent the concrete creation that is already identified.



PYLON DESIGN

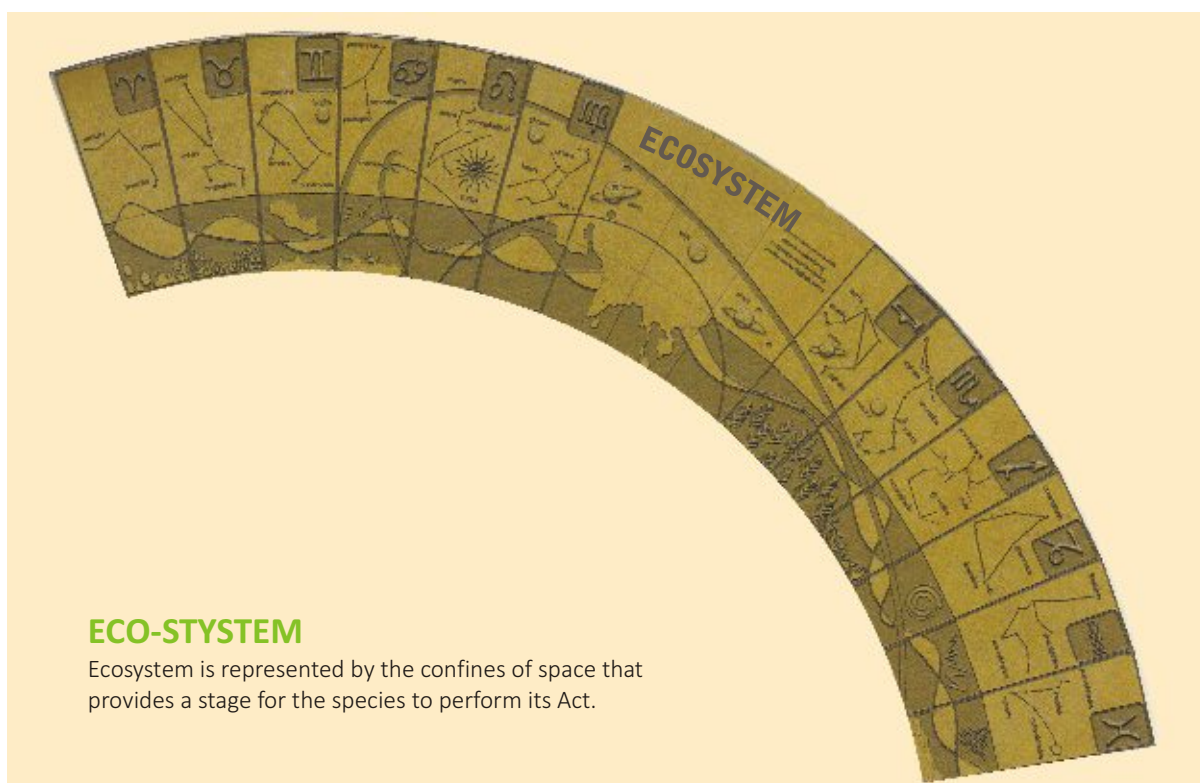




SPECIES PYLON(prani stambha)

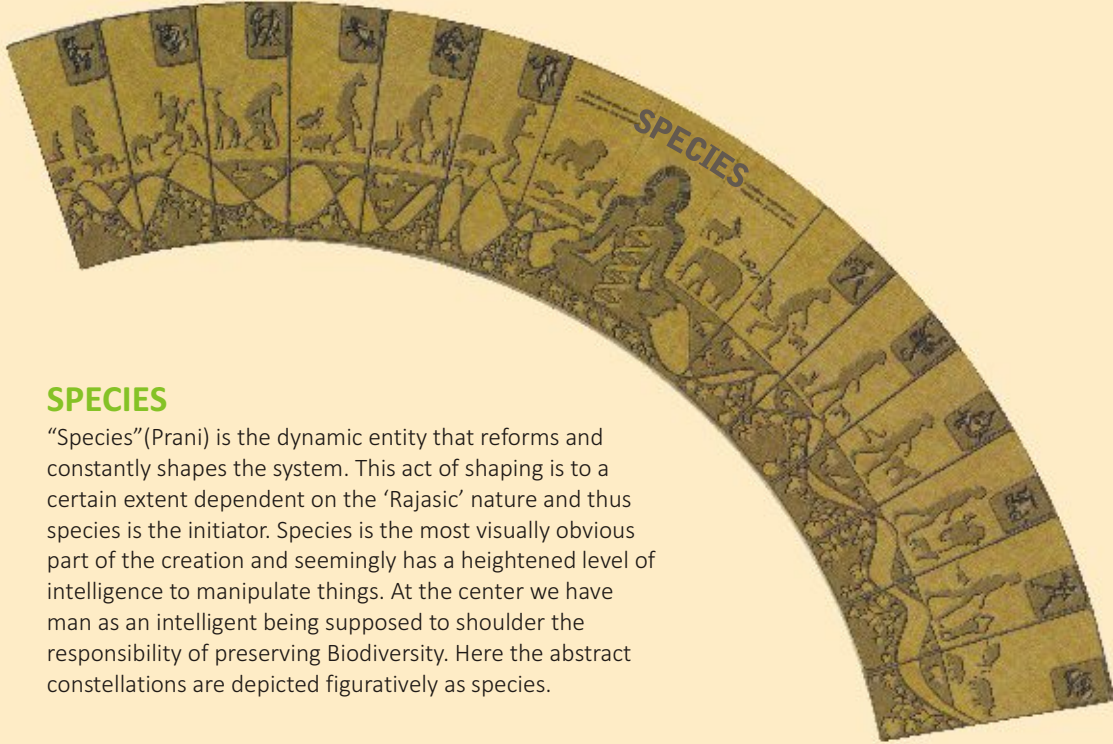
Mimicking an extruded *Shaligram* (representing Vishnu, the Preserver among the Trinity) is a 32 feet tall elliptically shaped stone pylon, stands next to the steel pylon. 32 represents 32 million species on the planet earth, of which only a little over 8 million species have been identified. Down from the 32 feet datum level to the of the 24 feet level datum on the steel pylon, a section of 8 feet is internally lit signifying the identified 8 million plus species.

The species pylon is adorned with graphics symbolizing the story of Biodiversity. Vertically the graphics on the pylon are depicted in an ascending order according to their cell size. From the bottom, it starts with atoms, small molecules, proteins, virus, prokaryotes and eukaryotes. These divisions are depicted with their corresponding graphics. Right in the middle there are depictions of Dasavataras, that also tells the story of evolution mythologically. From 'Fish' in water to an amphibian 'Turtle'(Kurma), from terrestrial 'Boar'(Varaha) to a half beast(Narasimha), from the 'Pygmy'(Vamana) to the Wildman(Parushurama). From 'Cultured man'(Rama) to 'Superman'(Krishna) and finally from the enlightened Buddha to the unknown potential of the beyond. There are 48 pentagonal punctures on the stone pylon. Pentagons represent the sugar molecule in the DNA structure that is fundamental to the building blocks of life. 48 represents the 480 seconds it takes for the sunlight to reach the Earth. Thus, the descending pentagons are a symbol of the life being initiated by the Sun from above.



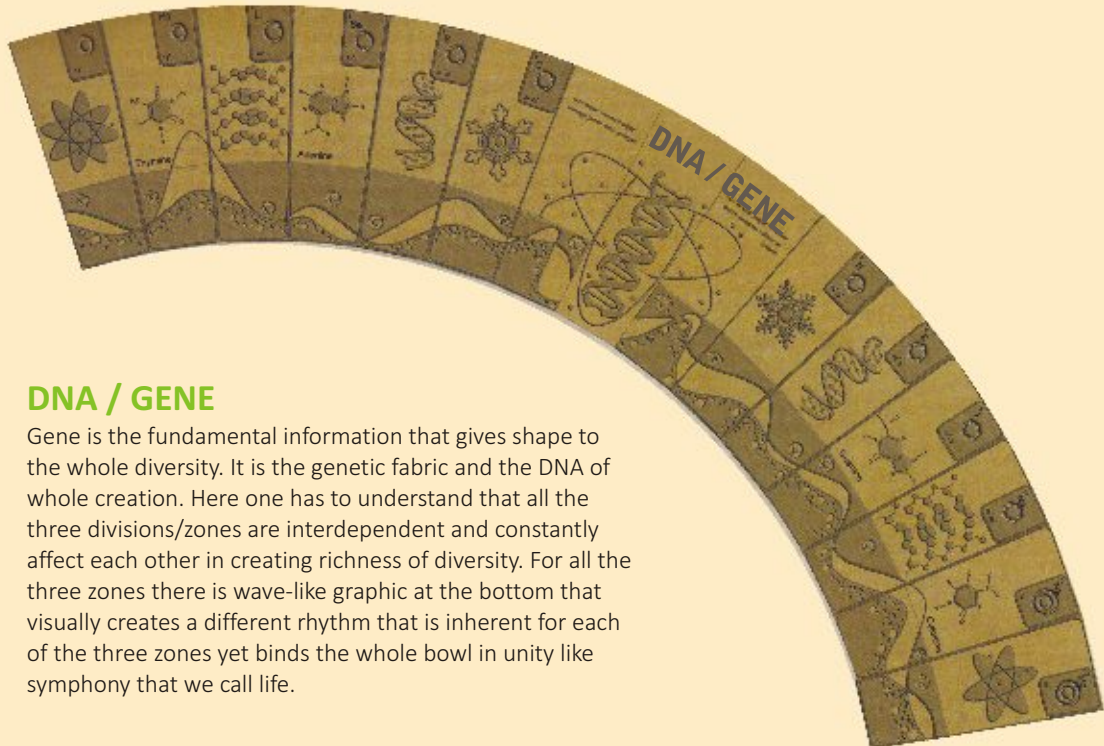
ECO-STYSTEM

Ecosystem is represented by the confines of space that provides a stage for the species to perform its Act.



SPECIES

“Species”(Prani) is the dynamic entity that reforms and constantly shapes the system. This act of shaping is to a certain extent dependent on the ‘Rajasic’ nature and thus species is the initiator. Species is the most visually obvious part of the creation and seemingly has a heightened level of intelligence to manipulate things. At the center we have man as an intelligent being supposed to shoulder the responsibility of preserving Biodiversity. Here the abstract constellations are depicted figuratively as species.



DNA / GENE

Gene is the fundamental information that gives shape to the whole diversity. It is the genetic fabric and the DNA of whole creation. Here one has to understand that all the three divisions/zones are interdependent and constantly affect each other in creating richness of diversity. For all the three zones there is wave-like graphic at the bottom that visually creates a different rhythm that is inherent for each of the three zones yet binds the whole bowl in unity like symphony that we call life.



*"I think that I shall never see
A poem lovely as a tree;*

*A tree whose hungry mouth is prest
Against the earth's sweet flowing breast;*

*A tree that looks at God all day
And lifts her leafy arms to pray;*

*A tree that may in summer wear
A nest of robins in her hair;*

*Upon whose bosom snow has lain
Who intimately lives with rain;*

*Poems are made by fools like me
But only God can make a tree."*

-Joyce Kilmer, 1913 in TREE





BIODIVERSITY PARK





AFGHANISTAN



15

Bauhinia blakeana Dunn

Common Name: Hongkong Orchid Tree; Red Flowered Bauhinia

Family : Leguminosae-Caesalpinioideae



The Hong Kong Orchid Tree is an exotic winter-flowering ornamental tree in India which is being planted in gardens and parks due to its prolific, bright-coloured, fragrant, orchid-like flowers and rounded, spreading canopy. This Bauhinia is sterile and rarely produces the large flat seed pods seen on other species.

It was first discovered on the sea shore in Hong Kong in 1908 and named after Sir Henry Blake, Governor of Hong Kong during 1898-1903. *Bauhinia blakeana* was adopted as the floral emblem of Hong Kong by the Urban Council in 1965. Since 1997, the flower appears on Hong Kong's coat of arms, its flag and its coins. In Hong Kong, the bilobed leaf is known as "clever leaf" and is regarded as a symbol of wisdom. Some people use the leaves to make bookmarks in the hope that they will bring them good luck in their studies.

SPOT IDENTIFICATION

The double-lobed leaf looking like the cloven hoof of a sheep and the characteristic orchid-like flowers make the species distinct in the field. The flowers are rich magenta-purple with paler veins and the uppermost petal is darker towards the base. The bilobed leaves are dark green and shiny with raised yellowish-green veins.

SEASONALITY

Large colourful flowers appear in November-January.

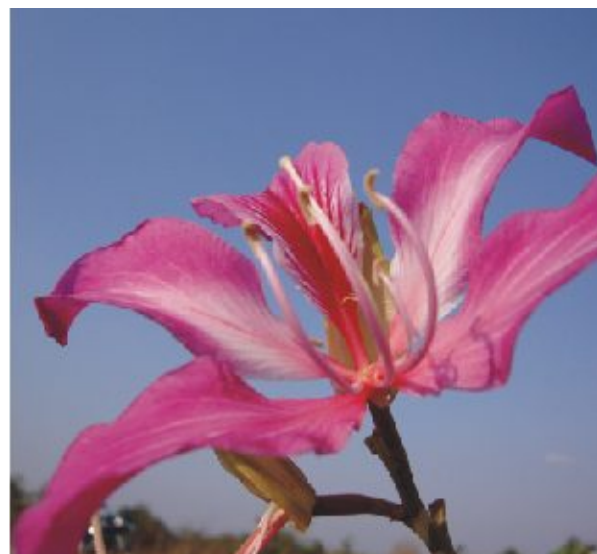
DISTRIBUTION

Hong Kong Orchid tree is native to Hong Kong. It is completely sterile and was earlier believed to be the

result of an accidental hybridization between the largely sympatric species, *B. purpurea* and *B. variegata*. However *B. blakeana* is not naturally stabilized and is only maintained horticulturally by vegetative propagation.

UTILITY

The species is of great horticultural value and planted as an ornamental tree in gardens, parks and institutional premises. Due to its low height and good response to pruning, the plant can be planted as a good hedge as a dividing barrier. Its adaptability to wide range of soil and ability to tolerate drought makes it a suitable species to plant in recalcitrant sites also. This tree requires occasional pruning to maintain its shape.



Pterospermum acerifolium (L.) Willd.

Synonym : *Pterospermadendron acerifolium* (L.) Kuntze

Common Name: Mapple-leaved Bayur, Dinner Plate Tree

Family : Malvaceae

Mapple-leaved Bayur is medium-sized evergreen tree with a straight trunk and dense, spreading canopy. The flow of the breeze in the open area exposing the ash-grey leaf undersurface and yet showing the dark-green leaf-top of some of the leaves makes the plant very conspicuous. The fragrant, pure-white flowers are exposed when the flower-cup peels backwards like a banana skin. Large number of pollinators, including birds and variety of insects hover around these night-opening flowers in the early morning hours. Similarly, the movement of squirrels in the branches to devour the seeds of the dehisced capsules is a common sight.

SPOT IDENTIFICATION

P. acerifolium can be identified by rough-gray bark; densely rusty-hairy young twigs and inflorescence; large, very broad, irregularly lobed leaves which are green on top but woolly-grey underneath; pure-white, fragrant flowers with 5 long petals; rusty-brown, 5-angled woody capsules, splitting into 5 valves; and winged seeds.

SEASONALITY

Mapple-leaved Bayur is a slow-growing and flowers appear in February-April. The flowers are nocturnal and exceptionally fragrant, suggesting they attract moths for pollination.



DISTRIBUTION

P. acerifolium is distributed in the foot of the Himalayas from Jamuna eastwards in Sikkim, Assam, Meghalaya and Manipur in India; Chittagong in Bangladesh and Myanmar. It is extensively grown in gardens for the large scented flowers in many tropical countries.

UTILITY

A common ornamental tree planted in parks and gardens due to its hardiness; dense, evergreen, spreading crown with broad, roundish leaves; and large, white, fragrant flowers. The timber with its reddish heartwood is used for high-class joinery, paneling, flooring and furniture. The leaves are used as plates. Bark and leaves are used to treat wounds and itching. Flowers are believed to cure ulcers, leprosy and diseases of blood. Flowers and bark, charred and mixed with Kamala applied for the treatment of small pox. Dried flowers act as an insect repellent.





ALGERIA



17

Cassia fistula L.

Common Name: Indian Laburnum

Family : Leguminosae - Caesalpinioideae

Planted by the country's representative - Mr. Echarif Mhacene



Indian Laburnum is one of the India's loveliest flowering trees with its spectacular drooping yellow flower-clusters and light-green foliage. The species name '*fistula*' means pipe, referring to the long pipe-like pods. Indians associate the tree with the hot summer months when long drooping sprays of yellow flowers cover the Laburnum in clouds of gold. Indian Laburnum finds its mention in many Hindu mythological and religious literatures. It is believed that whenever Lord Shiva embarks on a heroic mission, he wears garlands made of Laburnum flowers. Flowers of this tree are used during the celebration of "Onam" festival in Kerala, India.

Indian Laburnum is considered as one of the best yellow-flowering trees for planting in gardens, avenues and parks in almost all tropical countries of the world for beautification. Its drought-resistant nature and ability to come in difficult edaphic conditions make this species versatile.

FIELD IDENTIFICATION

C. fistula can be spotted readily in the forest by its dark-grey bark with crusty plates; paripinnate compound leaves with light-green leathery leaflets; handsome, long, drooping racemes of bright, golden-yellow flowers; and long, cylindrical pipe-like fruits with brown seeds embedded in a sticky pulp.

SEASONALITY

The Indian Laburnum is leafless in winter and spring. Flowers appear in April-May and new leaves emerge shortly thereafter. Fruits mature around March-April of the year following flowering.

DISTRIBUTION

The Indian Laburnum is indigenous in the forests of India, Pakistan, Bangladesh and Myanmar. It is distributed widely in semi-evergreen to dry deciduous forest throughout India.

UTILITY

The cleansing strength of Indian Laburnum was mentioned in the Ayurveda text indicating the efficacy of the sweetish fruit pulp as an effective purgative, antitoxin and in expelling internal worms. Fresh sweet pulp is an effective remedy for colic, while the matured pulp is used to make a gentle laxative. The leaves are reputed to treat ulcers. Externally, the bark and leaves are ground into a paste for chronic skin diseases. A decoction of the flower is taken to destroy intestinal worms and to stimulate urination. The powdered wood is reportedly used for dysentery and its wash is used as a caustic to promote healing of open abscesses. The flowers are fried and eaten in some parts of India. The bark yields a red dye, used for tanning. The wood is hard and used for posts and making agricultural implements. It makes good firewood and excellent charcoal.



Conocarpus erectus (L.) DC.

Common Name: Green Buttonwood, Button Mangrove

Family : Combretaceae



Green Buttonwood is usually a dense, low-branching, multiple-trunked, tall tree looking more like *Acacia auriculiformis*. Buttonwood is ideal for seaside planting as it is highly tolerant of full sun, sandy soils, and salty conditions. It also tolerates brackish areas and alkaline soils. This is a tough tree capable of tolerating severe drought conditions. Since the seeds are mostly sterile, propagation can be done by rooting of branch cuttings.

FIELD IDENTIFICATION

C. erectus can be identified by its thick grey bark with rectangular flakes; dark-green shiny leaves with two salt glands at the base of the leaf; small, creamish-white to purple-white flowers in dense, long panicles; button-like, reddish brown fruits (on maturity) with 2-winged, cone-like seeds.

SEASONALITY

Green Buttonwood is a moderately fast growing species which comes to profuse flowering during April-May. Button-like green fruits appear in cluster shortly after and turn into reddish-brown colour to discharge large number of mostly sterile seeds.

DISTRIBUTION

Buttonwood is native to the shorelines of tropical and sub-tropical regions of the world including Caribbean, Central and South America from Mexico to Brazil on the Atlantic coast and Mexico to Ecuador on the Pacific coast. It was introduced in Kuwait because it could thrive in high temperatures and absorb brackish water.

UTILITY

The species is planted in road dividers, parks and on hillocks. The wood is used in making cabinets. It is also used as firewood, and is reported to be good for smoking meat and fish, as it burns very hot and slowly. It also makes high quality charcoal. The bark is high in tannin for which it has been harvested commercially since long.





Pterygota alata (Roxb.) R. Br.

Synonym : *Sterculia alata* Roxb.

Common Name: Buddha's Coconut, Mad Tree

Family : Malvaceae

Buddha's Coconut is a large deciduous tall tree which gets its name from its coconut like fruit. It is also known as Mad Tree as no one leaf is same as another leaf. Its straight tall trunk branches very high up with large, glossy leaves crowded near the ends of short upturned branches. It is number of wild almond species native to India and Southeast Asia.

FIELD IDENTIFICATION

P. alata can be identified by its grey smooth or ash coloured bark; heart-shaped leaves with 5-7 basal nerves and long petiole; bell-shaped brownish-yellow flowers with fleshy sepals which are densely covered with a mealy substance on the outside and purple with red streaks inside; and large, obliquely round, long-stalked woody fruits with winged seeds.

SEASONALITY

Leaves are shed in March, starting from the top of the tree. New leaves appear early in May. Flowering begins in mid-March when old leaves start to fall. Fruits ripen on the tree in April-May of the year following the flowers.

DISTRIBUTION

Buddha's Coconut is indigenous to rainforests of Burma, India and Bangladesh. In India, this tree is found in the rain forests of Andamans, Sikkim, Assam and Western Peninsula.

UTILITY

Because of its evergreen habit and fast growth, Buddha's Coconut is often cultivated in gardens and also as avenue tree. The wood is white, soft, fibrous, and elastic. The wood is chiefly used for drums, tea boxes and also used for planking, plywood and light furniture in India. It has got a good potential for making good quality toys.



Filicium decipiens (Wt. & Arn.) Thwaites

Synonym : *Filicium elongatum* Radlk. ex Taub.

Common Name: Fern Leaf Tree, Japanese Fern Tree

Family : Sapindaceae

Planted by the country's representative - Mr. Valona M. Gonzalez Posse

Fern Leaf Tree is an attractive evergreen species of compact growth with a dense crown of unusual foliage having prominent wings all along of the main leaf stock. It is neither Japanese in origin nor a fern though the long thin leaves growing out from stems have a fern-like look. Its bushy growth creates dense shade and the natural round- top of the canopy makes it an ideal handsome evergreen short-statured tree in the gardens or road meridians. Fern Leaf Tree is slow-growing and long-lived tree, but attains a good shape in course of time.



FIELD IDENTIFICATION

F. decipiens is distinguished by its characteristic dome-shaped canopy; dark grey or blackish bark peeling off in small pieces; branches with scales; dark-green, shining, compound leaves with broadly winged rachis; small, white flowers in long axillary panicles; and purple coloured 1-seeded, ovoid

fruits.

SEASONALITY

The flowers appear in January and February and fruits ripen in April-May.

DISTRIBUTION

The Fern Leaf Tree is a native to moist forests of South-West India, Sri Lanka and eastern tropical Africa.

UTILITY

Fern Leaf Tree is an excellent tree for Parks for its fern-like, evergreen, compact foliage. This is a popular tree with attractive appearance and foliage in tropical gardens. It can be grown in pots for several years. The timber of Fern Tree is hard and strong; suitable for building purpose and making





ARMENIA



Swietenia macrophylla King

Synonym : *Swietenia candollei* Pittier

Common Name: Big-leaf Mahogany, Spanish Mahogany

Family : Meliaceae



The big-leaf mahogany species is a majestic tree and an integral part of the rainforest ecosystem. Its dark brown flaky bark has a sweet odor. With leaves of 50-60 cm length, it has earned its "big-leaf" name. The juvenile pink leaves give a spectacular look to this tree. It was first brought to India from British Honduras in 1872 and planted in high-rainfall areas of South India. Unfortunately, mahogany trees have been over-exploited in the wild for its prized timber which commands handsome price in the market.

FIELD IDENTIFICATION

S. macrophylla can be identified by its grey-brown, shallowly fissured bark; paripinnate compound leaf with 3-8 pairs of dark-green, glossy leaflets having asymmetrical base; greenish-white flowers arranged in branched clusters with stamens grouped together in a column; and a woody, brownish capsule, shaped like an inverted dub pointing upwards.

SEASONALITY

New leaves appear in March-April. Flowers are produced abundantly in the leaf axils in April-May. Fruits take longer period for maturity, ripening during September-October.

DISTRIBUTION

Big-leaf mahogany is native to southern Mexico, Central America and into South America. It is now grown in all tropical countries of the world because of its magnificent appearance and valuable timber. Although it grows luxuriantly in high rainfall areas, it is well adapted to grow in drier climate also.

UTILITY

Mahogany has been a prized timber product - a building block for high-quality furniture and musical instruments - valued for its deep reddish color, durability and beauty. Mahogany has the reputation of being very durable, though it is not immune to dry-wood termites. It is also excellent for veneers and plywood. The bark is used as an astringent and as a substitute for cinchona. The traditional use of seeds of Mahogany used as an anti-diabetic has been validated scientifically.



Caryota urens L.

Common Name: Fish-tail Palm

Family : Arecaceae

Planted by the country's representative - Mr. Darryl Watkins Taimus WG

Fish-tail Palm is a conspicuous tree on the hill slopes of the shifting cultivation areas, being left uncut by the tribals as insurance for food in summer days. *Caryota* is the only genus of palms with bipinnate leaves. It is called the 'Fish-tail Palm' because of the resemblance of the ragged ends of its leaflets to the fins of fish. The majestic appearance of its massive drooping flower and fruit bunches in long ponytail-like tassels makes it distinctive. Fish-tail palm is grown in most of the parks and on the medians of the roads in the cities.



FIELD IDENTIFICATION

C. urens is conspicuous by its tall cylindrical grey trunk with clear rings spaced well apart; bipinnate compound leaves with leaflets shiny with ragged ends; small white flowers in long hanging inflorescence; and globose, dark-red ripened fruits.

SEASONALITY

The inflorescence of a number of equal branches appears in descending order and seen almost throughout the year hanging down like a brush.



DISTRIBUTION

Fish-tail palm is native to India, Myanmar, Thailand, Malayna Peninsula and Archipelago. This species is often cultivated in India. It occurs in the moist and rain forests of hilly areas of Eastern Ghats, NE India and Andaman Island.

UTILITY

The core of tree yields palm sugar, called sweet toddy. The sap is 'toddy' when it is fresh and used as 'arrack' after it gets fermented. The starchy pith from the central part of the trunk is said to be equal to sago. The leaves provide 'kittul' fibre which is used for rope, baskets, brooms and fishing lines. The nuts, or seed kernels are used as an external application to the head to treat hemicrania. In Ayurveda, they are considered acrid and cooling, and are reportedly used to reduce thirst and fatigue. The 'toddy' is used as a laxative.





Bucida molinetii (M. Gomez) Alwan & Stace

Synonym : *Bucida spinosa* Jenn.

Common Name: Spiny Black Olive

Family : Combretaceae

Planted by the country's representative - Mr. Gerald Dick

Spiny Black Olive is a tall semi-deciduous tree, highly branched, forming a pyramidal and umbellate canopy architecture. Though commonly called 'black olive tree', this is not the edible olive (*Elaeagnus umbellata*), we know and love, but does produce a small, black seed-capsule. Black olive is 15 - 20 metres tall, evergreen tree with a smooth trunk strong, wind-resistant having many branches in whorls and forming a pyramidal shaped canopy when young but developing into a very dense, oval to rounded crown with age.

The inconspicuous, small, greenish-yellow flowers are produced in 10 cm long spikes during spring and summer which eventually form black fruits exuding a staining tannic acid material that could damage patios, sidewalks, or vehicles parked below. Besides this one shortcoming, black olive is beautifully suited for landscaping.

FIELD IDENTIFICATION

B. molinetii is identified by its umbellate canopy with branches coming in whorls; grey-brown fissured bark; crowding of the leaves near the end of the branchlets; small, white, densely crowded flowers in spikes; and small fruits crowned with ovate sepal-lobes.

SEASONALITY

New foliar growth is bronze-colored and ages to light-green. It flowers in March-April and fruits ripen in July-August.



DISTRIBUTION

Black Olive is native to Florida and Caribbean countries. It is found in SE North America (Bahamas, Cuba, Dominican Republic, SE Mexico and Belize).

UTILITY

Wood of Black Olive is suitable for veneers and plywood. It is used for furniture, boards and packing cases etc. Medicinally, the bark of Black Olive is mixed with the bark of *Rhizophora mangle* and processed into a styptic agent (causing to stop bleeding when applied to wounds). Bark yields a tanning agent.

Colvillea racemosa Bojer

Common Name: Colville's Glory

Family : Leguminosae-Caesalpinioideae



Colville's Glory is a beautiful large tree from Madagascar with large feathery canopy and very conspicuous cylindrical or cone-shaped clusters of bright orange flowers that are bright red in bud. The feathery canopy can easily be mistaken (when not in flower) for Gulmohar (*Delonix regia*). However, the main trunk is taller than Gulmohar but branches are fewer giving the appearance of an open canopy. Its grape-like clusters of velvety buds, varying from chameleon green to blood orange, are a sight to behold. The genus is named after Sir Charles Colville, a former Governor of Mauritius. It was first cultivated in Mauritius, mainly for its fiery, drooping, orange blossoms.

FIELD IDENTIFICATION

C. racemosa can be identified in the field by its brown-grey bark with pinkish tone; Gulmohar-like bipinnate compound leaf; orange-red flowers in large drooping clusters; and one-seeded, compressed flat pods.

SEASONALITY

Young trees grow fairly rapidly. Leaves are shed in January and new leaves sprout during April. It flowers from December-March. The flowers produce abundant nectar and get pollinated by sunbirds. The fruits ripen about six months after flowering.

DISTRIBUTION

Colville's Glory is endemic to western Madagascar. In its native range, the tree primarily grows in lowland deciduous forests and savannah areas on sandy soils. It is widely grown as an ornamental plant in Australia, North America and elsewhere in tropical countries.

UTILITY

Colville's Glory is grown in gardens and road side for its elegant appearance and unusually beautiful flowers. The wood, known as '*sarongaza*', is yellowish-white to greyish-yellow, moderately light weight with straight and coarse texture. It is used for posts, carpentry, shuttering, fences and veneer. It is suitable for light joinery, interior furniture, boxes and crates. The wood may be used as a material for match-box industry.





BAHAMAS



25

Putranjiva roxburghii Wall.

Synonym : *Drypetes roxburghii* (Wall.) Hurus.

Common Name: Lucky Bean, Child-life Tree.

Family : Putranjivaceae



Lucky Bean is an evergreen tree with long drooping branchlets bearing dark glossy leaves. Though it lacks conspicuous flowers, one gets attracted for this tree by its grace and geometry of foliage and the greyish bark. This tree is sacred to Hindu women. The plant is reported to cause conception in sterile women, leading to the birth of a male child, hence the name "*putranjiva*". The tree has a reputation as a protection against the evil eye, especially in case of children. Rosaries made with the nuts of the fruit are used to keep children healthy and said to ward off evil spirits.

FIELD IDENTIFICATION

P. roxburghii is identified in the field by its corky, greyish bark studded with conspicuous white dots; thin-textured, dark-green glossy leaves; yellowish male flowers in dense clusters; and small single seeded fruit which are green to begin with but turn to grey on ripening.

SEASONALITY

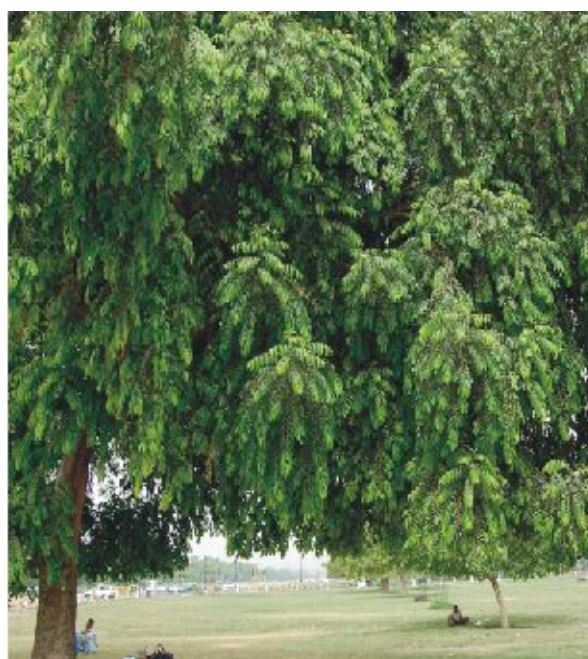
Flowers in April and fruits from quickly (only on female trees) after the flowers but do not ripen till February of the following year.

DISTRIBUTION

Lucky Bean is native to moist evergreen forests of India and Sri Lanka, Cambodia, Laos, Myanmar, Thailand, Indonesia and Papua New Guinea. Usually, the tree grows on alluvial soil along the river, or in swamps or evergreen forests. *Putranjiva* makes one of the best clipped evergreen hedges on the road-medians.

UTILITY

The fruits, seeds and seed oil of Lucky Bean are considered purgative. In traditional medicine, the leaves and crushed stones of the fruits are used to treat colds, fevers and rheumatism. The bark is used as an external application to relieve sprains, bruises and rheumatic swellings. The oil from the seeds once used as a lamp fuel. The leaves make a good cattle fodder. The wood is grey and not particularly attractive but is moderately hard and close-grained. It finds some use locally in making tool handles and small articles.





BAHRAIN

26

Pseudobombax grandiflorum var. *majus* A. Robyns

Synonym : *Pachira cyathophora* Casar.

Common Name: Shaving Brush Tree

Family : Malvaceae

Planted by the country's representative - Mr. Adel K-Alzayani

Shaving Brush Tree is an ornamental tree from Brazil that produces clusters of large and spectacular whitish-pink flowers during spring. It is a fast-growing, deciduous tree with a large open crown supported by a crooked and much-branched bole. The flower buds are said to open at night with an audible 'pop'.



FIELD IDENTIFICATION

P. grandiflorum var. *majus* is identified by its smooth grey bark; digitate leaf with 6-8, shortly stalked leaflets; large, cream-white flowers with revolute petals which turn red after opening; long stamens in bundles with lower 2/3 length white and upper 1/3 purple; and golden-brown woody capsules with seeds embedded in cottony fiber.

SEASONALITY

Flowering takes place in November-December and the fruits mature during April-May.

DISTRIBUTION

Shaving Brush Tree is native to Brazil although many of its allies are distributed in Central and South America, Africa and India. However, it has been planted in several tropical countries as an ornamental plant.

UTILITY

Shaving Brush Tree is a very attractive ornamental tree, especially when in flower and therefore it is often planted in gardens. The wood is very light, soft to cut and of short natural durability. It is only used for low-value items such as packing boxes and plywood filling. Yellow floss obtained from the seed pods is used as a stuffing material for pillows etc.



Citharexylum spinosum L.

Synonym : *Citharexylum bahamense* Millsp. ex Britton

Common Name: Fiddlewood

Family : Verbenaceae



Fiddlewood is a beautiful small tree with long pendulous spikes of richly scented white flowers. In Caribbean Islands, the wood is used in the manufacture of stringed musical instruments – that could be the reason for its common name, Fiddlewood. It is easy to walk right past Fiddlewood trees until you smell their sweet fragrance emanating from the tiny delicate white flowers hidden amongst the dark-green shiny leaves with a hue of saffron colour at petiole base. It is a tall tree with a spreading crown but seen as a very short-statured in most of the gardens because most of the plants are developed from stem cuttings.

FIELD IDENTIFICATION

C. spinosum is identified by its spreading branches with dark green, glossy leaves; reddish-brown or light-grey bark; scented, small, tubular, snow-white flowers in axillary long-hanging racemes; and small, globose, fleshy fruits which turn orange-red colour when ripe.

SEASONALITY

Though the major flowering time of this species is June-August, flowers also appear in March-April and November-December. Fruits ripen in September.

DISTRIBUTION

Fiddlewood is a native to Southern Florida, USA, The Caribbean, Guyana, Suriname and Venezuela. Moderate soil tolerance allows planting near the beach. It has been introduced in gardens and parks in many parts of India.



UTILITY

The tree is planted in parks and gardens because of its fragrant white flowers and attractive bunch of orange coloured fruits. The tiny flowers are a favourite to the bees. The wood is strong, hard and close-grained and is used for cabinet making.



Parkia biglandulosa Wt. & Arn.

Synonym : *Mimosa pedunculata* Roxb.

Common Name: Badminton Ball Tree, African Locust Tree.

Family : Leguminosae-Mimosoideae

The Badminton Ball tree is a large, spreading tree with a huge bole and numerous tiny leaflets in its compound leaves. The genus *Parkia* is named after the African explorer Mungo Park. It earns its common name by the peculiar shape of its flower-heads, which have evolved as landing stages for nectar-feeding bats that pollinate flowers in exchange of nectar and pollen rewards. For most part of the year, the tree is very easily confused with *Delonix regia* or *Jacaranda*. It is only during December-January, appearance of tennis-ball shaped fluffy flower-heads makes one realize that this tree indeed has to be *Parkia*! However, the leaflets of the Badminton Ball Tree are much smaller and more in number.



UTILITY

Badminton Ball Tree is used for planting on avenues for shade and parks as an ornamental tree. The farinaceous pulp which surrounds the seeds is edible. The seeds can be fermented into a strongly-scented, cheese-like substance that is used as a flavouring agent. The roasted seed is used as a substitute of coffee. Flower heads discharge lot of pollen which, with water, makes a refreshing drink.

FIELD IDENTIFICATION

P. biglandulosa can be identified by spreading, drooping branches with grey-white bark; compound leaves with the presence of circular dark brown gland at its base on either side of rachis (hence the name of species, *biglandulosa*); tiny, white flowers clustered in dense, badminton ball-like flower-heads; and long, flat, dark-brown pods hanging in clusters with a long peduncle.



SEASONALITY

Flower heads on long drooping peduncles appear in November-January. Legume develops during February-March and matures during May-June.

DISTRIBUTION

Badminton Ball Tree is distributed in the tropical regions of Asia, Africa and South America. It is a native to Western Africa, but it is often grown in garden in tropical countries.





BELARUS



Alstonia scholaris (L.) R. Br.

Synonym : *Echites scholaris* L.

Common Name: Devil's Tree, Dita tree

Family : Apocynaceae

Devil's Tree is a large evergreen tree from moist forests of India, introduced in the gardens and avenues mostly for the glossy evergreen foliage and whorled branches creating starry symmetries. It is commonly known as Devil's Tree, as it is considered to be the abode of the devil, in popular superstition. The generic name "*Alstonia*" commemorates the distinguished Botanist, Prof. C. Alston of Edinburgh. The species name '*scholaris*' refers to the fact that the timber of this tree has traditionally been used to make wooden slates for school children. It owes much of its popularity to the fact that it is fast-growing and evergreen. The dehiscence of the fruit releases seeds with lot of short fine fibres, easily dispersed by air.

FIELD IDENTIFICATION

A. scholaris is identified by its pale greyish-brown bark studded with a distinctive pattern of raised corky dots; milky latex oozing out from the broken leaves; rounded canopy and whorled branches; digitately compound leaf with 6-8 leathery, dark-green leaflets radiating from a central point; and long, slender bean-like fruits in pairs.

SEASONALITY

Leaves are more or less evergreen; new, paler flushes stand out against dark old leaves in March-April. Flowering is not synchronized, sometimes between October and December. Fruits appear from March onwards and dehisce in April.



DISTRIBUTION

It is native to the Indian sub-continent, South East Asia, Australia and China. Because of its wide adaptability, non-browsability, drought-hardiness and spectacular tree-form with bright green foliage, Devil's Tree is a favoured species in avenue plantations.

UTILITY

This is an astringent medicinal tree used in Ayurveda to also treat chronic dysentery, snake bites, diarrhoea and used in Panchakarma purification process. Ulcers are best treated with the milky sap of the tree. Malaria and diarrhoea was treated with the decoction of the bark. The compounds present in the bark serve as a great quinine alternative. To treat beriberi, a decoction of the leaves is used. It also has a reputation as an aphrodisiac. Wood of the tree is light and hence used for packing cases, tea-boxes, coffins, veneers, plywood and match splint.





BELGIUM

30

Lagerstroemia speciosa (L.) Pers.

Synonym : *Lagerstroemia flos-reginae* Retz.

Common Name: Pride of India, Queen's Crape Myrtle

Family : Lythraceae

Planted by the country's representative - Mrs. Ines Verleye



Pride of India is a flagship species of a spectacular genus of flowering trees whose rose-like flowers with crinkly petals are displayed in large, erect clusters. In many of the avenues and parks it is a common tree with a low, spreading crown. The name *Lagerstroemia* recognizes Magnus von Lagerstroem, a Swedish naturalist who provided specimens from the East for Carlos Linnaeus in Sweden.

DISTRIBUTION

Queen's Crape Myrtle is widely distributed in India, China, Southeast Asia, and Australia. It is native to moist forests in North East and South India, where it sometimes grows to a great size. This species is widespread in cultivation in tropical regions.

FIELD IDENTIFICATION

L. speciosa tree can be identified by its spreading crown; pale-brown, smooth bark; pink-red leaves before falling; mauve, pink or lilac flowers in large clusters with petal-margins wavy and curling; and oval, woody capsule turning from olive green to black as it matures.

UTILITY

The species is used in garden for its purple-mauve large flowers. The wood is pale red when freshly sawn, darkening to a handsome reddish-brown colour. It is used for making carts, boxes, panelling etc. The wood is valuable for the construction of boat. The leaves are considered purgative and diuretic. A decoction of the leaves, or the dried fruits, prepared like tea, is used to reduce blood sugar. The bark is considered purgative, stimulant and febrifuge; its decoction or infusion is used to relieve abdominal pain and diarrhoea. The seeds are said to be narcotic.

SEASONALITY

Leaves start turning red and purple before shedding in December. New leaves appear in April. Flowers appear from late April to June. Fruits are formed by August, remaining for long on the tree.





BELIZE



Elaeocarpus serratus L.

Synonym : *Elaeocarpus ganitrus* Roxb. ex G. Don

Common Name: Utrasam Bead Tree, Rudraksha

Family : Elaeocarpaceae



Rudraksha is a large tree from Nepal and East India grown more for its religious importance. The word 'Rudraksha' comes from two Sanskrit words – 'rudra', a synonym for Lord Shiva and 'aksha' meaning eyes. All legends pertaining to the origin of Rudraksha describe them as tears shed by Lord Shiva. According to one story, Lord Shiva once entered into a profound state of meditation for the benefit of mankind. When he emerged from this state and opened his eyes, the deep joy and peace that he felt were expressed as tears, which ran down his cheeks and fell on the earth. From his tears emerged the Rudraksha tree. The stones (seeds) are used to make prayer beads. The tree is considered as a threatened plant in north eastern region of India.

SPOT IDENTIFICATION

E. serratus can be identified by its straight, buttressed trunk and grey-brown bark; serrate, shining green leaves which turn red before falling; white flower with fringed petals; globose, bluish-purple drupes; and hard, tubercled stones, marked generally with 5 vertical grooves.

SEASONALITY

The flowering in Rudraksha occurs in April-June and the fruits appear in June which ripen by August-October.

DISTRIBUTION

Rudraksha is frequently found in North Bengal, Assam of India, Nepal, Bangladesh, Malaysia and Java.

UTILITY

Rudraksha stones (seeds) are cleaned, polished and used as beads for rosaries, bracelets and other ornamental objects. They are also widely used for religious purpose. Rudraksha is used in folk medicine in treatment of stress, anxiety, depression, palpitation, nerve pain, epilepsy, migraine, lack of concentration, asthma, hypertension, arthritis and liver diseases. It is also good for children who suffer from frequent fever. The paste of ten- faced Rudraksha with milk relieves prolonged cough. To cure small pox, equal quantity of black pepper and Rudraksha is powdered and taken with water.





BENIN

32

Erythrina variegata L.

Synonym : *Erythrina corallodendron* Lour.

Common Name: Indian Coral Wood

Family : Leguminosae-Faboideae

Planted by the country's representative - Mr. Vigann Modeste C

Indian Coral Wood is a soft-wooded, spiny, ornamental tree with brilliant scarlet blossoms and variegated yellow leaves. There is also a white-flowered variant. The tree often has multiple stems ascending steeply upwards.

FIELD IDENTIFICATION

E. variegata is identified in the field by its greenish-grey bark; black conical spines on stems and branches; trifoliate leaf with rhomboid-shaped leaflets having yellowish veins; clusters of bright scarlet papilionaceous flowers with spathaceous calyx and long stamens; and elongated, cylindrical, black legumes with swellings and constrictions.



SEASONALITY

The tree sheds off leaves in winter months and flowers appear in February-March, followed by emergence of new leaves. The fruits mature during April-June.



DISTRIBUTION

Indian Coral Wood tree is primarily a coastal species on sandy soil in littoral forest with very wide distribution throughout tropical Asia. It is native to India and Malaysia but is grown in many tropical countries of the world, more frequently in Asia and Africa

UTILITY

Indian Coral Wood tree is a popular shrub for garden because of its showy red flowers and variegated leaves. The tree is also widely grown in rural area as posts for fencing and as a support for growing climbing vegetables and pulses. The wood is soft, but durable and used for making boxes and toys. The bark is used for tanning and dyeing. Leaves are effective to relieve toothache, earache and eye ailments like conjunctivitis. The bark cures dysentery and is also used as a febrifuge.





BHUTAN



Grevillea robusta A. Cunn. ex R.Br.

Synonym : *Grevillea venusta* A.Cunn. ex Meisn.

Common Name: Silver Oak, Silky Oak

Family : Proteaceae



Silver Oak is an evergreen, tall, graceful tree with a long clean trunk and a conical crown. Silver Oak is not really an Oak at all! It is striking by its deep-green fern-like foliage with silvery underside, rusty-tomentose young shoots and bright-orange brush-like blossoms in April. It is very popular as a fast-growing ornamental tree which is planted often in parks and gardens.

FIELD IDENTIFICATION

G. robusta is conspicuous by its conical shaped crown; very dark bark with vertical furrows; feathery leaves with leaflets deeply dissected like a fern leaf with silver-mealy beneath; orange-yellow flowers in long brush-like spikes and curved brownish pods which burst to release the seeds.

SEASONALITY

Silver Oak is evergreen and the leaves are seldom completely shed. The leaf litter decomposes quickly. It is a poor coppiceer. The flowers appear in April-May and the fruits ripen during the cold weather.

DISTRIBUTION

Silver Oak is a native of Australian forests. In its wild native place, it occurs along the coastal river banks in well-drained soils. It does not stand water-logging.

UTILITY

Silver Oak was first introduced into India as a shade tree in tea and coffee plantations and still used mainly for windbreaks, alley cropping and as an ornamental tree. Birds, bats and insects visit its nectar-laden flowers. Yellow and green dye is extracted from the leaves used for dyeing silk. The timber is attractively figured and easy to work. The reddish-brown heartwood is of medium strength and used for joinery, cabinet-making and paneling. Plywood and rotary veneer are made out of this wood. Mixed with long-fibred wood, it is suitable for chemical pulp.



Phyllanthus emblica L.

Synonym : *Emblica officinalis* Gaertn.

Common Name: Indian Gooseberry, Embelic Myrobalan

Family : Phyllanthaceae

Planted by the country's representative - Mr. Diego Pacheco

The chebulic myrobalan for resistance to disease, the embelic myrobalan for its tonic value-mentioned by Charak in first century A.D. The Sanskrit name 'Amlaki' for this small tree with its leathery leaves and fleshy fruits translates as "The Sustainer" or "The Fruit where the Goddess of Prosperity" resides. In Hindu mythology, the tree is worshipped as the Earth Mother; its fruit considered so nourishing that the tree is believed to be nursing mankind. It is a deciduous tree from dry forests with a fluted trunk, fine feathery foliage and thin grey bark peeling in small, irregular patches. The fruit of embolic myrobalan contains twenty times as much vitamin C to be found in a glass of fresh orange juice.



FIELD IDENTIFICATION

P. emblica is located in the forest by its smooth grey bark, flaking off in small patches to reveal yellow under-bark; closely set small leaves; small, greenish-yellow or pink flowers crowded in clusters on naked twigs; and fleshy, globose, smooth, greenish-yellow fruits with six seeds.

SEASONALITY

The leaves are completely shed in January-February. Flowers appear from March to April. The fruits ripen in the month of November to February.



DISTRIBUTION

The plant is a native of tropical and sub-tropical India, Sri Lanka, China and Malaysia. It is one of the commonest species of dry deciduous forests of India.

UTILITY

In combination with the fruits of 'belleric and chebulic myrobalans' in "Ayurvedic Triphala", it is employed in treating chronic dysentery and a range of digestive disorders. The fruit juice, when mixed with honey and taken daily, prevents asthma, bronchitis, bleeding of gum and is said to be a good liver tonic. The juice from freshly picked fruits is employed as eyewash. The dried gooseberry is used as a detergent and shampoo, where it is believed to cure loss of hairs. The bark mixed with onion juice is an effective antidote for the sting of a scorpion. It is regarded as excellent firewood having high calorific value.





Cananga odorata (Lam.) H.F. & Thoms.

Synonym : *Cananga mitrastigma* (F.Muell.) Domin

Common Name: Ylang-ylang Tree

Family : Annonaceae

Planted by the country's representative - Mr. Mehmedcero



The name 'Ylang-ylang' is derived from the Malaya language (ilang ilang) and translates to 'flowers of flowers'. It is a tall, evergreen tree with straight trunk and very fragrant flowers. The tree grows between 10-20 meters high and flowers of this tree are yellowish in colour. The trees are kept pruned and they flower year round. The fragrance of these flowers is the reason that Ylang-ylang is so common in the perfume industry. Flowers are picked up in the morning. The fairly thin oil is water distilled and presents a yellow to yellow-orange colour.

FIELD IDENTIFICATION

C. odorata can be identified by its straight trunk and smooth grey bark; distichous leaves; drooping, fragrant flowers with incurved large yellow-orange perianth-lobes; and ovoid green fruits in bunches of 10-12.

SEASONALITY

The species flowers during January-February.

DISTRIBUTION

Ylang-ylang is common in SE Asia, primarily in Indonesia. It has also spread to the Pacific Islands. The plant is grown commercially for extraction of perfume and oil for commercial use.

UTILITY

The tree yields a scent (ilang-ilang) and oil (Cananga oil) which are of commercial importance in the Philippines and Indonesia. Ylang-ylang oil has a euphoric and sedative effect on the nervous system. Ylang-ylang is thought to be an aphrodisiac and it appears to have a relaxing effect when used as a massage. On the skin, ylang-ylang oil has a soothing effect.



Agathis robusta (C.M. ex F.Muell.) Bailey.

Synonym : *Agathis palmerstonii* (F.Muell.) F.M.Bailey

Common Name: Queensland Kauri, Kauri pine

Family : Araucariaceae

Planted by the country's representative - Mr. Joshua J Moloi

Queensland Kauri is one of Australia's native softwood timber species. Its species name, *Agathis robusta*, is derived from its cones, which looks like a ball of thread (*agathis*), combined with its vigorous growth (*robusta*). It is a large, evergreen, resinous tree with characteristically long, straight bole, covered with smooth to flaky grey-brown bark. Woody scales from collapsing cones gather at the base of these trees. Though it is a conifer, generally native to temperate forests, yet tolerates the tropical climate well.



FIELD IDENTIFICATION

A. robusta can be identified by its straight trunk with horizontal branches in whorls; grey-brown bark; thick and leathery, dark-green leaves without midrib; and ovoid cones.



SEASONALITY

Large, upright cones are found for many months of the year. The female cones are globose, 8–13 cm diameter, and mature in 18–20 months after pollination. They mature during July-September and disintegrate to release the seeds.

DISTRIBUTION

A. robusta is native to eastern Queensland, Australia and subsequently introduced into many of the botanical gardens of the tropics and subtropics for the excellent tree-form and thick, leathery, shining green leaves.

UTILITY

The tree is grown in gardens and parks. The timber of this species has a fine even texture that is pale cream to light or pinkish brown in hue, with a straight grain. It is very strong and durable and is of considerable commercial value. Queensland kauri timber is commonly used for cabinet-work, turning, joinery and shelving. Resin from this species is known as 'copal' or 'dammar' and it is used in manufacture of varnishes and linoleum.





BRAZIL



Kigelia africana (Lam.) Benth.

Synonym : *Kigelia aethiopum* (Fenzl) Dandy.

Common Name: Sausage tree, Cucumber tree

Family : Bignoniaceae

Planted by the country's representative - Dr. Brantio Dias

Sausage tree refers to the long, sausage like fruits. It has a short, thick trunk and spreading crown. At most times of the year, either it has large, waxy, liver-coloured flowers or grey sausage-shaped fruits dangling at the ends of the very long, rope-like stalks. Their scent is most notable at night indicating that they are adapted to pollination by bats, which visit them for pollen and nectar in the night. The foetid-smelling pulp of the fruit encompasses the poisonous seeds. The wound-healing ability of the various parts of the plant make the local tribes use it as a remedy against various common infections of the skin.



DISTRIBUTION

Sausage tree occurs throughout tropical Africa from Eritrea and Chad south to northern South Africa, and west to Senegal and Namibia. Due to its hardiness and drought-resisting ability, it has been planted in various parts of the world.

UTILITY

Various parts of tree are used for treating skin ailments like fungal infections, boils, psoriasis and eczema, leprosy, syphilis and gastric complaints. The powdered leaves are said to have potent wound healing activity, as well as the ability to clear infections from wounds. Fruit pulp is used for making skin creams and shampoos. The boiled fruit yields a reddish dye.

FIELD IDENTIFICATION

K. africana is distinguished in the field by its grey-brown bark flaking in small plates; leathery imparipinnate compound leaves with conspicuous rigid veins and of brownish-red tinge at the base of petiole; large, fleshy, trumpet-shaped, maroon-coloured flowers replete with nectars; and a brown cylindrical, large, woody, hanging fruit with a long stalk.

SEASONALITY

The leaves fall during January-February and new foliage appear in March-April. Flowers appear on the branches (cauliflorae) in April-May and fruits ripen in the rainy season.



Adansonia digitata L.

Synonym : *Adansonia bahobab* L.

Common Name: The Baobab Tree, Monkey Bread Tree

Family : Malvaceae

Planted by the country's representative - Mrs. Noralinda Ibrahim



The Baobab trees are uniquely engineered with the fattest trunks of any tree, tapering into absurdly thin branchlets on top. They were first brought from sub-Saharan Africa to the west coast of India by Arab traders more than a millennium ago. They are superbly adapted to withstand drought by storing water in the spongy, fibrous tissue of their swollen basal trunks.

Hindus believe that the Baobab tree is a wish-fulfilling tree, one of the nine jewels churned out of the sea by the demons and gods during '*samudra manthan*'. It is popularly known as "kalpa vriksha" by the people in Rajasthan, India. Thousands of people worship this tree on the new-moon day of the month of Shravan.

FIELD IDENTIFICATION

A. digitata is identified by its conspicuously bulging stem at the base with somewhat hollowness inside; smooth, greyish bark; digitate compound leaf with 5-7 leaflets; large solitary, drooping white flowers with upward recurved petals; cluster of golden anthers; and an oval-shaped, woody, velvety fruit.

SEASONALITY

The leaves fall off in cold months and new leaves appear in April-May, followed by flowers in June-July. Many large oblong hanging fruits appear during September onwards.

DISTRIBUTION

The Baobab is a native of tropical Africa, but it is found in most of the tropical countries as an ornamental tree with unusual appearance and large flowers and fruits.

UTILITY

The wood is soft and spongy and yields paper pulp suitable for wrapping as well as writing paper. The bark yields a strong fibre for cordage. The fruit is used to cure biliousness and dysentery. The pulp is edible and the fruit acts against epidemic fevers as it tempers the heat of the blood. A preparation made from the fruit is used to relieve stomach complaints. The Baobabs are used as an ornamental tree in the parks and gardens.





BULGARIA



Terminalia arjuna (Roxb. ex DC.) Wt. & Arn.

Common Name: White marudah, Arjun

Family : Combretaceae

Planted by the country's representative - Mrs. Nonavara Djova

White Marudah is a massive tree with a broad oval crown, smooth bark and buttressed trunk usually found growing along water courses in dry deciduous forests. Its superficial shallow root system spreads radially along stream banks. The silvery white bark with exfoliating irregular sheets makes it very prominent in the forest. Ancient Hindu scriptures describe the Arjun as combining the virtues and essence of all herbs. The Arjun's great service to medicine lies in its bark extract, which is used in clinical treatment of hypertension. A powder from the bark, taken orally, is a valuable tonic.

FIELD IDENTIFICATION

T. arjuna can be identified in the field by buttressed and fluted stem with grey or pinkish-green bark; large drooping crown; leathery leaves with 2 prominent glands at the unequilateral leaf-base; numerous, white, cup-shaped small flowers in short, axillary drooping spikes; ovoid-oblong, dark-brown to reddish-brown indehiscent drupes with 5-7 stiff wings

SEASONALITY

New leaves appear during February-April. Flowers begin in April after a brief period of leaflessness. The fruit ripens the following February-May.

DISTRIBUTION

T. arjuna is native to India. It occurs naturally along banks of streams and rivers and seasonally dry water courses at low elevations.



UTILITY

The Arjun tree's medicinal value comes from its use in cardiac drugs. It is a valuable remedy for heart diseases. A decoction or powder made out of its bark, if taken regularly along with milk and jaggery every morning, stimulates the heart. It is used to treat asthma and, if taken with honey, it strengthens fractured bones. The decoction also cures dysentery. A paste made out of the bark mixed with honey cures pimples. Ash made out of the bark is applied on the area stung by scorpion. The leaves are used for feeding 'tasar' silkworms to produce tasar silk. Timber is locally used for carts, agricultural implements, water troughs, traps, boat buildings and house building. It makes excellent charcoal and firewood. The bark is used as tanning and dyeing material. The bark, containing large amount of lime (calcium carbonate), is often burnt to produce lime for chewing with betel. The bark is also used to assist precipitation of mud from turbid water.

Revised Version of Uses

Timber is locally used for carts, agricultural implements, water troughs, traps, boat building and house building. It makes excellent charcoal and firewood. The bark is used as tanning and dyeing material. The bark, containing large amount of lime (calcium carbonate), is often burnt to produce lime for chewing with betel. The bark is also used to assist precipitation of mud from turbid water. Leaves are used for feeding 'tasar' silkworms to produce tasar silk. The Arjun tree's medicinal value comes from its use in cardiac drugs. The powdered bark gives relief in case of symptomatic hypertension and act as a diuretic and acts as a general tonic in case of cirrhosis of the liver. A decoction of the bark is used as a wash for ulcers and taken internally as a febrifuge. The powdered bark, taken with milk or honey, is used to treat bone fractures. A paste made out of bark mixed with honey cures pimples. Ash made out of the bark is applied on the area stung by scorpion.



Neolamarckia cadamba (Roxb.) Bosser.

Synonym : *Anthocephalus cadamba* (Roxb.) Miq.

Common Name: Kadamba, Common Bur-Flower Tree

Family : Rubiaceae

Planted by the country's representative - Mr. Pr. Jean Koulidiati



Kadamba is a quick-growing tall handsome tree with a long, clean bole and spreading branches having round flower heads of the size of an undernourished orange. The honey-coloured flowers of the Kadamba tree open only after dark to produce the wine-rich scent that is extracted into a perfumed oil. The most widespread legends concerning the Kadamba tree springs from Kadamba's association with Lord Krishna. He said to have stood in its shade when playing his flute, and to have climbed to its branches when he stole the clothes of a group of bathing cowherd girls.

FIELD IDENTIFICATION

N. cadamba is distinguished by its horizontal whorled branches; shining, coriaceous, ovate leaves in opposite pairs with interpetiolar stipule; and numerous, small, yellowish-white, scented flowers in compact terminal heads of tennis ball size.

SEASONALITY

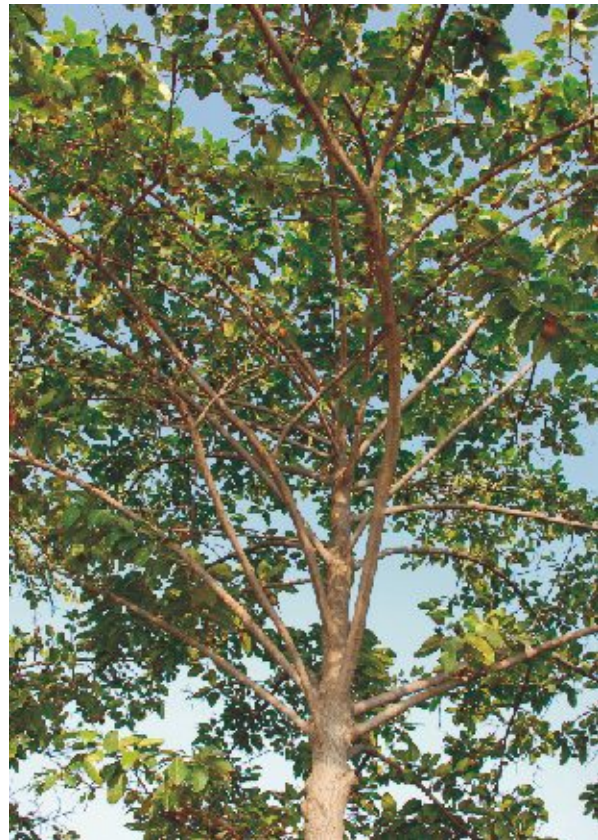
Leaves start to drop in March, renewed between April and June. Flowering occurs during late rains, mostly in the month of August-September. Fruits ripen and fall in January-February.

DISTRIBUTION

It is indigenous to India, China and SE Asia. It is mainly found in alluvial soils along the rivers and also in swampy ground. It is widely planted on roadsides and gardens.

UTILITY

Kadamba is cultivated in parks, colonies, avenues and temples because of its dense canopy and fragrant flowers. The wood of Kadamba is not very strong and is used only in low-quality planking and for box-making materials like tea chest. The wood is also used for pencil making and MDF boards. The fruits are eaten either raw or cooked and the leaves are lopped for fodder. The bark is used in traditional medicine to cure fevers and coughs, and the juice of the fresh bark is employed to treat inflammation of the eye. The squeezed fruit juice is mixed with cumin seeds and sugar and given to children for gastric irritability, and the whole fruit is useful when children are running high temperatures because it cools and quenches thirst.





BURUNDI



Ficus benghalensis L.

Common Name: Banyan Tree

Family: Moraceae



SEASONALITY

The figs ripen from February to April.

DISTRIBUTION

The Banyan is native to Indian subcontinent where it is widely distributed.

Called "The Many-Footed" after the aerial roots striding from its trunk to form a small forest, the canopy of a single banyan tree has been known to spread to an extensive area. Banyan Tree is characterized by its aerial prop roots that reach the ground and thicken into "pillar roots" which can eventually become trunks in their own right and then often become free from the mother tree. '*Thimmamma marrimanu*' in Anantapur district of Andhra Pradesh, India was listed as the world's largest banyan tree in Guinness World Records in 1989. The tree is situated in and is named after '*Thimmamma*' who committed *sati* on her husband's funeral pyre. Banyan is a sacred tree and being worshipped at many places by Hindus as the male consort of the Peepal (*Ficus religiosa*).

The Banyan Tree is the National Tree of India. The name Banyan is said to have been given to tree by the British when the British traders who followed King James's ambassador observed that the Indian merchants (*baniyas*) assemble for business under this great tree, considering a contract made in its shade to be binding.

FIELD IDENTIFICATION

F. benghalensis is spotted easily in the field by its huge size with numerous aerial roots; greyish-white smooth bark exfoliating in irregular flakes; thick, coriaceous, ovate leaves with 5-7 basal nerves; oozing milky latex when injured; and bright red syconia (figs) in pairs at the twig ends.

UTILITY

The figs are eaten by birds, bats, monkeys and squirrels. The leaves make good fodder. The crushed seeds and the milky latex from the twigs are applied externally to relieve pains, sores, ulcers and bruises. The same mixture is also used for healing cracked and burning soles. The seeds are considered cooling and tonic. A paste of the leaves or the heated leaves is applied as poultice to promote healing of abscesses. The infusion of the bark is a powerful tonic and useful for treating diabetes, dysentery and diarrhoea. The red tips of the young aerial roots are eaten to cure obstinate vomiting. The paste of the aerial root tips is



Dysoxylum alliaceum (Blume) Blume.

Synonym : *Dysoxylum acuminatissimum* Blume.

Common Name: Cape York Cedar, Buff Mahogany

Family : Meliaceae

Planted by the country's representative - Dr. Mok Maret



UTILITY

Buff Mahogany is grown for timber and it is used in construction and furniture. The wood is also used as a source of fuel.

The specific epithet '*alliaceum*' is derived from the Latin meaning 'onion-like', referring to the smell of the inner bark. It was introduced in West Bengal, India from Myanmar. The tree has paripinnate leaves, long, white or cream coloured flowers and globular fruits having many seeds. The plant is fast growing, usually attaining a height or 3-4 m in a year, particularly in the first few years after planting of the sapling, without producing axillary branches.

FIELD IDENTIFICATION

The prominent characters like straight tall stem with smooth brown bark; very large paripinnate leaves with 10 pairs of coriaceous leaflets which are with unequal base and thick petiole; copious white or cream coloured flowers on a lax paniculate cyme; and red-coloured roundish ripened fruits make the species conspicuous in the field.

SEASONALITY

The flowering appears in March-April and fruits ripen during June-July.

DISTRIBUTION

D. alliaceum is a native of Myanmar and Chittagong in Bangladesh. It is being grown even in small holdings for timber. It can be planted on road side as an avenue plant, because of its rapid growth.





CAMEROON



Tabebuia aurea Benth. & Hook.f.ex Moore.

Synonym : *Tabebuia argentea* (Bureau & K.Schum.) Britton.

Common Name: Caribbean Trumpet Tree

Family : Bignoniaceae

Planted by the country's representative - Dr. Nanaa Boubakar



Caribbean trumpet tree is a small, deciduous, crooked tree that remains self-effacing most of the year but bursts into attractive bright-yellow blossoms in March. In addition to its silvery foliage, the Caribbean trumpet tree has attractive silvery corky bark. Its branches and trunk are typically intertwined with two or three major branches dominating an asymmetrical crown. This is one of the most spectacular flowering trees, especially when grouped. Its wide adaptability, drought resistance and salt tolerance ability make this species most suitable for planting in varieties of site conditions.

FIELD IDENTIFICATION

T. aurea can be identified by pale-grey, corky bark with thick vertical ridges; palmately compound leaf with 5-7 narrow, oblong-lanceolate leaves with greyish tinge; bunches of golden-yellow funnel-form flowers with flaring mouth arranged in terminal panicles; and glossy greyish-brown oblong capsule with many white winged seeds.

SEASONALITY

The tree becomes completely leafless when it is in full bloom. A few trees start flowering in February, but the best performance comes in March-April. The fruit starts maturing in May.

DISTRIBUTION

T. aurea is a characteristic tree of the dry forests of the Brazilian Cerrado, Eastern Bolivia, Peru, Paraguay and northern Argentina. The common English name Caribbean trumpet tree is misleading, as it is not native to the Caribbean.

UTILITY

This is the most spectacular common tree selected for planting in avenues, medians of the roads and parks due to its attractive flowers, silvery leaf and ridged corky bark. However, it has soft, brittle wood that breaks easily in strong winds, but will recover.



Annona reticulata Linn.

Synonym : *Annona excelsa* Kunth

Common Name: Bullock's Heart, Netted Custard Apple

Family : Annonaceae

Planted by the country's representative - Mrs. Krista Black Borow



Netted Custard Apple is a low, erect tree with a rounded or spreading crown with unpleasant smell, slender leaves, inconspicuous drooping greenish-yellow flowers and smooth-surfaced greenish-pink fruits. The name Bullock's Heart is derived from the typical assymetrical heart-shaped fruits with a depression at the base. It requires slight moist areas for its luxuriant growth.

FIELD IDENTIFICATION

A. reticulata can be identified in the field by its distichous leaf arrangement, dark green narrow lanceolate leaves with conspicuous veins; drooping, half-opened, greenish-yellow flowers in cluster of 3-4 with a dark-red or purple spot at the base on the inside of thick petals; and a smooth, heart-shaped fruit with thin skin but distinct network externally being brownish when ripe with a pink blush.

SEASONALITY

The species flowers from October and continue through the cold season and fruits ripen in hot weather.



DISTRIBUTION

Bullock's Heart is indigenous to Caribbean and Central America. It is not grown in large areas for commercial purpose as in the case of *A. squamosa* and often found as isolated tree.

UTILITY

The pulp of the fruit of Bullock's Heart is sandy in consistency and of inferior quality as compared with that of custard apple (*A. squamosa*). A decoction of the leaf is given as vermifuge. Crushed leaves may be used as poultice over boils, abscesses, and ulcers. The unripe fruit is rich in tannin. It is dried, pulverized and employed against diarrhoea and dysentery. The bark is very astringent and the decoction is taken as a tonic and used against diarrhoea and dysentery. Fragments of root bark are put around the gums to relieve toothache. The root decoction is taken as febrifuge. The wood is yellow, rather soft, and moderately close grained. It is used to make yokes for oxen. A blue or black dye is obtained from the leaves. The seeds and leaves possess insecticidal property.



Ficus virens Aiton.

Synonym : *Ficus glabella* Blume

Common Name: White Fig

Family : Moraceae



White Fig is fairly common strangler fig in India and Sri Lanka. It is a large, deciduous, fast-growing, densely foliaceous tree with an immense spreading canopy that displays wonderful changing tints when it renews its foliage in spring. It has long aerial roots like the banyan's but they tend to wrap themselves around the top of the trunk instead of dangling like prop-roots. It is seen frequently as an epiphyte.

FIELD IDENTIFICATION

F. virens is identified in the field by its smooth, greenish-grey bark with flakes off in irregular patches and milky latex oozing out when blazed; membranous, triplinerved ovate leaves with long petiole, shortly acuminate apex and truncate base; and white syconia (figs) with a pinkish blush in axillary pair.



SEASONALITY

The tree becomes leafless for a short period during winter months and the coppery white or pink new leaves appear in late January or February. Figs are formed from February-June and ripen during August-September.



DISTRIBUTION

The species is distributed in many parts of India, Sri Lanka, China and Malay Peninsula. It is grown on road sides and other places for its ornamental importance in many tropical countries of the world.

UTILITY

The leaves make excellent fodder, particularly for elephants. Its qualities of being a quick grower and providing ample shade make the white fig an excellent avenue tree. The decoction of the bark is used as gargle and wash for ulcers. Fruits are edible. Both wood and bark are suitable for paper pulp.



Ficus elastica Roxb. ex Hornem.

Synonym : *Ficus karet* (Miq.) King.

Common Name: Indian Rubber Tree, Assam Rubber

Family : Moraceae

Planted by the country's representative - Mr. Francois Nadweyama



Indian Rubber Tree is a large evergreen strangler fig with long thin aerial roots. Its compact crown with large glossy dark-green leaves and bright-red leaf-buds attributes make it suitable for indoor planting.

FIELD IDENTIFICATION

F. elastica can be identified in the field by its high-buttressed trunk with smooth, grey bark; large, glossy, coriaceous leaves with deciduous pink stipules; and presence of ovoid-oblong syconia (figs) in the axils of the fallen leaves which become greenish yellow when ripe.

SEASONALITY

The shining fresh green new leaves appear at the end of the cold months. The figs ripen during the rainy season.



DISTRIBUTION

Indian Rubber Tree is native to of the outer Himalayas from Nepal eastwards to Assam, Meghalaya and upper Myanmar. It is now planted in almost all tropical parts of the world and also grown as house plant in containers.

UTILITY

This species was the source of India rubber in the past and erasers were made from the milky juice of this tree. Now, the source of natural rubber is *Hevea brasiliensis* (Euphorbiaceae). The wood is used as fuel.





CHAD



Callistemon polandii F.M. Bailey.

Synonym : *Melaleuca polandii* (F.M.Bailey) Craven.

Common Name: Gold-tipped Bottlebrush

Family : Myrtaceae

Gold-tipped Bottlebrush was named after the Rev. Poland. It is a small, hardy, adaptable tree or large shrub, with drooping branches, reaching a height of 5-6 m. With its dense and compact canopy having silvery pink new foliage and nice deep-red brush-like flowers displaying the exposing yellow anthers make this species very pleasing in the landscaping panorama. Needless to say that it is an excellent tree for attracting birds from the noisy lorikeets to the tiny honey-eaters.

FIELD IDENTIFICATION

C. polandii is identified by its thick, coriaceous, lanceolate leaves; spikes with crowded flowers appearing like bottle brush; dark red filaments with yellow anthers; and cup-shaped, woody, brownish fruits, dehiscing on the top.

SEASONALITY

This slow-growing evergreen tree produces flowers in almost each branch during February-April. Clusters of light-purple new leaves appear at intervals.

DISTRIBUTION

C. polandii is native of Queensland, Australia. It occurs along the strip of coast between Rockhampton and Townsville.



UTILITY

Gold-tipped Bottlebrush is preferred for planting in gardens and parks because of its attractive colour of new leaves and flowers and its adaptability to come in wide-ranging edaphic conditions. The tree is useful as a hedge, windbreak or screening plant attracting small birds to the garden. The fibrous papery bark of the trees is also useful for attaching orchids and bromeliads to add another dimension to the planting scheme.



Ficus benjamina L.

Synonym : *Ficus comosa* Roxb.

Common Name: Java Fig Tree, Weeping Fig

Family : Moraceae

Weeping Fig is a large, handsome evergreen tree (in its moist natural habitat) with dense, round, spreading crown of gracefully drooping branchlets. The thick, glossy evergreen foliage generously clothe the long branches. The prolific fruiting with small globose orange to deep red figs all over the canopy adorns the tree and enhances the soft look of this handsome tree. Birds and squirrels chatter in summer competing for its fruits. Three separate varieties of the species and numerous ornamental hybrids are distinguished, causing much confusion.



FIELD IDENTIFICATION

F. benjamina is distinguished by its dark-green, densely foliaceous canopy with numerous spreading and drooping branches; grey, smooth bark; ovate-elliptic, small leaves with many parallel secondary veins and abruptly acuminate tip; and yellow-orange to red syconia (figs) in pair.

SEASONALITY

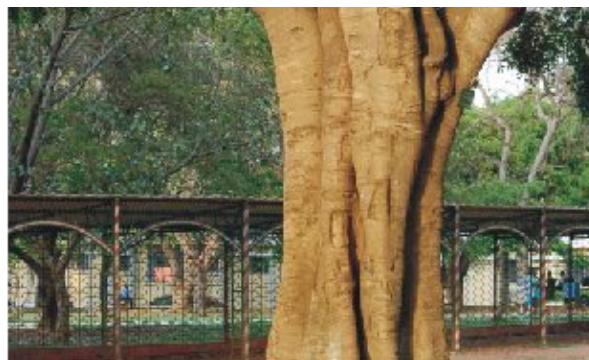
The Java Fig tree is an evergreen species. The main crop of fig appear in early summer and a second crop of figs ripens in August.

DISTRIBUTION

The Java Fig tree is indigenous to the Eastern Himalaya, Assam and Andamans in India, Chittagong in Bangladesh, Myanmar, Malaysia and China. Now, it is grown in most of the tropical countries as a commercial ornamental tree.

UTILITY

The dense, rounded canopy and gracefully drooping branches of Weeping Fig made it quite popular as a landscape tree. It is also grown as a house plant in containers. Wood is suitable for manufacturing of packing cases, match boxes etc. The decoction of leaves, mixed with oil, is applied to promote healing of ulcers.





CHINA



49

Terminalia catappa L.

Synonym : *Terminalia badamia* DC.

Common Name: Indian almond tree

Family : Combretaceae



The Indian almond tree has a characteristic pagoda-shaped crown with horizontally spreading branches in whorls from the main stem. As the tree gets older, the crown becomes flattened and spreads like vase-shape. This is one of the few tropical trees changing the leaf colour to reddish-purple before falling off. The fruits are almond-shaped and green, turning brown to purple when ripe. The fibrous shell surrounds an edible nut.

FIELD IDENTIFICATION

T. catappa is identified by its pyramidal canopy with whorled horizontal branches; glossy, dark-green, coriaceous, large obovate leaves with rounded or cuneate base; crowding of leaves in rosette at the apices of branchlets; small white flowers in slender axillary spikes – few in tip are females with the rest males; ellipsoid fruit with two distinct ridges covering the nut-like seed with fibrous and fleshy red coloured rind.

SEASONALITY

Leaves are shed during November–December and new leaves arise in February. Flowers appear during March–May. Fruits ripen from August to October.

DISTRIBUTION

T. catappa is seen on rocky or sandy coasts of the Indo-Pacific Oceans. The ability to float in water retaining its viability for a very long period makes the seed dispersed to long distance.

UTILITY

The Indian almond tree is a highly ornamental tree, much planted in avenues, households and gardens. The wood is rather light and often used for making boxes. The seed within the fruit is edible when fully ripe, tasting almost like almond. The fruit is astringent to the bowels and is used to treat biliousness and bronchitis. The leaves act as sudorific and are applied to relieve rheumatic joint pain. The juice of the young leaves is used to cure skin diseases and for the treatment of headache and colic. The bark extract is said to be a remedy for dysentery and bilious fever.



Artocarpus heterophyllus Lam.

Synonym : *Artocarpus maximus* Blanco.

Common Name : Jack Tree

Family : Moraceae



Jack tree is one of the popular, edible fruit-bearing, handsome evergreen trees with a short, thick bole and dense round crown of dark-green foliage. The gigantic, lumpy, barrel- or pear-shaped fruits arising directly from the main stem presents a curious spectacle. The tree is planted in the avenues, house premises and also cultivated for its delicious fruits – the largest edible fruit in the world. The leaves are considered auspicious in Hindu religion and are used along with mango leaves to decorate the sacred pot or '*Kalasam*' while performing '*puja*'.

FIELD IDENTIFICATION

A. heterophyllus is conspicuous in the field by its grey-brown bark with large warts; convolute bud at the tip of the branchlets; coriaceous, elliptic, glossy green leaves; oozing milky latex when injured; and large cylindrical, obovate greenish fruits with sharply pointed tubercles, hanging from the main branches or main trunk.

SEASONALITY

The flowers appear in cold season and fruits ripen in summer. Young trees bear only male flowers on smaller branches.

DISTRIBUTION

Jack Tree is native to the humid climate of Western and Eastern Ghats of India and adapted to moist conditions.

UTILITY

The Jack fruits are rich in sugar and seeds have high carbohydrate and protein contents. Raw fruits are eaten as vegetables or preserved as pickles. A strong yellow dye obtained by boiling the saw dust from the tree is used to dye the robes of Buddhist monks. The leaves are used as fodder. The wood is also used for making door and window panels. Latex extracted from the tree is used to cure night blindness; mixed with vinegar, it is applied to glandular swellings and abscesses to promote suppuration. The young leaves are reportedly useful for treating certain skin diseases. A paste of root is applied to treat ulcers and wounds.



Handroanthus impetiginosus (Mart. ex DC.) Mattos.

Synonym : *Tabebuia avellanedae* Lorentz ex Griseb.

Common Name: Pink Trumpet Tree

Family : Bignoniaceae



Pink Trumpet tree is a small to medium-sized ornamental tree with a light canopy and beautiful pink trumpet-shaped blossoms appearing when the branches are bare. The pink trumpet flowers have a white throat with yellow stripes and blooms in large clusters in the spring just before the new foliage emerges. As a young tree, it may not bloom but when it does, it is often spectacular. The genus name comes from a combination of 'Handro', for a 20th century Brazilian botanist Oswaldo Handro and 'anthos' from Latin for flower. It is used extensively in landscaping, avenues and planting in parks and gardens.

FIELD IDENTIFICATION

H. impetiginosus can be identified by its grey fissured bark; palmately compound leaf with 5 broad, ovate-elliptic, coriaceous, tomentose leaflets; lavender-rose or mauve pale-purple trumpet-shaped flowers in clusters at the end of the branches; and narrow, dehiscent flattened capsules with winged seeds.

SEASONALITY

Pink Trumpet tree becomes deciduous in November-December and numerous clusters of flowers appear in February-April followed by emergence of new leaves.

DISTRIBUTION

This species is distributed in Paraguay, North Mexico to Argentina. Due to its attractive flowers, it has been introduced in many tropical countries.

UTILITY

Pink trumpet tree is planted in gardens, parks and avenues for its beautiful lavender-rose coloured trumpet-shaped blossoms. The wood is of a pleasant yellowish colour, barely knotted and very tough and heavy. It is rich in tannins and therefore very resistant to weather and sun. It is used traditionally for infectious diseases of bacterial, protozoal, fungal and viral origin, to enhance the immune system, and as an anti-inflammatory agent.





CONGO

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Schleichera oleosa (Lour.) Oken.

Synonym : *Pistacia oleosa* Lour.

Common Name: Ceylon Oak, Lac Tree

Family : Sapindaceae



Ceylon Oak is a handsome looking tree with a broad, shady crown on a short, fluted and gnarled trunk with smooth, grey bark found scattered in mixed deciduous forests. It splatters with bright scarlet colour when its new leaves emerge during late spring. The inconspicuous flowers and fruit are easily overlooked.

FIELD IDENTIFICATION

S. oleosa can be located easily in forest during summer months by its bright-red or parrot-green juvenile emerging leaves; grey bark with exfoliating small, irregular plates; pinnately compound leaves with three pairs of coriaceous leaflet, terminal pair being the largest; small, dull-yellow coloured flowers in spikes; and smooth, rounded fruits with a pointed tip.

SEASONALITY

The tree becomes leafless for a short period during winter months. Flowers appear with new red leaves in February-March and the fruits ripen in July-August.

DISTRIBUTION

The species is distributed in Sri Lanka, Myanmar and Java and in lower hills of Himalayas, Central and South India.



UTILITY

The reddish-brown timber of the Ceylon Oak is one of the hardest and heaviest of Indian woods. It is suitable for construction, cabinet, beams, posts and rafters, making tool handles, bullock carts and ploughs. The leaves of Ceylon Oak are host to lac insect (*Laccifer lacca*). The fruit's aril is edible. The leaves are used as an excellent fodder for cattle. The yellowish-brown seed oil is used for cooking, lubricating and burning of lamps. It is also used externally to treat acne, rheumatism, and to relieve body-ache. The oil is a stimulating agent for the scalp, both for cleansing and promoting hair growth. The bark is astringent and antipyretic; it is used to relieve itching, back pain, inflammations and ulcers.



Callistemon citrinus (Curt.) Skeeb.

Synonym : *Metrosideros citrina* Curtis.

Common Name: Bottle brush

Family : Myrtaceae



The Bottle brush tree is a graceful, evergreen willowy with slender drooping branchlets which attains a height of 8-10 meters. It attracted the attention of the gardeners because of its drooping flowery spikes possessing number of crowded bright scarlet flowers having blackish anthers, stiff linear leaves with a greyish-silver tinge and small cup-shaped woody capsules.

FIELD IDENTIFICATION

C. citrinus is spotted in any landscape easily by its slender, drooping branches; greyish-brown bark with vertical ridges and furrows; linear-lanceolate, coriaceous leaves with reddish tinge and lemon smell at the young stage (hence the species name); bright red flowers crowded on sub-cylindrical spikes having apical leafy shoot; and ovoid, truncated fruits.

SEASONALITY

The leaves are shed in January. New leaves appear in February-March. Flowers appear in February-March and fruits ripen in July-August.

DISTRIBUTION

This is a native of Queensland and New South Wales of Australia.

UTILITY

Bottlebrush is planted in gardens and parks for its beautiful scarlet-red flowers. The leaves yield a pleasant-smelling essential oil. The timber of bottlebrush is reputedly tough and strong and used mostly for tool handles and small objects. The oil from the seeds is reported to be anthelmintic.



Calliandra haematocephala Hassk.

Synonym : *Calliandra inaequilatera* Rusby.

Common Name: Red Powder Puff Tree

Family : Mimosoideae



Calliandra comes from two Greek words '*kallos*' meaning beauty and '*andros*' meaning a man – thus indicating a 'beautiful male' or 'beautiful stamens'. This large multiple-trunked, low-branching evergreen shrub or small tree of 4-6 meters tall with silky leaves which open copper-pink but mature to dark green and profuse fragrant bloom of big pinkish puffs of 5-7 cm across with deep-red or white silky stamens make it very popular for the landscapers. Those bright red fuzzy "flowers" are actually made up of stamens. Powder puffs cover the tree nearly all year, making this a stunning accent in the home. Nectar feeding birds, bees and butterflies are frequent visitors to these flowers.

FIELD IDENTIFICATION

C. haematocephala is conspicuous in the garden by its blackish-brown bark; bipinnate compound leaves with 5-10 pairs of glossy green leaflets; raspberry-like flower buds opening to hemispherical, red powder-puff flower-heads with masses of scarlet stamens; and erect, flat, explosive dehiscent pods of dull brown colour with 5-6 brown oblong seeds.

SEASONALITY

Powder Puff tree grows very fast, flowers and fruits in the first year itself and appear round the year.

DISTRIBUTION

Powder-puff is a native to Central America, from Mexico to Panama.

UTILITY

This plant is useful as fire wood, paper pulp and forage crop and for soil stabilization. It is an attractive plant bearing red, powder-puff like flowers for long duration. This is planted as hedge and recommended for buffer strips around parking lots or for median strip plantings in the highways.



Albizia lebeck (L.) Benth.

Synonym : *Albizia latifolia* B. Boivin.

Common Name: Indian Siris, Siris Tree

Family : Leguminosae-Mimosoideae

Planted by the country's representative - Mr. Loukou(Abidjan)

Indian Siris is a commonly noticed tree with straight bole and thin, spreading crown. It bears fragrant 'powder puff' flowers with long, greenish-yellow stamens and is festooned for many months with straw-coloured pods that clatter noisily in the slightest breeze. The fragrant flowers attract lot of bees.

FIELD IDENTIFICATION

A. lebeck is distinguished by its brownish-grey rough bark; bipinnate compound leaf with 2-4 pairs of pinnae and a large oblong gland about the middle of the petiole; large, white, puffy flowers with very long greenish stamens; and the characteristic straw-coloured, flat, pods remaining on the tree for a very long time.



UTILITY

The reddish-brown timber of the Ceylon Oak is one of the hardest and heaviest of Indian woods. It is suitable for construction, cabinet, beams, posts and rafters, making tool handles, bullock carts and ploughs. The leaves of Ceylon Oak are host to lac insect (*Laccifer lacca*). The fruit's aril is edible. The leaves are used as an excellent fodder for cattle. The yellowish-brown seed oil is used for cooking, lubricating and burning of lamps. It is also used externally to treat acne, rheumatism, and to relieve body-ache. The oil is a stimulating agent for the scalp, both for cleansing and promoting hair growth. The bark is astringent and antipyretic; it is used to relieve itching, back pain, inflammations and ulcers.

SEASONALITY

The tree flowers early in April and fruits during October-November. The fruits remain on the tree throughout winter.

DISTRIBUTION

Indian Siris is a native of Australia, Bangladesh, India, Nepal, Pakistan, Indonesia, Malaysia, Myanmar, and Thailand.



Albizia chinensis (Osbeck) Merr.

Synonym : *Albizia stipulata* B.Boivin

Common Name: Stipulate Albizia, The Sau Tree

Family : Leguminosae-Mimosoideae

Planted by the country's representative - Mr. Michael Zmaflovic



Stipulate Albizia is a large, deciduous, fast-growing, handsome-looking tree with white flowers having pink filaments. It attains huge size with an expanding, umbrella-like crown. The genus was named after Filippo del Albizzi, a Florentine nobleman. It differs from all other Albizias by the presence of large foliaceous stipule at the base of the petiole of the young compound leaf.

FIELD IDENTIFICATION

A. stipulata is characterized by an uniformly spreading crown supported by a long, straight bole; grey or dark-brown bark with many horizontal wrinkles; bipinnate compound leaf with two very prominent, caduceus, foliaceous stipules at the base; many small greenish-white flower heads on a drooping panicle; and a light-brown, flat, 8-10 seeded legume.

SEASONALITY

Flowering in this species occurs between September and June; legumes attain full size in September and ripen during December-March.

DISTRIBUTION

Stipulate Albizia occurs naturally in India, Myanmar, Thailand, Java, and China. It is a native of mixed deciduous forest of humid tropics and subtropics. It occurs in secondary forest, along river banks.



UTILITY

A. stipulata has got tremendous potential for introduction as an avenue tree because of its rapid growth. It is being used as a shade tree in coffee and tea plantations. The cattle relish the leaf as fodder. The wood has been reputed for making marine boats. It is also used for box making, especially tea boxes, packing cases and for matches. A gum of low quality is extracted from the bark. The bark contains triterpenes which have spermicidal activity.



Filicium decipiens (Wt. & Arn.) Thwaites

Synonym : *Filicium elongatum* Radlk. ex Taub.

Common Name : Fern Leaf Tree, Japanese Fern Tree

Family : Sapindaceae

Planted by the country's representative - Mr. Hector Conde Almeida



Fern Leaf Tree is an attractive evergreen tree of compact growth with a dense crown of unusual foliage having prominent wings all along of the main leaf stock. The branches are covered with scale. The bark is deep grey or blackish, peels off in small pieces. The flowers are small and white in long axillary panicles. It is neither Japanese in origin nor a fern - though the long thin leaves growing out from stems have a fern-like look. Its bushy growth creates dense shade and the natural round-top of the canopy makes it an ideal handsome evergreen short-statured tree in the gardens or road meridians. Fern Leaf Tree is slow-growing and long-lived tree, but attains a good shape in course of time.

FIELD IDENTIFICATION

F. decipiens is distinguished by its characteristic dome-shaped canopy; dark-green, shining, compound leaves with broadly winged rachis; and purple coloured 1-seeded, ovoid fruits.

SEASONALITY

The flowers appear in January and February and fruits ripen April-May.

DISTRIBUTION

The Fern Leaf Tree is a native to moist forests of SW India, Sri Lanka and eastern tropical Africa.

UTILITY

Fern Leaf Tree is an excellent tree for Parks for its fern-like, evergreen, compact foliage. This is a popular tree with attractive appearance and foliage in tropical gardens. It can be grown in pots several years. The timber of Fern Tree is hard and strong; suitable for building purpose and making furniture.



Calophyllum inophyllum L.

Synonym : *Calophyllum blumei* Wight.

Common Name: Alexandrian Laurel, Beach Mahogany

Family : Clusiaceae



Alexandrian Laurel is neither a laurel nor a native of Alexandria, Egypt. The scientific name *Calophyllum* comes from the Greek words for "beautiful leaf". It is a middle-sized evergreen tree, with a broad-spreading crown and large gnarled horizontal branches. The attractive fragrant white flowers in bunches brings in lot of bees for foraging. It is the sacred tree of several temples across South India. Its flower is one of the eight flowers offered to Lord Shiva during the early morning 'puja'. It is a useful tree for coastal shelterbelts because it grows well despite the wind, salt spray, drought and occasional flooding.

FIELD IDENTIFICATION

C. inophyllum is identified by its smooth grey bark with deep fissures alternating with flat ridges; coriaceous dark-green, shining leaves; cluster of scented flowers in lax, axillary racemes having snow-white petals with a thick centre of yellow stamens; and cluster of ball-shaped, light-green fruits.

SEASONALITY

The flowers appear in June-July and early winter. Fruits are usually borne twice a year, i.e., April-June and October-December.

DISTRIBUTION

Alexandrian Laurel is native of East Africa, through India and SE Asia to the Philippines and Taiwan. The habitat is primarily coastal and adjacent to lowland forests.

UTILITY

The scented, dark-green 'dillo' oil extracted from seed kernels is used in soap manufacture and as an illuminant and lubricant. This oil is also used to cure rheumatism, ulcers and skin diseases. The astringent bark is used in Ayurveda to heal ulcers and inflammation of the eye, and in preparation for improving the complexion. The oil obtained by steeping the greenish-yellow gum (latex from the cut branches) mixed with strips of the bark and leaves is a useful remedy for indolent ulcers and in treatment of sore eyes and menstrual headaches. The juice of the bark can arrest external bleeding. The leaves are used as a fish poison. The wood is very hard and used to make boats. It is an excellent wood for cabinet. Tannin is extracted from the bark.

Cordia sebestena L.

Synonym : *Cordia laevis* Jacq.

Common Name: Sebestan Plum, Aloe-wood

Family : Cordiaceae



Sebestan Plum is a small tree which grows up to 6-7 metres tall with a dense, rounded canopy. The plant, on account of its large tubular scarlet flowers, is one of the most beautiful of the trees of West Indian region. The splendid flowers are followed by pear-shaped fruits which have a pleasant fragrance but are not particularly tasty.

FIELD IDENTIFICATION

C. sebestena is characterized by its rough grey bark having longitudinal furrows; ovate leaves with cordate or rounded base and sandpaper-like coarse texture; orange or reddish-orange flowers in a terminal congested cyme; and ovoid, 1-seeded fruit which become white or yellow when ripe.

SEASONALITY

Sebestan Plum is fairly quick growing small tree which flowers almost throughout the year and abundantly during cold months. New leaves are produced in February.

DISTRIBUTION

C. sebestena occurs on all islands groupings within Bahamian Archipelago, the Caribbean region and New World tropical and sub-tropical regions. It is now grown everywhere as an ornamental tree due to its attractive scarlet red flowers.

UTILITY

Sebestan Plum is grown in many tropical countries because of its attractive flowers and hardiness to grow in hot weather. The wood can also be used for small furniture because of its wavy grain. It is used in Bahamas for gastrointestinal problems like decreasing indigestion and increasing appetite. The plant attracts lot of butterflies on account of copious nectar from flowers.







Mangifera indica L.

Synonym : *Mangifera austroyunnanensis* Hu

Common Name: Mango Tree

Family : Anacardiaceae



With its distinctive shape and succulent golden-yellow flesh, the mango is perhaps India's best known fruit and rightly called as King of fruits. Fortunately for Indians, the mango tree fruits in the hot summer months. As mangoes are highly effective against sunstroke, a variety of summer drinks are made from pulped mango pulp throughout India to lower body temperature and assuage thirst during summer. Strained with black salt, molasses and cumin, raw mango juice becomes '*panna*'. Strongly scented, and with a slightly astringent taste in their sweetness, mangoes are rich in Vitamin C.

FIELD IDENTIFICATION

M. indica can be identified easily by its rough grey-brown bark; pink or purple juvenile leaves which are slender with tapering apex; tiny, strongly-scented, greenish-yellow flowers in huge, branched clusters; and smooth-skinned, pulpy fruits which turns into golden-yellow from green when ripened.

SEASONALITY

In India, the tree flowers profusely in bunch from November to March. Fruits ripen in 4-5 months after flowering.

DISTRIBUTION

This species is believed to have been originated from Indo-Myanmar region. It has been extensively planted for its delicious fruits.

UTILITY

The wood is extensively used for low-cost furniture, window frames, heavy packing cases, match splints and agricultural implements. It is suitable for manufacture of commercial plywood. Ripe mango fruit is recommended as a laxative and diuretic. It is a restorative tonic and is useful for treating heat-strokes. The rind of the fruit is astringent and is used for treating stomach debility. Dried flowers are used for curing dysentery. The astringent seed kernel is used to treat diarrhoea and the juice can be inhaled to stop nasal bleeding. The leaves are chewed to give tone to the gums. The ash of the burnt leaves is a household remedy for burns and scalds.



Barringtonia asiatica (L.) Kurz

Synonym : *Barringtonia butonica* J.R.Forst. & G.Forst.

Common Name: Queen of seashore, Box Fruit

Family : Lecythidaceae



Queen of seashore is an evergreen medium-size tree that grows as a mangrove associate on sandy and rocky shores in the Malaysian and Andaman mangroves. It is also known as Box Fruit due the distinct box-shaped fruits it produces. The bronze-coloured juvenile foliage with pink veins turning into greenish-yellow makes it distinct in mangrove coastline. Its large pinkish-white flower puffballs hanging on a pendulous spike give off a sickly sweet smell to attract bats and moths which pollinate the flowers at night. The fruit is dispersed in the same way as a coconut - by ocean current - and is extremely water-resistant and buoyant. The fruit can survive on the sea for long distances and for periods of up to two years. All parts of the tree are poisonous.

FIELD IDENTIFICATION

B. asiatica is characterized by its large, thick, coriaceous, glossy, obovate leaves having narrow base, rounded apex and pronounced veins; large solitary white flowers appearing on a long spike from the centre of the leaf rosette; profusion of long white filaments tipped with pink; and brownish, egg-shaped turbinate fruits.

SEASONALITY

The tree grows fairly fast and large flowers appear in January-March.

DISTRIBUTION

B. asiatica is native to mangrove habitats on the tropical coasts and islands of Asia and Pacific islands. It is grown along streets for decorative and shade purposes.

UTILITY

A colourful shady tree, Queen of seashore is commonly planted as a roadside tree in Singapore. All parts of the tree contain 'saponin', a poison. The seeds and bark are pounded, pulped or grated to release the poison and it is used to stupefy fish in freshwater streams. Seeds are used to get rid of intestinal worms and the heated leaves are used to treat stomach-ache and rheumatism. The floating fruits are sometimes used as fishing floats.



Schefflera actinophylla (Endl.) Harms

Synonym : *Brassaia singaporensis* Ridl.

Common Name: Queensland Umbrella Tree, Octopus Tree

Family : Araliaceae

Planted by the country's representative - Mr. Hansrik Suart



Queensland Umbrella Tree is a small to medium-sized, multi-trunked tree, often epiphytic in natural habitat. It is usually multi-trunked, and the flowers develop at the top of the tree. The rich lustrous dark-green leaves with their bold tropical flare and lacquered appearance and the long radiating racemes at the top of the canopy are the plant's primary assets. The small, dull-red flowers generate copious nectar, attracting honey-feeding birds which also spread the seeds. The genus name honours J.C. Scheffler, while the specific epithet refers either to the radial arrangement of the leaves around the stems.

FIELD IDENTIFICATION

S. actinophylla can be identified by its umbrella-like canopy; prominent leaf scars on the stem; green bark turning to grey-brown palmately compound leaves with a group of seven dark-green, leathery leaflets; wine-red flowers in dense, sessile clusters on several long spikes; and purple-red fruits.

SEASONALITY

Flowering begins in early summer and extends for several months.

DISTRIBUTION

It is native to tropical rainforests and gallery forests in eastern and northern Australia, New Guinea and Java.

UTILITY

It is grown as an ornamental plant in shady areas of gardens and parks for its umbrella like canopy with dark green foliage and wine-red flowers in long spikes.





DJIBOUTI



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Ficus virens Aiton.

Synonym : *Ficus glabella* Blume

Common Name: White Fig

Family : Moraceae



White Fig is fairly common strangler fig in India and Sri Lanka. It is a large, deciduous, fast-growing, densely foliaceous tree with an immense spreading canopy that displays wonderful changing tints when it renews its foliage in spring. It has long aerial roots like the banyan's but they tend to wrap themselves around the top of the trunk instead of dangling like prop-roots. It is seen frequently as an epiphyte.

FIELD IDENTIFICATION

F. virens is identified in the field by its smooth, greenish-grey bark with flakes off in irregular patches and milky latex oozing out when blazed; membranous, triplinerved ovate leaves with long petiole, shortly acuminate apex and truncate base; and white syconia (figs) with a pinkish blush in axillary pair.

SEASONALITY

The tree becomes leafless for a short period during winter months and the coppery white or pink new leaves appear in late January or February. Figs are formed from February-June and ripen during August-September.

DISTRIBUTION

The species is distributed in many parts of India, Sri Lanka, China and Malay Peninsula. It is grown on road sides and other places for its ornamental importance in many tropical countries of the world.

UTILITY

The leaves make excellent fodder, particularly for elephants. Its qualities of being a quick grower and providing ample shade make the white fig an excellent avenue tree. The decoction of the bark is used as gargle and wash for ulcers. Fruits are edible. Both wood and bark are suitable for paper pulp.



Ficus lyrata Warb.

Common Name: Fiddle-leaf Fig Tree

Family : Moraceae



Fiddle-leaf Fig tree is prominent in any of the gardens for its broad, glossy, violin-shaped, thick leathery leaves with prominent white veins on the undersurface. It is a tall tree; initially growing linear without branches, always facing the threat of broken because of wind pressure, but subsequently develops into an oblong, rounded, closely compact canopy with profuse leaves.

FIELD IDENTIFICATION

F. lyrata is distinguished by its large, strongly coriaceous, thick, panduriform leaves with cordate-auriculate base and distinct, strong nerves; and large, roundish, stalkless, green syconia (figs) in pairs with white dots.

SEASONALITY

It starts its life as an epiphyte high in the crown of another tree; it then sends roots down to the ground which envelop the trunk of the host tree and slowly strangle it. It can also grow as a free-standing tree on its own, growing up to 12–15 m tall. The tree bears syconia (figs) at the upper part of the branches in April-September.

DISTRIBUTION

Fiddle-leaf Fig trees are found in tropics, where they thrive in very warm and wet conditions. It is native to western Africa, from Cameroon west to Sierra Leone.

UTILITY

Fiddle-leaf Fig tree is often planted in gardens for its showy crown and deep waxy green foliage with attractive yellow-green or white strong veins.





Mimusops elengi L.

Synonym : *Mimusops javensis* Burck

Common Name: Indian Medlar, Bakul

Family : Sapotaceae

Planted by the country's representative - Mr. Vocosta Valegzuqayoune Aris



SEASONALITY

The flowering in this evergreen species occurs during summer months and fruit ripening takes place during December-February.

DISTRIBUTION

Indian Medlar is a native of Western Peninsula and Andamans in India and Myanmar.

UTILITY

It is a common tree for planting inside temple, educational institutions, avenues, park and garden. The fruit is edible. An essential oil is obtained from the flowers is mixed with sandalwood oil and used in the preparation of perfume. The astringent pulp of the ripe fruit is used to treat chronic dysentery. Flower, fruit and bark are all astringent, and they are used as elements in an Ayurvedic lotion for wounds and ulcers. The seeds are purgative; made into a paste with oil or 'ghee' (clarified butter) and used in suppositories to relieve chronic constipation, particularly in children. A snuff made from the dried flowers induces copious defluxion from the nose and relieves headaches and pains. The bark is astringent, febrifuge and tonic; it is believed to increase fertility in women. The powdered bark is made into gargle for infected mouth and gums

Indian Medlar is a middle-sized evergreen tree, branching low and forming a dense, rounded crown of numerous spreading branches. The fragrance exuded by the night-opening tiny flowers of this towering tree is overpowering and lingers in the air. Due to its dome-shaped crown and its creamy white star-shaped flowers, the Indian Medlar is often planted in the Indian gardens and Indians take much pleasure in coming out to collect the scented flowers of this tree strewn over their lawns in the morning. Indian Medlar is sacred to Hindus, Buddhists, and Jains. In Hindu tradition, it is sacred to Lord Shiva. The flowers are collected by devotees and offered at the temples and hence it is a common tree in Indian temples.

FIELD IDENTIFICATION

The distinguishing features of *M. elengi* are dark-grey scaly bark with deep fissures; exudation of milky juice when wounded; glossy green leaves with wavy margin; white fragrant small flowers in clusters; and berries which are green at first and subsequently turning orange-yellow when ripe.



Dalbergia latifolia Roxb.

Synonym : *Dalbergia emarginata* Roxb.

Common Name: Indian Rosewood, Malabar Rosewood

Family : Leguminosae - Faboideae



Rosewood has been in the honour list of the Swedish brothers Nils and Carl Dalberg. The generic name in Latin means broad-leaved. Indian Rosewood is predominantly a single-stemmed large deciduous to evergreen tree having cylindrical, fairly straight bole with rounded crown of lush green foliage. Rosewood timber is stronger and much harder than Teak and ranks among the finest woods for furniture and cabinet work. The honey of Rosewood is dark amber and strong flavoured. It is known to be a nitrogen fixing tree like other legumes. The species is planted as a shade tree in coffee plantations.



FIELD IDENTIFICATION

D. latifolia is identified by thin grey bark, exfoliating in fibrous longitudinal flakes; compound odd-pinnate leaf having 5-7 alternate, unequal-sized, orbicular leaflets with a notch at the tip; creamy white flowers fascicled on branched panicles which arise on old wood below the upper leaves; and oblong-lanceolate brown pods with rounded apex.

SEASONALITY

In drier natural habitats, Rosewood has a partial or complete leaf-shed by the end of January and fresh foliage appears in April-May. Flowering begins by August-September. Immediately, green legumes appear and mature during December-January. They are normally wind-dispersed.

DISTRIBUTION

Indian rosewood is native to India and Indonesia, but is also grown in Nigeria, Kenya, Vietnam, the Philippines, and the other parts of tropical Africa and Asia.

UTILITY

Indian Rosewood has exceptional dimensional stability, and retains its shape very well after seasoning. The heartwood is rated as very durable, and is generally highly resistant to attack by termites. It is used to make premium-grade furniture, cabinets, valuable decorative articles, interior and exterior joinery, panelling and veneers. Leaves are used as fodder. Medicines are made from the tannins in the bark for diarrhoea, worms, indigestion, and leprosy. These tannins also produce an appetizer.





EGYPT



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Pterospermum canescens Roxb.

Synonym : *Pterospermum suberifolium* (L.) Lam

Common Name: Small-leaved Muchkund

Family : Malvaceae



A moderate-sized, pretty tree with irregularly lobed leaves fluttering in the wind to expose the greyish-white undersurface makes this conspicuous in the forest. With its spectacular snow-white fragrant flowers and whitish velvety oblong woody capsules attracted the outdoor landscapist to introduce this species into the gardens and parks.

FIELD IDENTIFICATION

P. canescens is characterized by dense, fine, ferruginous or tawny stellate hairs all over the branchlets; distichous arrangement of leaves, obovate-oblong leaves with sub-equal rounded base and acuminate apex; mildly fragrant white flowers; and oblong-ovoid, white velvety capsules dehiscent with 5 valves releasing the winged seeds.

SEASONALITY

Flowering is observed in this species during March-May. Fruits appear during November-February.

DISTRIBUTION

This species is native to India and Sri Lanka.

UTILITY

The wood is hard and durable. Also used for firewood because of its high calorific value. A strong fibre is taken out from the bark. The flowers are anodyne; a paste with rice water and vinegar is used externally in migraine. The bark and flowers are charred and mixed with 'kamla powder' (from the fruits of *Mallotus philippensis*) and used in smallpox eruptions.



Pithecellobium dulce (Roxb.) Benth.

Synonym : *Mimosa dulcis* Roxb
 Common Name : **Monkey-pod tree, Manila Tamarind**
 Family : Leguminosae - Mimosoideae



Monkey-pod tree, a moderate-sized fast-growing spinous tree having a broad, spreading crown with irregular branches is commonly found on the tank bunds. It is one of the popular agro-forestry trees of South India which is often frequented by children for its delicious, reddish, spirally coiled fruits in summer months and cowherd boys for lopping its branches to goats for fodder.

FIELD IDENTIFICATION

P. dulce is distinguished by its grey, rough and furrowed bark; bipinnate compound leaves with two pairs of 2 kidney-shaped leaflets, and a gland at the tip of the petiole; small, white flower-heads with numerous thread-like stamens; tightly coiled, beaded pods becoming reddish brown on ripening; and whitish edible aril embedding shining black seeds.

SEASONALITY

P. dulce is an evergreen tree. Flowers appear during March-April and the pods ripen 2-3 months later.

DISTRIBUTION

Monkey-pod tree is native to dry regions of South America. It can grow on poor soils, and is a drought resistant species,

UTILITY

Ripened fruits are edible. The leaves and pods are an excellent animal fodder. The bark is used to dye fish nets a yellow colour. It is planted for reclamation of poor soil, as a shade tree, and it makes an excellent live fence and hedge. Flowers are visited by bees and yield good quality honey. The wood is hard, heavy and strong. It is used for agricultural implements, drums, crates and cheap furniture.

The seed juice is inhaled into the nostrils against chest congestion and pulverised seeds are ingested for internal ulcers. The leaves, when applied as a plaster, can allay pain of venereal sores. The root bark may be used to cure dysentery. The bark is used as a febrifuge.



Callistemon polandii F.M. Bailey

Synonym : *Melaleuca polandii* (F.M.Bailey) Craven

Common Name: Gold-tipped Bottlebrush

Family : Myrtaceae

Planted by the country's representative - Mr. Santiago Fransisco Engoned

Gold-tipped Bottlebrush was named after the Rev. Poland. It is a small, hardy, adaptable tree or large shrub, with drooping branches, reaching a height of 5-6 meters. With its dense and compact canopy having silvery pink new foliage and nice deep-red brush-like flowers displaying the exposing yellow anthers make this species very pleasing in the landscaping panorama. Needless to say that it is an excellent tree for attracting birds from the noisy lorikeets to the tiny honey-eaters.

FIELD IDENTIFICATION

C. polandii is identified by its thick, coriaceous, lanceolate leaves; spikes with crowded flowers appearing like bottle brush; dark red filaments with yellow anthers; and cup-shaped, woody, brownish fruits, dehiscent on the top.



SEASONALITY

This slow-growing evergreen tree produces flowers in almost each branch during February-April. Clusters of light purple new leaves appear at intervals.

DISTRIBUTION

C. polandii is native of Queensland, Australia. It occurs along the strip of coast between Rockhampton and Townsville.

UTILITY

Gold-tipped Bottlebrush is preferred for planting in gardens and parks because of its attractive colour of new leaves and flowers and its adaptability to come in wide-ranging edaphic conditions. The tree is useful as a hedge, windbreak or screening plant attracting small birds to the garden. The fibrous papery bark of the trees is also useful for attaching orchids and bromeliads to add another dimension to the planting scheme.



Dillenia indica L.

Synonym : *Dillenia elongata* Miq.

Common Name: Elephant Apple Tree

Family : Dilleniaceae



Elephant Apple tree is a handsome, near-evergreen tree with a dense canopy of large, sharp-toothed pointed leaves. Its large white fragrant flowers with yellow anthers and calyx-modified large fruits are striking. The fruits take the greenish-yellow colour when ripened. The flowers are visited by honey and carpenter bees. The tree is preferably planted in temples and gardens for its fragrance, dark-green foliage and attractive flowers. Elephant Apple is the common fruit that is an integral part of grandma's recipe in NE India. The sour-tasted fruits are edible - both raw and cooked.

FIELD IDENTIFICATION

D. indica is conspicuous along the forest stream by its reddish-grey smooth bark peeling off in small hard flakes; fascicle of leaves at the end of the branches with sharply serrate margin, rigid nerves and channeled petiole; large, solitary, white, fragrant flowers with yellow anthers; and large, globose fruits made up of overlapping thickened sepals.

SEASONALITY

The flowers are seen during June-July and fruits ripen in October-December.



DISTRIBUTION

D. indica is native to moist evergreen forests of Nepal, NE & SW India. It is grown in the gardens, particularly around the lakes,

UTILITY

Thickened sepals of the fruits are used for flavouring food or made into jams and jellies. Fruits have tonic properties and act as mild laxative. The juice of the fruit, mixed with sugar and water, is used as a cooling beverage in fevers and as a cough mixture. The jelly-like content inside the fruit is applied to scalp for curing dandruff and hair fall. The thickened sepals are traditionally used for stomach disorder. Bark is used for tannin and green leaves feed for 'tusser' silkworm.





ESTONIA



73

Simarouba amara Aubl.

Synonym : *Simarouba glauca* DC.

Common Name: Paradise Tree, Simarouba

Family : Simaroubaceae



The Paradise tree is an evergreen medium-sized multi-purpose tree of rainforest of Caribbean islands introduced in various parts of the world for reclamation of wasteland, production of biodiesel and medicinal use. Its spreading crown with shining green leaves and big clusters of dark-purple grape-like fruits hanging from the branches make the tree distinct in the field. The leaves and bark of Simarouba have a long history of use as a natural medicine in the tropics for cure of malaria, and amoebic dysentery by the tribes in the rainforests of South America and Caribbean. When France suffered a dysentery epidemic from 1718 to 1725, Simarouba bark was one of the few effective treatments which were imported from Guyana. Its great potential of biodiesel made Simarouba for introduction in various parts of India.

FIELD IDENTIFICATION

S. amara is identified by its grey smooth bark; thick, glossy, shining, dark-green compound leaves with 15-17 leaflets; cream-yellow flowers on long drooping panicles; and ovoid or oblong, pulpy fruits which turn into scarlet or dark purple when ripened.

SEASONALITY

The species is evergreen but produces a new set of leaves once a year. The flowers appear during February-March and fruits ripen during April-May.

DISTRIBUTION

S. amara is native to the rainforests and savannahs of South and Central America and Caribbean.

UTILITY

It is deployed for rehabilitation of waste lands and soil and moisture conservation programme due to its adaptability to come up successfully in a wide range of edaphic conditions and drought-resistance and non-browsable nature. The wood is used for making toys. The seed contains 60-75% edible oil. The bark tea was an effective treatment for amoebic dysentery, diarrhoea and malaria. The quassinoids (simaroubin) responsible for the anti-amoebic and antimalarial properties have also shown to possess active cancer-killing properties.





ETHIOPIA

74

Chukrasia tabularis var. *velutina* (M.Roem.) W.Theob.

Synonym : *Chukrasia nimmonii* Graham ex Wight

Common Name: Chickrassy, White Cedar.

Family : Meliaceae

Planted by the country's representative - Mr. Sileshi Getahun



Chickrassy is a large handsome fast-growing evergreen tree with a generous crown, attaining great height. This tree is very suitable to be introduced on the roadside because of its bright green foliage, fulvous red tender leaflets towards the tip of the long, compound leaves and wonderfully fragrant flowers. Freshly cut wood is fragrant.

FIELD IDENTIFICATION

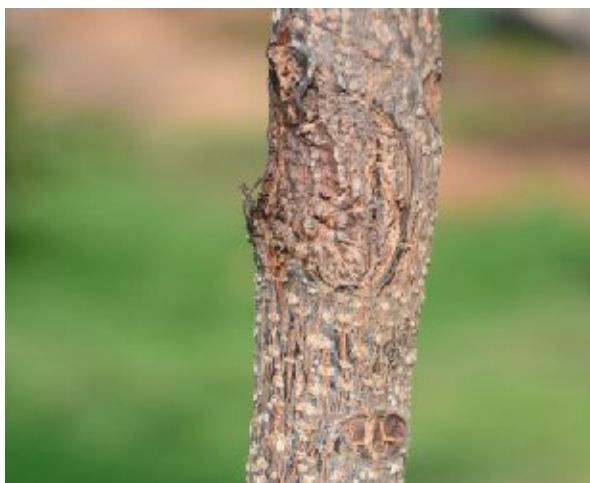
C. tabularis can be identified by its rusty-brown bark with vertical fissures, red-brown or pinkish blaze; large compound leaves with the leaflets asymmetrical at base; small, fragrant yellowish white flowers in loose clusters and a large, woody 5-valved capsule with lot of wind-dispersed winged seeds.

SEASONALITY

The flowers appear in April and fruits ripen in winter season.

DISTRIBUTION

Chickrassy is seen in rain forest and moist deciduous forest of India, southern China, SE Asia, Sri Lanka and Andamans.



UTILITY

The wood of Chickrassy is hard varying from reddish to yellowish brown with a satin lustre. The wood is prized for high-grade cabinet work, decorative panelling, interior joinery. It is also used for carving, toys and turnery. The wood peels well and gives exceedingly fine veneer. It is suitable for commercial and moisture proof plywood. The flowers contain a reddish yellow dye. Young leaves and bark contain tannin. The bark extract has powerful astringent properties and is used as a febrifuge and to treat diarrhoea.





EUROPEAN UNION



Mimusops elengi L.

Synonym : *Mimusops javensis* Burck

Common Name: Indian Medlar, Bakul

Family : Sapotaceae



Indian Medlar is a middle-sized evergreen tree, branching low and forming a dense, rounded crown of numerous spreading branches. The fragrance exuded by the night-opening tiny flowers of this towering tree is overpowering and lingers in the air. Due to its dome-shaped crown and its creamy white star-shaped flowers, the Indian Medlar is often planted in the Indian gardens and Indians take much pleasure in coming out to collect the scented flowers of this tree strewn over their lawns in the morning. Indian Medlar is sacred to Hindus, Buddhists, and Jains. In Hindu tradition, it is sacred to Lord Shiva. The flowers are collected by devotees and offered at the temples and hence it is a common tree in Indian temples.

FIELD IDENTIFICATION

The distinguishing features of *M. elengi* are dark-grey scaly bark with deep fissures; exudation of milky juice when wounded; glossy green leaves with wavy margin; white fragrant small flowers in clusters; and berries which are green at first and subsequently turning orange-yellow when ripe.

SEASONALITY

The flowering in this evergreen species occurs during summer months and fruit ripening takes place during December-February.

DISTRIBUTION

Indian Medlar is a native of Western Peninsula and Andamans in India and Myanmar.

UTILITY

It is a common tree for planting inside temple, educational institutions, avenues, park and garden. The fruit is edible. An essential oil is obtained from the flowers is mixed with sandalwood oil and used in the preparation of perfume. The astringent pulp of the ripe fruit is used to treat chronic dysentery. Flower, fruit and bark are all astringent, and they are used as elements in an Ayurvedic lotion for wounds and ulcers. The seeds are purgative; made into a paste with oil or 'ghee' (clarified butter) and used in suppositories to relieve chronic constipation, particularly in children. A snuff made from the dried flowers induces copious defluxion from the nose and relieves headaches and pains. The bark is astringent, febrifuge and tonic; it is believed to increase fertility in women. The powdered bark is made into gargle for infected mouth and gums.





FIJI

76

Mesua ferrea L.

Synonym : *Mesua nagassarium* (Burm. f.) Kosterm

Common Name: Ironwood Tree, Nagkesar

Family : Clusiaceae

Planted by the country's representative - Mr. Samualivereti Saumatur

Ironwood tree is an elegant, tall tree of moist forests with a regular, conical, bushy crown displaying its strikingly bright red and pink new leaves in dry summer season turning green with greyish-white underneath and large white night-opening flowers filling the ambience with soft fragrance makes this tree one of the best flowering trees of the tropics and sub-tropics. The generic name is in the honour of J. Mesue and the specific epithet is from Latin meaning 'belonging to iron', in reference to its famed and very hard, durable timber.

FIELD IDENTIFICATION

M. ferrea is conspicuous by its reddish to ash coloured bark oozing out yellow gum when injured; characteristic dichotomous branching with leaves having waxy-bluish-grey bloom beneath; scented flowers with 4 spreading white petals along with numerous yellow stamens; and globose, beaked, woody capsule dehiscing by 2 valves and supported by long persistent calyx.

SEASONALITY

Flowering occurs during dry season and flushes of pink leaves appear just after flowering at the start of rainy season. The flowers open for one day between 3-4 am and wither around sunset.

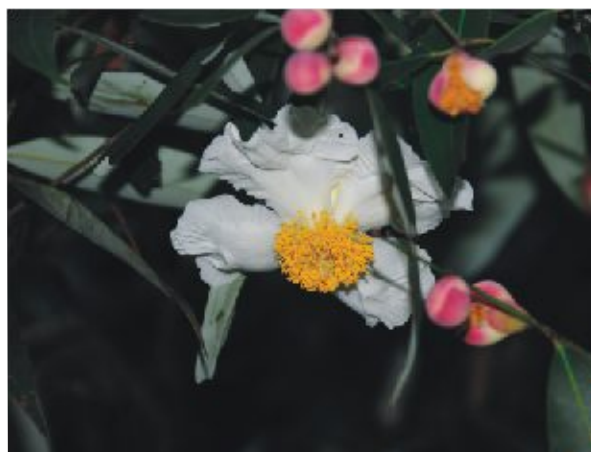


DISTRIBUTION

M. ferrea is a characteristic component of montane evergreen or semi-evergreen forest and often associated with Dipterocarps. It is a native species of India and SE Asian countries.

UTILITY

Nagkesar is a religious tree for Hindus planted mostly in temples. Being one of the heaviest, durable and termite-resistant woods, Ironwood is used for heavy construction purpose. Fresh flowers of this tree are used to treat bleeding piles and excessive bleeding during menses. The seed oil is used for treating itching and other skin eruptions, dandruff and against rheumatism. The flowers are used in perfumery and in dyeing.



Adonidia merrillii (Becc.) Becc.

Synonym : *Veitchia merrillii* (Becc.) H.E.Moore

Common Name: Manila Palm, Christmas Palm

Family : Arecaceae

Planted by the country's representative - Mr. Katonil Pohyack



The Christmas Palm Tree is world renowned for its beautiful red fruits which dangle from its arched fronds. The generic name *Adonidia* is derived from 'Adonis' meaning the handsome Sun God of the ancient Romans. It is commonly known as the "Christmas Palm" because its fruits become bright scarlet during December. This stocky, single-trunked palm with stiffly arched, six-foot long, bright green fronds is noted for winter-appearance of the very showy cluster of glossy bright red fruits which hang below the leaves at the base of the crown shaft. It is a little palm, growing up to 5 meter and resembles a dwarf variety of the Royal Palm (*Roystonea regia*).

UTILITY

The showy Christmas Palm is a compact beauty whose small stature makes it perfect for use in court-yards, atriums and other small scale plantings. The formal symmetry of Christmas palm is nicely showcased when it is grown in a container. In many parts of tropical countries, this palm has been introduced as an ornamental tree.

FIELD IDENTIFICATION

A. merrillii is conspicuous by slender, single, smooth grey stem having basal swelling and a short green shaft; compact crown of about a dozen long pinnate leaves; long branched inflorescence carrying numerous yellow to yellow-green flowers originating from the base of the crown; and showy bright red fruits.

SEASONALITY

Flowers generally occur in summer and green fruits are seen by late autumn. The fruits become bright red or orange red by late autumn, lingering to winter.

DISTRIBUTION

The Christmas Palm Tree is native to the Philippines and Sabbah and naturalized in the West Indies.



Muntingia calabura L.

Synonym : *Muntingia rosea* H.Karst.

Common Name: Singapore Cherry, Jamaican Cherry

Family : Tiliaceae

Planted by the country's representative - Mr. Poellabaver christin



Singapore Cherry is small but very fast-growing tree with spreading and nearly horizontal branches, introduced from tropical America. The horizontal drooping branches, numerous white flowers, resembling strawberry bloom, with yellow stamens and abundant shining yellow or reddish-brown berries made this species a common ornamental tree in many parts of tropical Asia. The berries are thin skinned and contain soft, juicy pulp with very sweet, musky somewhat fig-like flavor, filled with very minute seeds.



FIELD IDENTIFICATION

M. calabura is characterized by its grey and rough bark; linear-lanceolate leaves with grey undersurface, long acuminate apex, oblique base and serrate margin; solitary flowers with long stalk and spreading 5 white petals, 5 green sepals and many prominent yellow stamens; and small globose fruits which become red when ripe, resembling a cherry.

SEASONALITY

Flowering throughout the year and fruits of different maturity stages are seen for many months.

DISTRIBUTION

It is native to southern Mexico, the Caribbean, Central America, and western South America south to Peru and Bolivia.

UTILITY

Singapore Cherry Plant is planted in parks because of its umbrella-shaped canopy and red cherries. It also attracts birds, squirrels, bats and nocturnal animals that feast on the sweet juice of the fruit. Bark yields a cordage fiber. An infusion of the flower is valued as antispasmodic which relieves headache, first symptoms of cold and abdominal cramps. Fruits can be processed into jams and tarts. Leaves are used for making tea. Timber is reddish-brown, durable and light weight and can be used for carpentry.





GABON



79

Artocarpus altilis (Parkinson ex F.A. Zorn) Fosberg

Synonym : *Artocarpus incisus* (Thunb.) L.f.

Common Name: Breadfruit Tree

Family : Moraceae



The Breadfruit tree is a handsome fast-growing large tree having a clear trunk with buttress at base and many horizontal branches. The generic name *Artocarpus altilis* comes from the Greek words 'artos' (bread) and 'karpos' (fruit). The fruit is eaten and is commonly called Breadfruit. In the green stage, the fruit is hard and interior is white and starchy. When fully ripe, the fruit is somewhat soft and interior is yellow and sweetly fragrant.

FIELD IDENTIFICATION

A. altilis is conspicuous in the field by its strikingly large, glossy, pinnately incised, ovate leaves with a yellow petiole and veins; large, deciduous stipules enclosing the emerging new leaves and inflorescence; and large, oblong to globose or cylindrical, yellowish-green compound fruits (syncarp) with smooth to slightly spiny surface.

SEASONALITY

The species produces flowers and fruits from November to April.

DISTRIBUTION

A. altilis is native to New Guinea, and possibly Indonesia and the Philippines.

UTILITY

Breadfruit tree is grown in landscaping programme for its large leaves and showy appearance apart from growing the tree as a commercial fruit tree in the farm. Breadfruit is starchy; it is sliced after removal of the outer rind and baked or boiled for eating. To treat broken bones and sprains, the latex is massaged into the skin and is bandaged onto the spine to relieve sciatica. Leaves are relished by cattle. The bark yields fibre used for making rope, which can withstand prolonged contact with water.



Nyctanthes arbor-tristis L.

Synonym : *Nyctanthes tristis* Salisb.

Common Name: Night Jasmine, Coral Jasmine

Family : Oleaceae

Planted by the country's representative - Mr. Lamin jawara



Night Jasmine is called the Tree of Sorrow (*'arbor-tristis'* means sad tree) because the flowers lose their brightness during early morning and fall off. According to Hindu mythology, the tree was originated during the '*samudra manthan*' or churning of ocean. The petals are snowy white with dew drops sitting on them in the early morning and are used for worship in temple, mostly inside the Lord Krishna temples. Indian Muslims plant this shrub near their tombs (*'dargahs'*) so that they may be covered by fallen flowers in the morning. Night Jasmine is a well known tree in India and its neighboring countries as one of the most versatile medicinal plants. Buddhist monks used the dye from the flowers to dye their robes. It is popularly grown in Parks and Gardens for its fragrant night-blooming flowers which carpet the ground each morning in the rains.

FIELD IDENTIFICATION

N. arbor-tristis is identified by its quadrangular branches and flaky, pale grey bark; decussately opposite, greyish-green and scabrous leaves; white, fragrant flowers in a cluster at the tip of the branches with a brilliant orange tube; and flat, compressed, brown, heart-shaped fruits.

SEASONALITY

The species sheds its leaves at the end of winter months and the new leaves appear in summer. Flowering occurs during July-October and fruits ripen in April-June.

DISTRIBUTION

It is native to southern Asia, stretching across northern Pakistan and Nepal through Northern India to SE Thailand. It requires a secluded and semi-shade place to grow.

UTILITY

The tender leaves, rubbed with water and ginger, are useful for relief of intermittent fever and rheumatism. When the leaves are soaked in water and consumed twice a day, body and knee pain is reduced. The juice extracted from the leaves, when mixed with salt and honey and consumed, eliminates intestinal worms. The flowers are made into hair tonic and the seeds are used as a remedy for skin diseases. The powdered seeds are used as an application to relieve dandruff. The orange tubes of the flowers are used to make beautiful orange dye for silk and other fabrics. The bark is a source of tannin.



Syzygium jambos (L.) Alston

Synonym : *Jambosa jambos* (L.) Millsp.

Common Name: Rose Apple, Water Apple

Family : Myrtaceae

Planted by the country's representative - Mr. Ioseb Kartsivadze



Like many other fruits to which the word "apple" has been attached, the rose apple in no way resembles an apple, neither in the tree nor in its fruit. Rose Apple is a small, low-branching evergreen tree with lively red leaves when growing, but dark, glossy green on attaining full size. The edible fruit of Rose Apple has got a crisp, mealy, dry to juicy layer of yellowish flesh, sweet and resembling the scent of a rose in flavor. The seeds in the centre get loosened from the inner wall and rattle when the fruit is shaken.



FIELD IDENTIFICATION

S. jambos is identified by its rough greyish bark; opposite, narrow lanceolate, coriaceous leaves with attenuate base and acuminate apex; large creamy-white or greenish-white flowers with numerous stamens in a terminal cluster; and pear-shaped, scented, smooth fruits which become whitish or yellowish or sometimes pink-blushed when ripe.

SEASONALITY

The flowering of the species is seen in February-April and the ripening of fruits during May-July.

DISTRIBUTION

The species is indigenous to SE Asia, particularly Malaysia and Indonesia. However, it is grown for the fruits in many tropical countries including India.

UTILITY

The tree is grown in gardens more for its showy appearance and large flowers than for the fruits which is rose-scented. The fruit is made into jam or jelly with lemon juice added. It is also made into syrup for use as a sauce or to flavour cold drinks. The flowers are a rich source of nectar for honeybees and the honey is of amber color. The fruit is regarded as a tonic for the brain and liver. The bark is used as a remedy for asthma and bronchitis. The boiled extract from leaves is applied for eye troubles. The seeds are employed against diarrhoea, dysentery and catarrh.



Albizia lebeck (L.) Benth.

Synonym : *Albizia latifolia* B. Boivin.

Common Name: Indian Siris, Siris Tree

Family : Leguminosae-Mimosoideae

Indian Siris is a commonly noticed tree with straight bole and thin, spreading crown. It bears fragrant 'powder puff' flowers with long, greenish-yellow stamens and is festooned for many months with straw-coloured pods that clatter noisily in the slightest breeze. The fragrant flowers attract lot of bees.

FIELD IDENTIFICATION

A. lebeck is distinguished by its brownish-grey rough bark; bipinnate compound leaf with 2-4 pairs of pinnae and a large oblong gland about the middle of the petiole; large, white, puffy flowers with very long greenish stamens; and the characteristic straw-coloured, flat, pods remaining on the tree for a very long time.



SEASONALITY

The tree flowers early in April and fruits during October-November. The fruits remain on the tree throughout winter.

DISTRIBUTION

Indian Siris is a native of Australia, Bangladesh, India, Nepal, Pakistan, Indonesia, Malaysia, Myanmar, and Thailand.



UTILITY

The reddish-brown timber of the Ceylon Oak is one of the hardest and heaviest of Indian woods. It is suitable for construction, cabinet, beams, posts and rafters, making tool handles, bullock carts and ploughs. The leaves of Ceylon Oak are host to lac insect (*Laccifer lacca*). The fruit's aril is edible. The leaves are used as an excellent fodder for cattle. The yellowish-brown seed oil is used for cooking, lubricating and burning of lamps. It is also used externally to treat acne, rheumatism, and to relieve body-ache. The oil is a stimulating agent for the scalp, both for cleansing and promoting hair growth. The bark is astringent and antipyretic; it is used to relieve itching, back pain, inflammations and ulcers.





GHANA



83

Cochlospermum religiosum (L.) Alston

Synonym : *Cochlospermum balicum* Boerl.
Common Name : Yellow Silk Cotton, Buttercup Tree
Family : Bixaceae



Yellow Silk Cotton tree is a medium sized tree with erect trunk and open canopy, conspicuous on the hottest, driest and stoniest slope of the dry deciduous forests. When the hill slope looks completely devoid of slightest shade of greenery in the peak of summer months, this tree is prominent by its buttercup shaped bright yellow bloom followed by the tender pink leaves which turn into green as the leaves expand. The silky cotton extracted from the matured capsules induces sleep when stuffed into pillows. The generic name *Cochlospermum* means snail-like seeds and the species name *religiosum* is because the flowers are used as temple offerings.

FIELD IDENTIFICATION

C. religiosum is characterized by smooth, pale grey fibrous bark with deep longitudinal furrows; characteristic 7-lobed and 5-nerved leaves with long petiole; large golden yellow to bright yellow flowers with 5 spreading petals and a cluster of stamens in the center; and brownish-red, 5-valved capsules with black coloured seeds surrounded by white silky floss.

SEASONALITY

The leaves are shed in cold season. The flowers appear in the beginning of hot season, when the tree is still leafless. New leaves follow the flowering. The fruits ripen in the month of May- June.

DISTRIBUTION

The tree is a native of India, Burma and Thailand and Malaysia. It is grown in Sri Lanka and tropical countries of Asia.

UTILITY

The floss from the tree is used for stuffing pillows. The orange coloured juice from the bark yields a clear gum known as 'hog gum' which used for book binding. The gum is used in the treatment of cough. The dried leaves and flowers are used as stimulants. The wood is extremely soft, greyish-brown without any heartwood. The bark gives a useful cordage fiber. The seed yields bright red oil. Owing to the abundance of inflammable gum in the wood, the branches are used as torch-wood in the night by the local tribal.



Clusia rosea Jacq.

Synonym : *Clusia retusa* Poir.

Common Name: Autograph Tree, Pitch Apple

Family : Clusiaceae

The Autograph tree is wide-spreading, densely-foliated, compact, evergreen tree with a short trunk and broad, thickened, dark green, leathery leaves, reminiscent of Southern Magnolia leaves. The leathery leaves can be scratched by fingernails with the scratches remaining on the leaves until they fall – hence the name Autograph Tree. In summer, the showy, pink and white flowers appear at night followed by a fleshy, light green fruit turning black when ripe with bright red seeds embedded inside a black, resinous material. The seeds are very attractive to birds. The tree was introduced in India and other countries from tropical America. Generally the plant is propagated by cuttings.

FIELD IDENTIFICATION

C. rosea is conspicuous in the field by its thick leathery, dark green, spoon-shaped leaves without perceptible veins; solitary flowers with fleshy white petals blushed with pink surrounding the numerous yellow stamens; and globose, green capsules dehiscent from top exposing the red seeds.

SEASONALITY

Flowers in this species appear in January-March and fruits in May-September.

DISTRIBUTION

C. rosea is native to tropical America and Caribbean countries including Bahamas.

UTILITY

The Autograph tree is planted in gardens and houses as an ornamental for its glossy, coriaceous and evergreen foliage. It is recommended for buffer strips around parking lots and median strip plantings in the highway. It is often used as a screen due to its low spreading habit and is ideal for cooling building walls in the summer.





GRENADA



Mesua ferrea L.

Synonym : *Mesua nagassarium* (Burm. f.) Kosterm.

Common Name: Ironwood Tree, Nagkesar

Family : Clusiaceae

Planted by the country's representative - Mr. Spencer Thomas

Ironwood Tree is an elegant, tall tree of moist forests with a regular, conical, bushy crown displaying its strikingly bright red and pink new leaves in dry summer season turning green with greyish-white underneath and large white night-opening flowers filling the ambience with soft fragrance makes this tree one of the best flowering trees of the tropics and subtropics. The generic name is in the honour of J. Mesue and the specific epithet is from Latin meaning 'belonging to iron', in reference to its famed and very hard, durable timber.



FIELD IDENTIFICATION

M. ferrea is conspicuous by its reddish to ash coloured bark oozing out yellow gum when injured; characteristic dichotomous branching with leaves having waxy-bluish-grey bloom beneath; scented flowers with 4 spreading white petals along with numerous yellow stamens; and globose, beaked, woody capsule dehiscing by 2 valves and supported by long persistent calyx.

SEASONALITY

Flowering occurs during dry season and flushes of pink leaves appear just after flowering at the start of rainy season. The flowers open for one day between 3-4 am and wither around sunset.

DISTRIBUTION

M. ferrea is a characteristic component of montane evergreen or semi-evergreen forest and often associated with Dipterocarps. It is a native species of India and SE Asian countries.

UTILITY

Nagakesar is a religious tree for Hindus planted mostly in temples. Being one of the heaviest, durable and termite-resistant woods, Ironwood is used for heavy construction purpose. Fresh flowers of this tree are used to treat bleeding piles and excessive bleeding during menses. The seed oil is used for treating itching and other skin eruptions, dandruff and against rheumatism. The flowers are used in perfumery and in dyeing.



Chloroleucon tortum (Mart.) Pitter

Synonym : *Pithecellobium tortum* Mart.

Common Name: Brazilian Rain Tree

Family : Mimosoideae

Brazilian Rain Tree is a distinctive tropical beauty with its leaves folding in night or subdued light and night-opening sweetly scented white puff-like flowers. It is a spiny, deciduous tree with a wide-spreading open crown and can grow to 6-10 metres tall. The tree trunk begins fairly cylindrical as a young tree and then start to contort and twist as it matures. Thin layers of outer bark peel off revealing nearly white colour within, thus create a beautiful contrast between bark colours. The thorns on crooked stem and branches and the corkscrew-shaped seed-pods keep passersby from taking extreme liberties with their hands while she is engaged in performing her act of entertaining you with her superb fragrance and fancy footwork.

FIELD IDENTIFICATION

P. tortum can be identified by its greyish bark with exfoliating flakes; occasional spines on the stem; light-green, delicate compound leaves with 3 pairs of bipinnate leaves; typical touch-me-not flowers of white colour, grouped into a ball-like appearance; and spirally coiled curly fruit pods with small and pale yellow seeds.



SEASONALITY

The flowers appear during December-January and fruits mature during April-May.

DISTRIBUTION

P. tortum is native of South America, more specifically of Brazil. It is classified as 'Critically Endangered' in the IUCN Red List of Threatened species

UTILITY

It can be used as a pioneer tree for restoring woodland and, as a very ornamental tree that is valued especially for its decorative trunk, it is suitable for landscaping purposes in urban areas. Brazilian Rain tree is planted in gardens for its fragrant white flowers. The unique features of this species such as the twisted trunk, exfoliating bark, and delicate compound leaves made it an ideal candidate for Bonsai. The tree yields a very ornamental wood.



GUINEA



Azadirachta indica A. Juss.

Common Name: Neem, Margosa.

Family : Meliaceae

Planted by the country's representative - Mr. Alexandre Pucelouh

Possessed of many great virtues, this native Indian tree has been identified on five thousand years old seals excavated from the Indus Valley civilization. With its fine star-like flower, its oblong lemon-yellow coloured berries and its billowing cumulus crown, Neem is very much loved and admired in India because of its antiseptic and disinfectant properties. It is thought to be protective of women and children. The tree has been described as the 'heal all', 'divine tree', and 'village pharmacy' because of curing several common ailments. Neem is considered as an excellent shade tree. The tree is considered as a religious in some parts of India. The leaves and flowers of this plant are traditionally used to mark the New Year day (*Ugadi*) in Andhra Pradesh, India.



FIELD IDENTIFICATION

A. indica can be easily identified by its dark grey-brown bark with vertical furrows; imparipinnate compound leaf having 10-15 shining, obliquely falcate-lanceolate leaflets with acuminate apex, cuneate base and serrate margin; white scented flowers with spreading petals and stamens fused in a central column; and oblong green drupes turning lemon-yellow on ripening.



SEASONALITY

Leaves begin to fall in mid March; new pink leaves emerge quickly afterwards. Flowers in April and fruits follow quickly, ripening and dropping in July.

DISTRIBUTION

A. indica is native to India but has introduced in many parts of the world.

UTILITY

Neem is planted on roadside as an excellent shade tree. Most parts of the Neem tree are credited with medicinal value. The seeds yield yellow, bitter oil used to treat leprosy, skin diseases, ulcers and rheumatism. The neem oil is used for preparing cosmetics and it acts as an insect repellent. It is also used as a biopesticide. Bathing in an infusion of neem leaves clears away scars, and marks the ritual termination of an attack of chickenpox or measles. A paste of the leaf with turmeric powder is applied externally on smallpox pustules, itching soles, cracked heels and to heal boils and burns. Neem wood is handsome, hard and is used for high-class joinery, paneling and furniture.



Tabebuia dubia Seibert

Synonym : *Tabebuia crassifolia* Britton

Common Name: Cuban Pink Trumpet Tree

Family : Bignoniaceae



Cuban Pink Trumpet tree is a medium sized and attains upto 10 meters high. The evergreen bluish-green foliage, dense regular canopy and the rose-pink clouded trumpet-shaped flowers during hot months gives a spectacular look. This is a suitable species for planting on the road meridian, parks and gardens.

SEASONALITY

The tree flowers from March-June and the green fruits hang from the tree for a period of 2-3 months before dehiscing to release the winged seeds.

DISTRIBUTION

T. dubia is native to tropical America, Mexico to Venezuela and grown in gardens in many countries.

FIELD IDENTIFICATION

T. dubia is characterized by evergreen habit, straight stem, digitate leaf with 3-5 oblong-lanceolate leaves with greyish tinge; clusters of bell-shaped rose-pink flowers with short tube and large spreading crisped petals; and linear, dehiscent capsule having numerous flat winged seeds.

UTILITY

Cuban Pink Trumpet Tree is preferred in avenue and park because of its evergreen leaves and pale lilac-pink flowers. The wood is hard, light yellow to brownish in colour. It is used in furniture and cabinet work. The bark has diuretic and antipyretic properties.





GUYANA



Couroupita guianensis Aubl.

Synonym : *Couroupita antillana* Miers.

Common Name : **Cannonball Tree**

Family : **Lecythidaceae**

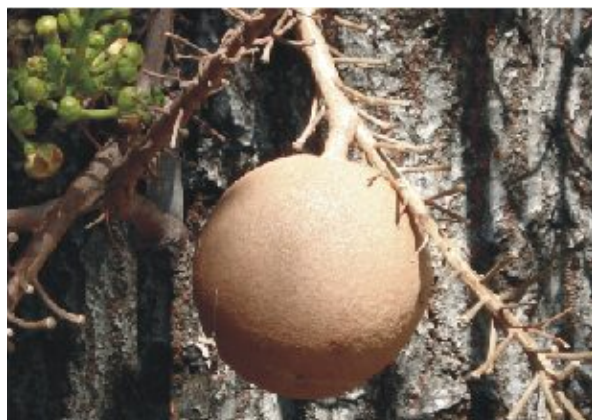
Planted by the country's representative - Mr. Inderjit Ramdas



Cannonball is a tall and uniform shaped tree with a straight and stout trunk with flowers coming out in long racemes directly from the main trunk – flowers yellow, reddish and pink with stunning fragrance. Cannonball flowers are considered of special significance in Buddhist culture in Sri Lanka. The ‘*Sivalingam*’ (symbol of Lord Shiva of Hindu religion) shape is visible at the center of the flower and snakehood-shaped stamens are the speciality of this flower. This rare flower, called ‘*Nagalingam*’ in South India, is offered in ‘*Shiva Pooja*’.

FIELD IDENTIFICATION

C. guianensis can be distinguished by clustering of the leaves at the ends of the branches; large scented waxy flowers on drooping racemes coming out from the main trunk (cauliflorae); stamens of the flowers curve over the ovary like the hood of the serpent; and large, globose, woody fruits looking like big rusty cannonballs hanging in clusters like balls on a string and having unpleasant-smelling green pulp inside.



SEASONALITY

Flower appears on main stem abundantly during summer. Fruits are formed in the rainy season. It takes about 10 years for the plants to flower.

DISTRIBUTION

C. guianensis is indigenous to the tropical rainforest of the Amazon basin. It is most frequently found in wet areas of lowland forests and river banks subjected to periodic flooding.

UTILITY

The tree is often grown in large gardens and public parks. The wood is soft and it has a bad smell. The pulp of the fruit is eaten by the ethnic communities, but smell of white pulp discourages most people. Fruit shells sometimes used as utensils. Traditionally leaves are used as antiseptic and toothache. The fruit pulp, bark and flowers are used for medicinal applications and possess antimicrobial- and fungal activity. Juice made from the leaves is used to cure skin diseases. The inside of the fruit can disinfect wounds. The volatile oils from the flowers show anti-bacterial and anti-fungal properties.





HAITI

90

Kavalama urens (Roxb) Raf.

Synonym : *Sterculia urens* L.

Common Name: Indian-tragacanth, Gum Karaya Tree

Family : Malvaceae (Old: Sterculiaceae)

Planted by the country's representative - Mrs. Martin Elisabeth Mathieu

Indian-tragacanth is a handsome deciduous tree of the dry forest with a short bole which is often gnarled and having a much expanded canopy. This tree is always conspicuous in hot season from its light coloured, almost white smooth bark. A dry exudates from *K. urens*, known as 'Gum Karaya', is one of the least soluble gums used for many industries such as petroleum and gas, textiles, paper and pulp, pharmaceuticals, medicine and several other products. Commercial tapping of 'Gum Karaya' is done by blazing, peeling or by making deep cut at the base of the tree trunk. However, the large scale unsustainable harvesting is done by using improper instruments has resulted in drastic reduction of the population of this money-making tree from the forest.

FIELD IDENTIFICATION

K. urens is conspicuous in the forest by its smooth and shining white bark with outer layer peeling off as thin flakes; palmately 5-lobed leaves with long petiole; greenish-yellow purple flowers with thick glandular pubescence; and 5-follicled, radiating, brownish-red fruits with many stinging hairs which becomes stiff bristles on maturity.

SEASONALITY

Trees shed leaves in December-January and remain leafless till May. New leaves appear from April-June. The flowers appear from December to March. The fruits ripen in April-May.

DISTRIBUTION

K. urens is native of deciduous forests of dry rocky hills and tablelands of tropical climate. It is indigenous to India and Sri Lanka.

UTILITY

"Gum Karaya" is the source of livelihood for the tribal communities since there is a large demand for the gum in the market. Black seeds are roasted and eaten. The gum is used for preparation of pharmaceutical and medicinal preparations like lozenges, emulsions, lotions, sprays and pastes. The root, pounded with black pepper, is taken with water to relieve fever. A paste of the young leaves is used externally to relieve chapped or cracked skin. The wood is chiefly used for building construction work, furniture, cabinet work, carts, tool handles etc. It is suitable for heavy packing cases and turnery. The bark yields a good fiber.





HONDURAS



Peltophorum pterocarpum (DC.) K. Heyne

Synonym : *Peltophorum roxburghii* (G. Don) Degener

Common Name: Copper-pod Tree

Family : Leguminosae-Caesalpinioideae

Planted by the country's representative - Mrs. Rafael Amaro Gaicia Diaz



Copper-pod is a deciduous umbrella-shaped tree with a dark, dense, spreading canopy with mildly fragrant orange-yellow flowers in large rusty panicles. The common name derives from the flat, coppery pods which remain on the tree for many months. The versatility of the species and graceful appearance with its canopy, flowers and fruit pods makes it an ideal candidate tree species for planting in general landscaping.

FIELD IDENTIFICATION

P. pterocarpum is conspicuous in the field by its smooth grey leaves, large bipinnate compound leaves; rust-coloured flower buds and golden-yellow flowers on large, brown tomentose, terminal panicles; and 2-4-seeded dark-red indehiscent pods, turning black.

SEASONALITY

Leaves are shed in February and new leaves appear in March. Flowers appear in two distinct flushes: in May-June, and again during September to October. Fruits remain on the tree for many months giving an ornamental appearance.

DISTRIBUTION

Origin from East Asia and Andamans but cultivated mainly on the avenues because of its dark-green, thick canopy and abundant crinkly yellow flowers.

UTILITY

The tree is widely planted as an ornamental tree throughout the country. The bark is high in tannins and is used for tanning leather and in preserving and dyeing fishing nets. The leaves make a nutritious fodder. Although not used traditionally in India, the bark is used medicinally in Java for treatment of dysentery and externally in lotions to relieve eye troubles, muscular pains and sores. The tree is a host of 'lac' insects. The light reddish-brown heartwood is moderately heavy and fine-textured but not in use in India.





HUNGARY

92

Soymida febrifuga (Roxb.) A. Juss.

Synonym : *Swietenia febrifuga* Roxb.

Common Name: Indian Redwood

Family : Meliaceae

Planted by the country's representative - Mr. Tothka Talin

Indian Redwood is a large, semi-deciduous tree of Indian origin, growing very tall and straight in the drier aspects of deciduous forests. The ashy-green tough leaves and the hanging dehiscent brown capsules in the summer are conspicuous in the field. Often it occupies very refractory site with skeletal soil. It is an indicator of black cotton soil growing along with Teak. *S. febrifuga* form a phytosociological association with *Pterocarpus santalinus* in the Redsanders forests of Seschachalam Hill Ranges of Andhra Pradesh, India.

FIELD IDENTIFICATION

S. febrifuga is identified in the forest by its thick, dark-brown or greyish-brown bark exfoliating in large plates; greyish-green, coriaceous compound leaves with 3-6 pairs of leaflets; copious greenish-white flowers in large terminal panicle cymes; and 5-valved, brown capsules having flat, creamish-coloured, winged seeds.

SEASONALITY

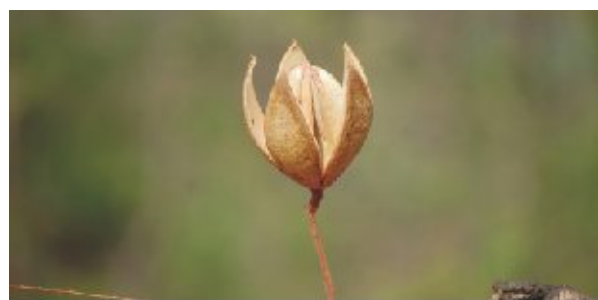
Flowers appear along with new foliage in February-May and capsules ripen during May-June.

DISTRIBUTION

S. febrifuga is a tree of dry to moist, mainly lowland areas of tropics. Its origin is from India.

UTILITY

The heartwood is bright when freshly cut, reddish-brown when dry. The wood is used for house building, as posts, rafters and beams. It compares well with Spanish Mahogany (*Swietenia macrophylla*) and makes high quality furniture. A beautiful clear gum is obtained from the bark in large pieces. A strong red fiber is obtained from the bark which is made into rope. The bark is very astringent and bitter and is used in the treatment of diarrhoea and dysentery and is also used as febrifuge instead of quinine by local people. Decoction of bark is used in gargles, vaginal infections and rheumatic swellings. Dried capsules are used to colour the fishing nets and can be used in dry-flower industry.





ICELAND



93

Terminalia bellirica (Gaertn.) Roxb.

Synonym : *Myrobalanus bellirica* Gaertn.

Common Name: Belleric Myrobolan, Bahera

Family : Combretaceae



Belleric Myrobolan is a handsome deciduous tree with a massive dome-shaped crown on a frequently buttressed straight bole with bluish or ashy-grey bark. The emerging copper-red young leaves along with flowering spikes with strong honey-like smell on a completely naked tree give a spectacular spectacle of the canopy when the trees are in a group. Belleric Myrobolan makes an excellent avenue tree for its ability to come up even on refractory sites and tolerate high temperature. However, some people consider it to be the abode of demons and avoid sitting in its shade.

FIELD IDENTIFICATION

T. bellirica can be recognized by its pale brown or ashy bark with yellowish blaze; broadly elliptic, smooth, leathery leaves with prominent veins; crowding of leaves towards the ends of the branchlets; greenish-yellow flowers on elongated spike with honey-like but nauseating smell; and grey-brown, flask shaped or ovoid fruits with a fine velvety down.

SEASONALITY

The tree sheds its leaves and remains completely leafless for 3 months from December to February. Flowers are seen along with the new leaves during March-May. Fruits remain for very long time on the tree and finally ripen during November-December.

DISTRIBUTION

T. bellirica is frequently found in monsoon forests, mixed deciduous forests. It is distributed in India and other SE Asian countries.

UTILITY

The yellowish-grey wood is hard but not durable. The tree yields a good-quality firewood and charcoal with a high calorific value. The leaves are highly valued and extensively used as fodder. The fruit pulp is also used for tanning and the seed oil for soap making. The fruit rind (pericarp) is astringent, laxative, anthelmintic, pungent, germicidal and antipyretic. The astringent fruit is one of the 3 ingredients of "*Ayurvedic triphala*", prescribed for coughs and several other ailments. When half ripe, the fruit is used as a purgative. Mixed with honey, the fruit pulp is used in an application to treat ophthalmia.

Ficus benghalensis L.

Common Name: The Banyan Tree

Family : Moraceae

Planted by the country's then Prime Minister - Dr. Manmohan Singh

There is in India a tree whose property it is to plant itself. It spreads out mighty arms to the earth, where in the space of a single year the arms took root and put forth anew.

Pliny (A.D. 70)

Called "The Many-Footed" after the aerial roots striding from its trunk to form a small forest, the canopy of a single banyan tree has been known to spread to an extensive area. Three thousand years before Pliny described it to the Roman Empire, this mighty shade tree struck awe in the Aryan nomads sweeping across India. Their priests likened the banyan's outpouring of vitality to a flow of light or to a liquid of immortality overflowing on to the earth from the goblets of the Gods themselves. Their chiefs drank ritually of its sap, believing it could increase their vitality.

The Banyan Tree is the National Tree of India. The name Banyan is said to have been given by the British when the British traders who followed King James's ambassador observed that the Indian merchants (baniyas) assemble for business under this great tree, considering a contract made in its shade to be binding. The extreme longevity of this tree seemed to support claims for its immortality. The Sanskrit name "*Vata*" means to surround or encompass derived from the tree's ability to put down aerial roots that cover an enormous area. This tree is also called as "*Kalpa Vriksha*", the wish-fulfilling tree of immortality.

The Banyan Tree is characterized by its aerial prop roots which reach the ground and thicken into "pillar roots" which can eventually become trunks in their own right and then often become free from the mother tree. The continually expanding system of new trunks, all connected through the branches can support an extensive crown. '*Thimmamma marrimanu*' was listed as the world's largest banyan tree in Guinness World Records in 1989, spreads over two hectares area. This old tree is situated in Anantapur district of Andhra Pradesh, India and is named after 'Thimmamma' who committed *sati* on her husband's funeral pyre.

FIELD IDENTIFICATION

F. benghalensis can easily be spotted in the field by its huge size with numerous aerial roots; greyish-white smooth bark exfoliating in irregular flakes; thick, coriaceous, ovate leaves with 5-7 basal veins, oozing milky latex when injured; and dull red synconia (figs) in pairs at the tip of twigs.

SEASONALITY

The figs ripen from April-July.

DISTRIBUTION

The Banyan is native to Indian sub-continent where it is widely distributed. However, it is luxuriantly grown in relatively moist forests. One can see very old trees of Banyan planted on the side of the Grand Trunk Roads in India by Mughal and Hindu Kings.

UTILITY

Banyan is a sacred tree and being worshipped at many places by Hindus as the male consort of the Peepal (*Ficus religiosa*). It is widely planted in land reclamation and avenue plantation programme. The figs are eaten by birds, bats, monkeys and squirrels. The leaves make good fodder.

In ancient times, it was discovered that an infusion of Banyan seeds did indeed make a tonic sufficiently invigorating to be widely regarded as an aphrodisiac. While its latex is applied to bruises and cracked soles to accelerate healing, an infusion of the bark is taken as tonic. The red tips of the young aerial roots are eaten to cure obstinate vomiting. Is it any wonder that this life-giving and self-preserving tree, capable as Pliny said, of planting itself, should have been revered by the earliest philosophers-sages of India! Or they should have enjoyed mankind to contemplate the Banyan's secret sacredness.





Hibiscus tiliaceus L.

Synonym : *Hibiscus boninensis* Nakai

Common Name: Beach Hibiscus, Coast Cotton Tree.

Family : Malvaceae



It is an evergreen tree with a short bole and round, dense canopy on tidal beaches and estuarine forests in India and many other parts of the world. This is the only species of *Hibiscus* that grows tree-sized. The change of colour of flower from lemon-yellow to pale-pink before falling is striking. This tree can grow in a wide range of soils, including inhospitable brackish swamps, waterlogged soils, and limestone. It stands up well to salty ocean winds. The near-sea level habitats that it mainly frequents are threatened by climate change and sea level rise and accompanying land inundation. One variegated variety has also been developed which is used in the landscaping.

FIELD IDENTIFICATION

H. tiliaceus can be identified by its dark greyish bark with longitudinal splits; broad leaves with 9-11 radiating nerves from the heart-shaped base; cup-shaped flowers having lemon-yellow colour petals with deep crimson throat inside; long staminal column studded with yellow anthers and a terminal, red-coloured 5-parted style; and light-brown, spherical dry capsules with black shiny seeds.

SEASONALITY

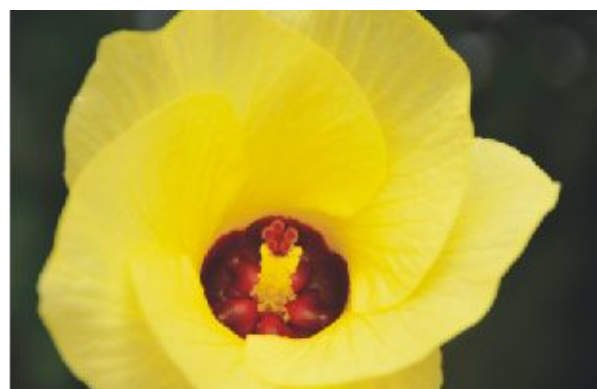
Beach Hibiscus produces flowers almost throughout the year, but abundantly in hot and cold months.

DISTRIBUTION

H. tiliaceus is indigenous throughout the tropics and sub-tropics. The tree is also found in tropical and sub-tropical America, Africa, Asia, Australia and Pacific islands.

UTILITY

The flowers, roots and bark are used in several herbal medicines. Root is a good febrifuge; powdered bark is emetic; and flowers cure ear ache. Hawaiians used the slimy sap of the inner bark as a laxative. The flowers are thought to aid in digestion. The plant is reputed to be a good forage plant for bees. The tree has been largely planted as avenues in coastal areas.



Dalbergia sissoo DC.

Synonym : *Amerimnon sissoo* (Roxb.) Kuntze

Common Name: Sissoo

Family : Leguminosae-Faboideae

Planted by the country's representative - Dr. Asqua Mohammed Fazel

Sissoo is a medium to large-sized deciduous tree from river banks in the sub-Himalayan tract, with stout branches supporting an extensive crown. In many places the tree appears crooked. Sissoo has been extensively



grown in forest and avenue plantation. The generic name *Dalbergia* honours the Swedish brothers Nils and Carl Dalberg.

FIELD IDENTIFICATION

D. sissoo can be identified by thick grey bark with longitudinal furrows, exfoliating in narrow strips; compound leaf of 3-5 leaflets with acuminate apex; pale white flowers in short axillary panicles; and numerous strap-shaped green legumes turning brown on maturity.

SEASONALITY

The flowering in Sissoo occurs in March-May and the pods ripen October-November. Mature pods remain attached to the tree for 7-8 months.

DISTRIBUTION

D. sissoo is a pioneering species in the riverine succession. It is indigenous to Afghanistan, Pakistan, India, Bhutan, Bangladesh and Malaysia.

UTILITY

The wood is used for making high-quality furniture, cabinets, decorative veneer, marine and aircraft grade plywood, ornamental turnery, carving, engraving, tool handles and sporting goods. Oil from the seeds is used for curing skin disease and powdered wood for leprosy and skin eruptions. The bark is used for treating bleeding piles. The decoction of the leaf is used to treat gonorrhoea. Young leaves and branches make a good fodder. Sissoo is planted to reclaim eroding sites and deployed as a windbreak. The flowers are visited by bees and produce a dark, strongly flavoured honey.



Ficus racemosa L.

Synonym : *Ficus glomerata* Roxb.

Common Name: Cluster Fig, Country Fig

Family : Moraceae

Planted by the country's representative - Dr. Fauzi R-Ali



Cluster Fig is an attractive semi-deciduous, medium-sized, lactiferous tree with a crooked trunk and a spreading crown. This fig tree is devoid of aerial roots unlike its many family members. The red, furry figs are distinctively arranged in short, branching clusters growing from the trunk or main branches. The tree is very sacred to Hindus and its wood is prescribed in ancient Hindu scriptures for the sacrificial fire. The tree is compared to Lord Vishnu (hence one of the names of Lord Vishnu in Hindu mythology is *Udumbara*). This species is widely distributed especially near water and often planted around temples and villages for shade and edible fruits.

FIELD IDENTIFICATION

F. racemosa is distinguished in the field by its white, pubescent young shoots; smooth, reddish-brown bark; elliptic leaves with rounded base; and sub-globose or pyriform figs of red colour in large clusters on leafless branches or on main trunk.

SEASONALITY

Leaves are shed by December and replenished by January and April. Figs are often produced in two crops, one in March-April and the second during the rains.

DISTRIBUTION

The Cluster Fig is indigenous in most parts of India, Pakistan, southern Myanmar, Sri Lanka, Bangladesh and even extends to south China, New Guinea and Queensland, Australia



UTILITY

Most parts of the tree are used in traditional healing. The astringent nature of the bark has been employed as a mouth wash in spongy gum and the decoction of the bark is used in treatment of various skin diseases and to heal deep wounds. It is also used as a poultice in inflammatory swellings / boils and regarded effective in the treatment of piles. The decoction of the leaf is used for washing septic wounds. The root extracts is used to treat diabetes and dysentery. The figs are carminative and a good remedy for visceral obstruction and used in curing diarrhoea and constipation. Leaves are an excellent fodder.





IRELAND

98

Ficus auriculata Lour.

Synonym : *Ficus pomifera* Wall. ex King

Common Name: Elephant Ear Fig Tree

Family : Moraceae

Planted by the country's representative - Mr. Fergal o Coighigh Kidwest Dublin

Elephant Ear Fig is an evergreen, low-branched, spreading small fig tree with very large rounded leaves, reminding one of elephant ears. The young leaves are intensely red, and turn green as the leaves mature. The complete absence of aerial roots and large cluster of pinkish

DISTRIBUTION

This plant has an extensive distribution range from east of India to Nepal, China, and Southeast Asia.



rounded figs arising out of the main trunk at the ground level and remaining for extended periods make it very impressive. The species is mostly found in sacred groves of India.

FIELD IDENTIFICATION

F. auriculata is very conspicuous by its short spreading stature; grey and warty bark; very large, broadly ovate to round leaves with shallow cordate base and irregular margin; triangular stipule; and fairly large, depressed-globose or pear-shaped figs with conspicuous white or rusty flakes arising in massive clusters from the basal part of the trunk.

SEASONALITY

Young glossy leaves tinged with pink or bronze become pale or yellowish green before turning green, are showy. The fruits ripen to greenish brown or purple colour from November-May.

UTILITY

In South-East Asia, the figs of this species are considered edible and quite delicious. The fruit is eaten fresh or added to pineapple juice for a refreshing drink. The latex from the stems is applied to cuts and wounds. The roasted fruit is used in the treatment of diarrhoea and dysentery. The 'Chakma' tribes of Bangladesh use its crushed bark as a relief for hydrophobia, a symptom of rabies. The bark yields a coarse fibre. The leaves are lopped for fodder.





ISRAEL



99

Bauhinia variegata L.

Synonym : *Bauhinia chinensis* (DC.) Vogel

Common Name: Orchid Tree, Variegated Bauhinia, Kachnar

Family : Leguminosae - Caesalpinioideae



Orchid Tree is a small ornamental tree of deciduous forest with a short trunk supporting many thin, ascending branches forming a modest crown with distinctly bilobed leaves, representing the imprint of a camel's foot. Orchid tree is stunningly beautiful when it is in bloom – and it blooms for several months. The flowers are reminiscent of showy orchids with five irregular, usually slightly overlapping petals in the shades of magenta, lavender, purplish-blue or even white. Because of its attractive flowers, it is cultivated in gardens and occasionally as avenue trees.

FIELD IDENTIFICATION

B. variegata is identified by its dark brown bark; thick, leathery bilobed leaf with the cleft running upto 2/3rd of its length; large flowers of purple and pink shade with 4 petals lighter in colour and 5th one larger and darker; and long, flat, hard, brown-coloured pods.

SEASONALITY

Leaves are shed in January and the tree becomes completely leafless. Flowering begins immediately after leaves are shed and fruits mature in May.

DISTRIBUTION

This tree is native to India and Myanmar, a component of dry deciduous forest. It is a popular flowering tree not only in India but in many tropical countries.

UTILITY

It is a common knowledge that a bark decoction of *Bauhinia* is a useful antiseptic wash for a variety of skin infections; an infusion of its flower with sugar is a gentle laxative; and a gargle made from its bark and pomegranate flowers is a remedy for sore throats. *Ayurveda* values this plant for its effectiveness against malarial fevers and as an antidote to snake poison. The leaves are a good fodder and are sometimes used to make 'beedis'. The flowers and especially the buds are eaten as a vegetable. The tree yields a gum that swells in water. Wood is used for making implements.





ITALY

100

Ailanthus excelsa Roxb.

Synonym : *Ailanthus wightii* Tiegh.

Common Name: Tree of heaven

Family : Simaroubaceae

Planted by the country's representative - Mr. Felice cappellet Cartohaccolli

Tree of Heaven is a large deciduous species of wasteland with expanded crown with large bluish-green, unpleasant-smelling compound leaf that is often arched. Mostly seen around villages and old forts and broken



ground, but seldom found in the forests. The generic name *Ailanthus* comes from 'ailanthos', meaning tree of heaven. The cobwebs tangling the massive flower panicles of the complete leafless tree in summer is quite prominent. Though its leaves are strongly pungent, the matured leaves are still browsed by goats, sheep and camels. This is really a plant of heaven because of its wide scope in the treatment of serious and chronic diseases.

FIELD IDENTIFICATION

A. excelsa is conspicuous by its light grey bark with conspicuous leaf scars; large pinnately compound leaves having 10-14 pairs of broadly lance-shaped, curved leaflets with unequal base and coarsely dented margin; drooping massive flower clusters from the leaf base; and flat, copper-red, 1-seeded fruit that is strongly veined and twisted at the base.



SEASONALITY

Tree of Heaven becomes completely leafless in winter and new leaves sprout in March-April. Flowers appear in January-February. Fruits ripen in April-May.

DISTRIBUTION

A. excelsa is native to India and Sri Lanka. It grows well in semi-arid and semi-moist regions and has been found suitable for planting in dry areas. Grows in a wide variety of soils, but thrives best in porous sandy loams. It avoids clayey soils with poor drainage and waterlogged areas.

UTILITY

The wood is yellowish-white, soft and light and is used for veneers, plywood, cabinet making, packing-cases, toys etc. The tree is grown as a shade and avenue tree and serves as shelterbelts along borders of fields. The leaves are rated as highly palatable and nutritious fodder for sheep and goats. The bark is used to treat asthma and bronchitis, and as an astringent for diarrhoea and dysentery. It is also used to treat indigestion and earache. The bark has antiseptic properties and is used as an infusion to promote healing of wounds. A tonic prepared from the bark and leaves is used in many parts of India to relieve debility following childbirth.





JAMAICA



Putranjiva roxburghii Wall.

Synonym : *Drypetes roxburghii* (Wall.) Hurus.

Common Name: Lucky Bean, Child-life Tree.

Family : Putranjivaceae



Lucky Bean is an evergreen tree with long drooping branchlets bearing dark glossy leaves. Though it lacks conspicuous flowers, one gets attracted for this tree by its grace and geometry of foliage and the greyish bark. This tree is sacred to Hindu women. The plant is reported to cause conception in sterile women, leading to the birth of a male child, hence the name "*putranjiva*". The tree has a reputation as a protection against the evil eye, especially in case of children. Rosaries made with the nuts of the fruit are used to keep children healthy and said to ward off evil spirits.

FIELD IDENTIFICATION

P. roxburghii is identified in the field by its corky, greyish bark studded with conspicuous white dots; thin-textured, dark-green glossy leaves; yellowish male flowers in dense clusters; and small single seeded fruit which are green to begin with but turn to grey on ripening.

SEASONALITY

Flowers in April and fruits from quickly (only on female trees) after the flowers but do not ripen till February of the following year.

DISTRIBUTION

Lucky Bean is native to moist evergreen forest of India and Sri Lanka, Cambodia, Laos, Myanmar, Thailand, Indonesia and Papua New Guinea. Usually, the tree grows on alluvial soil along the river, or in swamps or evergreen forests. *Putranjiva* makes one of the best clipped evergreen hedges on the road-medians.

UTILITY

The fruits, seeds and seed oil of Lucky Bean are considered purgative. In traditional medicine, the leaves and crushed stones of the fruits are used to treat colds, fevers and rheumatism. The bark is used as an external application to relieve sprains, bruises and rheumatic swellings. The oil from the seeds once used as a lamp fuel. The leaves make a good cattle fodder. The wood is grey and not particularly attractive but is moderately hard and close-grained. It finds some use locally in making tool handles, small articles.



Pongamia pinnata (L.) Pierre

Synonym : *Pongamia glabra* Vent.

Common Name: Pongam oil Tree, Indian Beech Tree

Family : Papilionoideae

Planted by the country's representative - Mr. Yutaka Gotanda

Pongam oil tree is a familiar evergreen tree with a short, crooked bole and broad, shady head with shining green leaves giving relief from the blazing sun of summer. The handsomely purple tender leaves and whitish-purple flower masses make this tree conspicuous. It has become a popular city tree in India because it is not nibbled by goats. The biodiesel potential of this species has led to extensive plantation of this species throughout India.

FIELD IDENTIFICATION

P. pinnata is easily identified by its greyish-brown bark with knots and swellings; compound leaf having 5-7 dark-green, shining leaflets; pinkish-white flowers in lax axillary racemes; and 1-seeded, woody, indehiscent, falcate pods.

SEASONALITY

Numerous clusters of flowers appear in summer during April-May. Fruits ripen in the spring of the year after flowering – usually April or May.



DISTRIBUTION

The tree is native to India and Sri Lanka. It grows wild along river and stream beds but due to its remarkable adaptability to various edaphic and climatic conditions, it has been deployed to reclaim the wastelands.



UTILITY

Pongam oil tree is a multi-purpose species. The species is planted on roadsides for shade and on field bunds for green manure. The seed yields yellowish-brown oil which is used as a lubricant, lamp oil, pesticide and in soap-making. There is recent interest in its potential as a bio-fuel.

This species is a veritable one-stop pharmacy credited with an astonishing range of remedies in folk medicine: oil pressed from seeds is used to cure skin diseases; the root and bark for piles, tumors, ulcers and diseases of the eye and skin; juice of the leaves is used to treat flatulence, diarrhoea and cough; a hot infusion of the leaves is used as a medicated bath to relieve rheumatic pains and for cleaning ulcers and sores.



JORDAN



Latania lontaroides (Gaertn.) H.E.Moore

Synonym : *Latania borbonica* Lam.

Common Name: Red Latan Palm

Family : Arecaceae

The Red Latan Palm is an attractive, medium to large, fan-shaped palm with rounded crown, restricted to a small strip of coastline on a single island in the southern Indian Ocean. This large striking fan palm is well known for its stunning reddish colour leaf stems. The palm has a single clean trunk lined with closely packed rings where the leaf sheaths have fallen away. Young palms have reddish leaves, petiole, leaf margins and veins; hence this palm's common name Red Latan Palm. The surface of each leaf is covered with a whitish, waxy deposit, providing a

SEASONALITY

In spring, it produces small yellow flowers followed by the fruits after 2-3 months.

DISTRIBUTION

Red Latan Palm is endemic to the Reunion Island of Indian Ocean where it occurs on the coast between Petite Ile and Saint-Philippe. However, it has been introduced as an ornamental palm in many countries due to its red-veined fan-type leaves.



UTILITY

Red Latan Palm being an attractive palm plant, is generally planted in landscaping. It makes an excellent pot plant and becomes very eye-catching once it matures. It has a very unique appearance with reddish colour on stems. The fruit is fleshy and edible.



silvery appearance to the palm. The Red Latan Palm is a relatively hardy species with a high salt tolerance. However it is threatened to habitat loss in the wild.

FIELD IDENTIFICATION

The palm is characterized by a straight deep-grey trunk lined with closely packed rings; large, palmate, fan-shaped, stiff leaves with long red petiole which become completely green as the leaf matures; cluster of tiny yellow flowers in 2 meter long inflorescence originating between leaves; and spherical, brownish-green, 1-seeded fleshy fruits.



Jacaranda mimosifolia D. Don

Synonym : *Jacaranda ovalifolia* R.Br.

Common Name: Mimosa-leaved Jacaranda

Family : Bignoniaceae

Planted by the country's representative - Mr. Lyudwils Shadevous



Mimosa-leaved Jacaranda is a delicate-leaved, deciduous ornamental tree with an open crown, malformed short bole and low-branching habit. It is widely planted for its showy clusters of striking purple-blue flowers that appear along with the pale-green finely cut new foliage. Pretoria, the administrative capital of South Africa is popularly and poetically known as Jacaranda because of the huge number of the trees which turn the city blue when they flower in the spring. The tree struggles in dry climate and also flowers sparingly.

FIELD IDENTIFICATION

Jacaranda can easily be spotted by pale-brown furrowed bark; finely cut fern-like feathery foliage; bell-shaped, blue-violet coloured flowers; and flat, roundish woody capusules which becomes brownish-black when matured.

SEASONALITY

Flowers appear in April-May usually on bare trees before leaf growth. It flowers profusely in high altitude and temperate climate. The fruits are seen by June which remains on the plant for several months

DISTRIBUTION

Jacaranda is native of Argentina and Brazil. However, it was introduced in various parts of world due to its feathery compound leaves and attractive flowers. It prefers highland areas but can also grow in some drier ones.

UTILITY

Jacaranda It is one of finest ornamental trees, widely grown in gardens. The tree creates pleasant open shade and is used effectively as a screen or windbreak. The wood is scented and streaked with purple and black. It is used in carpentry works. It provides useful firewood. An infusion of the bark is used for the treatment of ulcer. Bark and roots are used for syphilis. The relatively large flowers attract bees.





KENYA



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Pterocarpus santalinus L.f.

Synonym : *Lingoum santalinum* (L.f.) Kuntze

Common Name: Red Sanders

Family : Leguminosae-Faboideae



Red Sanders is a moderate-sized, deciduous tree with a long clean bole and a rather dense, round crown. Its distribution is confined to the Seshachalam Hill Ranges of Andhra Pradesh, India. Red Sanders wood is very highly priced in international market. It is observed that the Red Sanders grown on the shale type of subsoil, at an altitude of 750 meters above mean sea level and in semi-arid climatic conditions gives a distinctive wavy grain margin. In Hinduism, this wood has been traditionally used as a sacred wood.

FIELD IDENTIFICATION

P. santalinus is identified in the field by its blackish-brown bark which is deeply cleft into rectangular plates; leathery, shining, orbicular leaves with emarginate apex; bright-yellow flowers in axillary racemes; and winged roundish pods with a stipe.

SEASONALITY

The leaves are shed during January-March and the new leaves appear quickly. The flowers appear in April-May. Pods form rapidly afterwards, but do not ripen till next February or March.

DISTRIBUTION

P. santalinus is endemic to YSR Kadapa and Chittoor district of Andhra Pradesh, India. It is also planted in many locations of India and also planted by farmers in field bunds.

UTILITY

Red Sanders wood is red-coloured and beautifully streaked. As a timber, it is very hard and heavy, and hence is not used for cabinet work despite the attractive colour of wood. The heartwood is highly valued and exported to Japan for the manufacture of a special musical instrument called 'Shamisen'. The wood has been valued very high historically in China because of its use in elegant furniture of royal palace. The wood is exclusively used for carving into idols. The sapwood is not much of use and it deteriorates very fast. The wood dust is also used for dye and Ayurvedic formulations. The wood is also used in temples.



Brucea mollis Wall. ex Kurz

Synonym : *Brucea acuminata* H. L. Li

Common Name: Brucea Tree

Family : Simaroubaceae

Planted by the country's representative - Mr. Maniukaoti Timeau



Brucea is a short-height evergreen tree reaching up to a height of 10 meters, having a dense, spreading canopy on a short trunk. Its round, close canopy with dark-green glossy leaves provides soothing feeling in summer days.

FIELD IDENTIFICATION

B. mollis can be identified in the field by its dark-brown bark with shallow longitudinal fissures; densely white lenticellate branchlets; dark-green, glossy, broadly lanceolate leaves with acuminate tips; minute, light-yellow flowers on long hanging panicles with spoon-shaped petals; and small, ovoid, crimson-red fruits with foetid-smelling pulp.

SEASONALITY

Flowers appear during February-March and fruits ripen during May-June. The viability of the seeds is low.

DISTRIBUTION

Brucea is mainly distributed in the tropical Eastern Hemisphere and found in Vietnam, China, India, Bhutan, northern Australia, and other SE Asian countries.

UTILITY

Brucea is an excellent tree for avenues because of its dense canopy and dark-green evergreen foliage. The tree comes up very well in hot climate. Red fruits are eaten by birds and squirrels. Wood used for making match stick and toys. The root decoction is reported to have anti-malarial activity.





KUWAIT



Wrightia arborea (Dennst.) Mabb.

Synonym : *Wrightia tomentosa* Roem. & Schult.

Common Name: Woolly Dyeing Rosebay, Large Indrajav

Family : Apocynaceae



Woolly Dyeing Rosebay is a medium-sized deciduous tree, with opposite divaricate scabrous branches forming a rounded crown. The whole tree abounds with copious yellow-milky juice. It is commonly found in the dry and moist deciduous forest. The genus of *Wrightia* is named after a Scottish physician and botanist William Wright. It has been overexploited by the local artisans and craftsman for the valuable wood used for making toys.

FIELD IDENTIFICATION

The tree can be identified in the forest by its pale yellowish-grey corky bark; yellowish milky latex oozing out when blazed; opposite, elliptic-ovate, tomentose leaves with prominent nerves; unpleasant-smelling flowers having dull-yellow, left-overlapping petals and fleshy, orange coloured corona of scales at the center; and elongate, stout, cylindrical green fruit of 2 connate follicles with white lenticels.

SEASONALITY

The tree becomes leafless in January-February. Flowers appear from April to July and the fruits ripen in winter months releasing hairy seeds.

DISTRIBUTION

The tree is indigenous in India and found in most parts of the country. It is also seen in Bangladesh, Myanmar and Sri Lanka. Often it is seen along streams and on sandy or rocky soils.

UTILITY

The wood is lemon-white in colour, fine textured and lustrous and is used for carving, turnery and toy making. Wood is used for making comb, small boxes, cups, plates, pen holder, cheap grade pencils and wooden idols. Yellow juice of the tree is said to be used to stop bleeding. The bark is also used for snake bite, scorpion sting and menstrual and renal disorders. Leaves are administered with salt for relief from toothache. It yields yellow dye which on dilution with water imparts fast colour to cotton fabric.



Ficus lyrata Warb.

Common Name: Fiddle-leaf Fig Tree

Family : Moraceae

Planted by the country's representative - Mrs. Alymzhanbek Demirovskaya

Fiddle-leaf Fig tree is prominent in any of the gardens for its broad, glossy, violin-shaped, thick leathery leaves with prominent white veins on the undersurface. It is a tall tree; initially growing linear without branches, always facing the threat of broken because of wind pressure, but subsequently develops into an oblong, rounded, closely compact canopy with profuse leaves.



FIELD IDENTIFICATION

F. lyrata is distinguished by its large, strongly coriaceous, thick, panduriform leaves with cordate-auriculate base and distinct, conspicuous nerves; and large, roundish, stalkless green syconia (figs) in pairs with white dots.

SEASONALITY

It starts its life as an epiphyte high in the crown of another tree; it then sends roots down to the ground which envelop the trunk of the host tree and slowly strangle and cover it. It can also grow as a free-standing tree on its own, growing up to 12–15 meters tall. The tree bears syconia (figs) at the upper part of the branches in April-September.

DISTRIBUTION

Fiddle-leaf Fig trees are found in tropics, where they thrive in very warm and wet conditions. It is native to western Africa, from Cameroon west to Sierra Leone.

UTILITY

Fiddle-leaf Fig tree is often planted in gardens for its showy crown and deep waxy green foliage with attractive yellow-green or white conspicuous veins.





Mimusops elengi L.

Synonym : *Mimusops javensis* Burck

Common Name: Indian Medlar, Bakul

Family : Sapotaceae



Indian Medlar is a middle-sized evergreen tree, branching low and forming a dense, rounded crown of numerous spreading branches. The fragrance exuded by the night-opening tiny flowers of this towering tree is overpowering and lingers in the air. Due to its dome-shaped crown and its creamy white star-shaped flowers, the Indian Medlar is often planted in the Indian gardens and Indians take much pleasure in coming out to collect the scented flowers of this tree strewn over their lawns in the morning. Indian Medlar is sacred to Hindus, Buddhists, and Jains. In Hindu tradition, it is sacred to Lord Shiva. The flowers are collected by devotees and offered at the temples and hence it is a common tree in Indian temples.

FIELD IDENTIFICATION

The distinguishing features of *M. elengi* are dark-grey scaly bark with deep fissures; exudation of milky juice when wounded; glossy green leaves with wavy margin; white fragrant small flowers in clusters; and berries which are green at first and subsequently turning orange-yellow when ripe.

SEASONALITY

The flowering in this evergreen species occurs during summer months and fruit ripening takes place during December-February.

DISTRIBUTION

Indian Medlar is a native of Western Peninsula and Andamans in India and Myanmar.

UTILITY

The species is used in garden for its purple-mauve large flowers. The wood is pale red when freshly sawn, darkening to a handsome reddish-brown colour. It is used for making carts, boxes, panelling etc. The wood is valuable for the construction of boat. The leaves are considered purgative and diuretic. A decoction of the leaves, or the dried fruits, prepared like tea, is used to reduce blood sugar. The bark is considered purgative, stimulant and febrifuge; its decoction or infusion is used to relieve abdominal pain and diarrhoea. The seeds are said to be narcotic.

Magnolia grandiflora L.

Synonym : *Magnolia angustifolia* Millais

Common Name: Laurel Magnolia, Southern Magnolia

Family : Magnoliaceae



Laurel Magnolia is a dense, evergreen tree with pyramid-shaped canopy and dark green thick - almost plastic-like-leaves. Its spectacular, fragrant blossoms of large snow-white saucer-shaped flowers with velvet petals are breathtaking. The branchlets, buds, fruits and lower surface of the leaves are characteristically golden to rusty pubescent. *M. grandiflora* is commonly known as Southern Magnolia, a name derived from its range in the Southern United States. In most parts of India, it is grown only in well-maintained gardens.

FIELD IDENTIFICATION

M. grandiflora is striking in the field by its brownish-grey thin bark; waxy, shiny dark-green, coriaceous elliptic leaves having underside paler with rusty fuzz; silky white to rusty red terminal bud; very showy and fragrant flowers occurring singly with large white petals and cluster of purple stamens; and cone-like fruits (follicles) changing from green to brown colour with bright red exposed seeds.

SEASONALITY

The flowers appear during March-May.

DISTRIBUTION

It is native of SE United State and widely grown in gardens in many parts of the world including India for its very attractive fragrant flower.

UTILITY

Laurel Magnolia is recommended for buffer strips around parking lots or for median strip planting in highways, residential tree, but cannot withstand high temperature. The timber is hard and heavy, and has been used commercially to make furniture, pallets, and veneer. The wood is suitable for production of unbleached pulps. The bark is considered as stimulant, aromatic and tonic, it is reported to be used for malaria and rheumatism.



Millettia peguensis Ali

Synonym : *Millettia ovalifolia* Kurz.

Common Name: Moulmein Rosewood

Family : Leguminosae-Faboideae

Planted by the country's representative - Mrs. Lara Samaha



Moulmein Rosewood is a small deciduous ornamental tree with a somewhat irregular but dense crown. The exquisitely beautiful mauve coloured pea-like flowers in dense drooping bunches when the plant is leafless during peak summer is a treat to watch. The tree may be confused with *Pongamia pinnata* trees as the flowers appear the same. However, flowers of *P. pinnata* are more whitish compared to *M. peguensis*. Due to its attractive flowers and bright green foliage, the species is introduced as an ornamental plant in avenues and landscaping.

UTILITY

Due to its attractive purple-mauve flowers in drooping clusters and bright green foliage, Moulmein Rosewood is planted as an ornamental plant in avenues and landscaping. The timber is hard, heavy, and as good and useful as that of rosewood. An infusion of the root is reported to possess insect-repellant properties. The bark is used as a fish poison.

FIELD IDENTIFICATION

M. peguensis is conspicuous by its smooth yellowish-brown bark which peels off in small, thin, rectangular scales; imparipinnate compound leaves with 5-7 elliptic-ovate leaflets; pinkish-purple flowers with blood-red calyx in dense, drooping racemes; and oblong, elongated, 2-3-seeded legumes which are narrowed towards apex.

SEASONALITY

Leaves begin to fall from February and the tree becomes completely leafless. Flowers in March-April and fruits appear in July-August and remain for a long time.

DISTRIBUTION

Moulmein Rosewood is native to dry parts of Myanmar and Thailand.



Barringtonia acutangula (L.) Gaertn.

Synonym : *Barringtonia bicolor* Craib

Common Name: Indian Oak, Stream Barringtonia

Family : Lecythidaceae

Indian Oak is a middle-sized tree with evergreen foliage and generally grows in moist places like seasonal fresh water swamp forests. It occupies low lying areas along the edges of the streams, rivers and round the edges of fresh water swamps. It is called "itchy tree" after a caterpillar with irritant hairs that sometimes colonizes the undersides of the leaves. Red flowers being produced in long drooping racemes and evergreen leaves in rosette makes the tree more attractive.



FIELD IDENTIFICATION

B. acutangula is distinguished by its rugged, fissured dark grey bark and yellowish blaze; obovate, finely serrate leaves which are crowded at the tips of branchlets; softly fragrant, scarlet coloured flowers with many filiform, spreading, reddish stamens in many-flowered slender pendulous racemes; and obtusely quadrangular fibrous fruits.

SEASONALITY

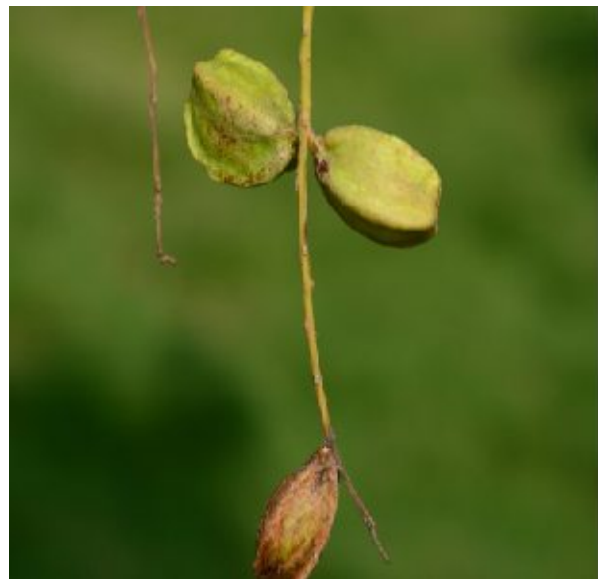
Flowering in June-July and the new leaves appear before flowering. Many fruits are borne on each spike after flowering is over. The fruits mature during December-January.

DISTRIBUTION

B. acutangula is native to coastal wetlands in southern Asia and northern Australasia, from Afghanistan east to the Philippines. It is extensively distributed in India.

UTILITY

Indian Oak is often cultivated in gardens for the beautiful, pendulous clusters of red flowers. Extremely useful for planting around the water bodies or in small islands inside the water bodies for the perching of birds. The wood is white and shining and used for house building, boat, cabinet making etc. Bark is rich in tannin. Juice of the leaves is given in diarrhoea and dysentery. Seeds, with juice of ginger, is used in inflammation of the nose and respiratory passages; applied to chest to relieve pain and cold; to the abdomen to relieve colic and flatulence. Seeds are also reported to relieve seminal weakness and gonorrhoea. The bark is given as astringent in diarrhoea and as a febrifuge in malaria.





LIBERIA



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Terminalia alata Heyne ex Roth.

Common Name: Indian Laurel, Black Murdah

Family : Combretaceae

The tall, straight clean bole exposing its greyish-black crocodile bark with spreading branches and heavy crown. Indian Laurel is one of the dominant tree species in almost all forest types of India. The tree is overwhelmed with exuberance of dull yellow flowers during rains filling the air with the typical smell and inviting swarms of honey bees to forage. Due to its commercial value, it is extensively planted in forest lands. The tree has got a special affinity for heavy BC soil where it forms gregarious pure patches.



FIELD IDENTIFICATION

T. alata is identified by its blackish-grey thick bark with deep longitudinal fissures and transverse cracks, flaking off in pieces; ovate-oblong, woolly, leathery leaves with a pair of stalked glands on the midrib near the base below; small, pale-yellow flowers in an axillary or terminal spikes; and 5-winged, ellipsoid, yellowish-green, large fruits which turn into reddish-brown on ripening.

SEASONALITY

The leaves fall in cold months, flowers appear in June-August and fruits ripen in February-April in the ensuing year and remain on the tree for a very long time.

DISTRIBUTION

Indian Laurel is native to southern and SE Asia in India, Nepal, Bangladesh, Myanmar, Laos, Cambodia and Vietnam. It is a prominent species of dry and moist deciduous forest throughout India.

UTILITY

Indian Laurel is a valuable and commercial timber. The wood is heavy and strong and is used for beams, joints, rafters, door and window frames in house building and underwater purposes. It is also used in the construction of carts, and furniture. Wood shows resistance to fire and is used in fire-proof buildings. The bark and especially the fruit yield pyrogallol and catechol to dye and tan leather. Decoction of bark is used against diarrhoea and as a local application for the relief of weak, indolent ulcers. Bark is the source of oxalic acid.





LIBYA

Albizia procera (Roxb.) Benth.

Synonym : *Acacia elata* Voigt

Common Name: White Siris

Family : Mimosoidae

Planted by the country's representative - Mr. Saleh M. Amnissi

White Siris is a medium-sized *Albizia* with distinct pale-yellow bark and a light open crown. The distinctly molasses-smelling fragrance while wandering in the woods in a rainy morning gives the indication of the presence of Indian Siris in the surrounding. The genus is named after Filippo del Albizzi. The species name is derived from the Latin word 'procerus', meaning very tall or high, possibly alluding to the height the species can attain. It is one of the excellent agro-forestry species to be planted in field bunds.

FIELD IDENTIFICATION

A. procera is conspicuous in the forest by its smooth light brown to light greenish-grey bark; bipinnate compound leaf with a gland at the base of rachis and having 2-5 pairs of sub-opposite pinnae; small yellowish-white flowers clustered together to form a head with thread-like stamens; and oblong, flattened, chartaceous pods changing from green to deep red or reddish brown on maturity and dehiscing with 6-12 flat, round greenish-brown seeds.

SEASONALITY

During dry season, the tree becomes almost leafless for a short time. Flowering occurs between July-August and pods form quickly and mature during January-February.

DISTRIBUTION

A. procera is widely distributed from India and Myanmar through Southeast Asia to Papua New Guinea. It is commonly found in open secondary forest and in areas with a pronounced dry season.



UTILITY

The wood is hard and durable and used for making planks, posts, boxes and other useful purposes. *A. procera* is sometimes planted as a shade tree in tea gardens and used for afforestation of degraded lands. High quality charcoal can be made from its wood. The leaves are used for the treatment of ulcers. All parts of the plant are reported to show anti-cancer activity. A decoction of the bark is given for rheumatism and haemorrhage and is considered useful in treating problems of pregnancy and for stomach-ache. The bark is also used as a fish poison.

Kigelia africana (Lam.) Benth.

Synonym : *Kigelia aethiopum* (Fenzl) Dandy

Common Name: Sausage tree, Cucumber tree

Family : Bignoniaceae



Sausage tree refers to the long, sausage like fruits. It has a short, thick trunk and spreading crown. At most times of the year, either it has large, waxy, liver-coloured flowers or grey sausage-shaped fruits dangling at the ends of the very long, rope-like stalks. Their scent is most notable at night indicating that they are adapted to pollination by bats, which visit them for pollen and nectar in the night. The foetid-smelling pulp of the fruit encompasses the poisonous seeds. The wound-healing ability of the various parts of the plant make the local tribes use it as a remedy against various common infections of the skin.

FIELD IDENTIFICATION

K. africana is distinguished in the field by its grey-brown bark flaking in small plates; leathery imparipinnate compound leaves with conspicuous rigid veins and of brownish-red tinge at the base of petiole; large, fleshy, trumpet-shaped, maroon-coloured flowers replete with nectars; and a brown cylindrical, large, woody, hanging fruit with a long stalk.

SEASONALITY

The leaves fall during January-February and new foliage appear in March-April. Flowers appear on the branches (cauliflorae) in April-May and fruits ripen in the rainy season.

DISTRIBUTION

Sausage tree occurs throughout tropical Africa from Eritrea and Chad south to northern South Africa, and west to Senegal and Namibia. Due to its hardiness and drought-resisting ability, it has been planted in various parts of the world.

UTILITY

Various parts of tree are used for treating skin ailments like fungal infections, boils, psoriasis and eczema, leprosy, syphilis and gastric complaints. The powdered leaves are said to have potent wound healing activity, as well as the ability to clear infections from wounds. Fruit pulp is used for making skin creams and shampoos. The boiled fruit yields a reddish dye.



LITHUANIA

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Barringtonia asiatica (L.) Kurz

Synonym : *Barringtonia butonica* J.R.Forst. & G.Forst.

Common Name: Queen of seashore, Box Fruit

Family : Lecythidaceae

Planted by the country's representative - Mr. Aleksandras

Queen of seashore is an evergreen medium-size tree that grows as a mangrove associate on sandy and rocky shores in the Malaysian and Andaman mangroves. It is also known as Box Fruit due the distinct box-shaped fruits it



produces. The bronze-coloured juvenile foliage with pink veins turning into greenish-yellow makes it distinct in mangrove coastline. Its large pinkish-white flower puffballs hanging on a pendulous spike give off a sickly sweet smell to attract bats and moths which pollinate the flowers at night. The fruit is dispersed in the same way as a coconut - by ocean current - and is extremely water-resistant and buoyant. The fruit can survive on the sea for long distances and for periods of up to two years. All parts of the tree are poisonous.

FIELD IDENTIFICATION

B. asiatica is characterized by its large, thick, coriaceous, glossy, obovate leaves having narrow base, rounded apex and pronounced veins; large solitary white flowers appearing on a long spike from the centre of the leaf rosette; profusion of long white filaments tipped with pink; and brownish, egg-shaped turbinate fruits.

SEASONALITY

The tree grows fairly fast and large flowers appear in January-March.

DISTRIBUTION

B. asiatica is native to mangrove habitats on the tropical coasts and islands of Asia and Pacific islands. It is grown along streets for decorative and shade purposes.

UTILITY

A colourful shady tree, Queen of seashore is commonly planted as a roadside tree in Singapore. All parts of the tree contain 'saponin', a poison. The seeds and bark are pounded, pulped or grated to release the poison and it is used to stupefy fish in freshwater streams. Seeds are used to get rid of intestinal worms and the heated leaves are used to treat stomach-ache and rheumatism. The floating fruits are sometimes used as fishing floats.





Grevillea pteridifolia Knight

Common Name: Fern-leaved Grevillea

Family : Proteaceae



Fern-leaved Grevillea is a gracious medium-sized tree with thin canopy having silver-green foliage and brilliant orange-yellow flowers in long dense spikes secreting copious nectar bringing in swarms of honey bees for foraging. It was introduced from Australia to some of the sub-tropical countries as an ornamental plant and reclamation of coal mines. Wherever stand formation of Fern-leaved Grevillea had taken place, it assumed the proportion of a weed because of profuse natural regeneration.

SPOT IDENTIFICATION

The field identification clues are dark greyish brown bark with rectangular flakes; fine, deeply divided silver-green leaves with margins conspicuously recurved; tomentose, reddish-brown young shoots and terminal bud; massive, dense erect panicles with golden yellow flowers; and ovoid, laterally-compressed, villous fruits with persistent pistil at the tip; and 2 small, brown, winged seeds.

SEASONALITY

The species comes to flowers during November-December and fruits during February-May.

DISTRIBUTION

G. pteridifolia is endemic to Australia. The plant produces abundant seeds and has the potential of spreading like a weed outside its native range.



UTILITY

G. pteridifolia is an ornamental tree suitable for garden and parks due to its showy bloom and fern-like foliage. Plants are suitable for planting on pulverized lateritic soil and loose soils on dumps of coal and bauxite mines, where it regenerates spontaneously. The nectar-filled flowers are good feed for honey bees and birds. The wood can be used for making packing boxes. It is a good firewood species. However, the tree is short-lived. The dried foliage has been used as an elastic stuffing for mattresses. The wood is a source of fuel wood.



Clusia rosea Jacq

Synonym : *Clusia retusa* Poir.

Common Name: Autograph Tree, Pitch Apple

Family : Clusiaceae

Planted by the country's representative - Mr. Rakololahy Charles Clement

The Autograph tree is wide-spreading, densely-foliated, compact, evergreen tree with a short trunk and broad, thickened, dark green, leathery leaves, reminiscent of Southern Magnolia leaves. The leathery leaves can be scratched by fingernails with the scratches remaining on the leaves until they fall – hence the name Autograph Tree. In summer, the showy, pink and white flowers appear at night followed by a fleshy, light green fruit turning black when ripe with bright red seeds embedded inside a black, resinous material. The seeds are very attractive to birds. The tree was introduced in India and other countries from tropical America. Generally the plant is propagated by cuttings.



FIELD IDENTIFICATION

C. rosea is conspicuous in the field by its thick leathery, dark green, spoon-shaped leaves without perceptible veins; solitary flowers with fleshy white petals blushed with pink surrounding the numerous yellow stamens; and globose, green capsules dehiscent from top exposing the red seeds.



SEASONALITY

Flowers in this species appear in January-March and fruits in May-September.

DISTRIBUTION

C. rosea is native to tropical America and Caribbean countries including Bahamas.

UTILITY

The Autograph tree is planted in gardens and houses as an ornamental for its glossy, coriaceous and evergreen foliage. It is recommended for buffer strips around parking lots and median strip plantings in the highway. It is often used as a screen due to its low spreading habit and is ideal for cooling building walls in the summer.

Schefflera actinophylla (Endl.) Harms

Synonym : *Brassaia singaporensis* Ridl.

Common Name: Queensland Umbrella Tree, Octopus Tree

Family : Araliaceae

Planted by the country's representative - Mr. Mpeta Mwanyongo

Queensland Umbrella Tree is a small to medium-sized, multi-trunked tree, often epiphytic in natural habitat. It is usually multi-trunked, and the flowers develop at the top of the tree. The rich lustrous dark-green leaves with their bold tropical flare and lacquered appearance and the long radiating racemes at the top of the canopy are the plant's primary assets. The small, dull-red flowers generate copious nectar, attracting honey-feeding birds which also spread the seeds. The genus name honours J.C. Scheffler, while the specific epithet refers either to the radial arrangement of the leaves around the stems.

FIELD IDENTIFICATION

S. actinophylla can be identified by its umbrella-like canopy; prominent leaf scars on the stem; green bark turning to grey-brown palmately compound leaves with a group of seven dark-green, leathery leaflets; wine-red flowers in dense, sessile clusters on several long spikes; and purple-red fruits.

SEASONALITY

Flowering begins in early summer and extends for several months.

DISTRIBUTION

It is native to tropical rainforests and gallery forests in eastern and northern Australia, New Guinea and Java.

UTILITY

It is grown as an ornamental plant in shady areas of gardens and parks for its umbrella like canopy with dark green foliage and wine-red flowers in long spikes.





MALAYSIA



Simarouba amara Aubl

Synonym : *Simarouba glauca* DC.

Common Name: Paradise Tree, Simarouba

Family : Simaroubaceae

The Paradise tree is an evergreen medium-sized multi-purpose tree of rainforest of Caribbean islands introduced in various parts of the world for reclamation of wasteland, production of biodiesel and medicinal use. Its spreading crown with shining



green leaves and big clusters of dark-purple grape-like fruits hanging from the branches make the tree distinct in the field. The leaves and bark of Simarouba have a long history of use as a natural medicine in the tropics for cure of malaria, and amoebic dysentery by the tribes in the rainforests of South America and Caribbean. When France suffered a dysentery epidemic from 1718 to 1725, Simarouba bark was one of the few effective treatments which were imported from Guyana. Its great potential of biodiesel made Simarouba for introduction in various parts of India.

FIELD IDENTIFICATION

S. amara is identified by its grey smooth bark; thick, glossy, shining, dark-green compound leaves with 15-17 leaflets; cream-yellow flowers on long drooping panicles; and ovoid or oblong, pulpy fruits which turn into scarlet or dark purple when ripened.

SEASONALITY

The species is evergreen but produces a new set of leaves once a year. The flowers appear during February-March and fruits ripen during April-May.

DISTRIBUTION

S. amara is native to the rainforests and savannahs of South and Central America and Caribbean.

UTILITY

It is deployed for rehabilitation of waste lands and soil and moisture conservation programme due to its adaptability to come up successfully in a wide range of edaphic conditions and drought-resistance and non-browsable nature. The wood is used for making toys. The seed contains 60-75% edible oil. The bark tea was an effective treatment for amoebic dysentery, diarrhoea and malaria. The quassinoids (simaroubin) responsible for the anti-amoebic and antimalarial properties have also shown to possess active cancer-killing properties.



Magnolia champaca (L.) Baill. Ex Pierre

Synonym : *Michelia champaca* L.

Common Name: Golden Champa, Champak

Family : Magnoliaceae

Planted by the country's representative - Dr. Mariyam Shakeela

Golden or Yellow Champa is a majestic tall evergreen tree with a straight cylindrical bole carrying a conical to cylindrical crown with sweetly fragrant deep-yellow flowers. These are the flowers you don't have to stick your nose in as the scent exudes from the blooming tree. Insects appear frantic, driven like drug addicts, bashing into each other to gain entry into every flower on the tree and get intoxicated with the heavenly smell. In South India where the tree grows abundantly, women wear a closed golden Champa in their long hair, allowing their body heat to cause the flower to open into a scented blossom as the evening progresses. A large part of India's tribal population traditionally uses the stem bark of



Golden Champa as a contraceptive agent. The genus '*Magnolia*' is named after Italian Botanist Peter A. Michel and the specific epithet '*champaca*' comes from the Sanskrit word campaka, meaning sweet smelling.

FIELD IDENTIFICATION

M. champaca is conspicuous in the forest by its smooth grey bark; spirally arranged, shining dark-green, ovate-lanceolate leaves; fairly large and fragrant flowers of yellowish-orange colour with 12-15 perianth lobes whose tips curved; and greenish grey to brownish, waxy follicles in dense cluster which split on one side exposing the hanging red seeds from the follicles

SEASONALITY

Flowers appear in March-June and fruits ripen in August to September releasing the red-arilled seeds.

DISTRIBUTION

M. champaca is native to India, where it occurs in humid tropical evergreen forests. It is found throughout Indo-China, Malaysia, Sumatra, Java, and southwestern China. It has been widely planted throughout SE Asia and Indonesia.

UTILITY

M. champaca is sacred to Hindus and Buddhists and it is often planted in temple grounds and around homes. Perfume is produced from the essential oils extracted from the fragrant flowers. Wood is fine grain and used for the construction of buildings, furniture, cabinet work, toys, and carvings. It is also utilized in the production of packing cases, crates, tea chests and as plywood.

A decoction of the bark is prescribed for gastritis and urinary problems. The young leaves are crushed in water to make a cooling antiseptic lotion used as eye drops. The leaf juice is given with honey for colic. The seeds are known to be effective for deworming. Mixed with curdled milk, the dried root and root bark are reportedly used as an external application to promote healing of abscesses.





MALI



123

Caesalpinia sappan L.

Synonym : *Biancaea sappan* L.

Common Name: Sappanwood Tree, East Indian Redwood Tree

Family : Leguminosae-Caesalpinioideae

Planted by the country's representative - Mr. Alassanepohcanaimaiga



A traditional welcome in a Kerala (South India) family with a glass of slightly pinkish lukewarm sappanwood ('pathimugam' in Malayalam) water is a common ritual. If sappanwood is boiled in water, the water gets purified and thereby drinking this water can prevent epidemic diseases spreading through water. Sappanwood, a deciduous small-sized spinous shrubby tree with prickles all over, is known for its spectacular therapeutic properties. It grows mostly in hilly areas in clayey soil and calcareous rocks at low and medium altitudes. The generic name is named after A. Caesalpini, an Italian Physician and Botanist.

UTILITY

The tree is the source of commercial Redwood or Brazil wood which is tough, takes excellent finish. It is used for cabinet making, violin bows and walking sticks. The heartwood yields a valuable red crystalline dye, 'brazilin', used to dye cotton, silk and woolen fabrics, and making red paints. A decoction of the wood is an astringent and is used in mild dysentery and diarrhoea. The dried heartwood is widely used against inflammation. Seed is sedative. The leaves are used for ripening of bananas and mangoes.

FIELD IDENTIFICATION

C. sappan is conspicuous in the forest by its recurved prickles on all parts of the plant; bipinnate compound leaf; large, terminal, erect panicle having bright yellow flowers with clawed petals and orange-coloured stamens; obliquely-oblong, flattened, deep-brown dehiscent pod with many sharp bristles and a conspicuous beak at the apex; and 2-3 brown, ellipsoid, flattened seeds.

SEASONALITY

Sappanwood flowers during rainy season, and fruits during November-March.

DISTRIBUTION

It is native to China, India, Malaysia, Myanmar and Thailand. It is grown in the regions where red soil is available.





MALTA

124

Hardwickia binata Roxb.

Common Name: Indian Blackwood

Family : Caesalpinioideae

Indian Blackwood is a dominating, imperiously tall tree of the drier forests having a straight clean bole and linear canopy with drooping slender branches and small Bauhinia-like bilobed leaves. Its gregarious nature in skeletal and black cotton soil with long deep root system, often does not allow many species to compete with it in area occupancy. The pure patch of *Hardwickia* with its juvenile red leaves in the blazing sun of the peak of summer presents a pleasing spectacle.

FIELD IDENTIFICATION

H. binata is characterized by greyish, dark-grey thick bark with deep longitudinal fissures; bifoliate leaf with a minute bristle in between; pinkish red tender leaves; inconspicuous pale yellowish-green flowers without petals in panicles of lax raceme; and flat, oblong-lanceolate, coriaceous, one-seeded, brownish samaroid fruit with parallel longitudinal ribs.

SEASONALITY

The species is leafless for a short time towards the end of cold months and the new copper-red new leaves appear in April. Flowers appear in July-September and pods ripen during February-March.

DISTRIBUTION

H. binata is native to India, mostly as a species of scrub or dry deciduous forest in Deccan and Western Peninsula.



UTILITY

Indian Blackwood produces a good quality timber. The hardwood is dark reddish brown streaked with purple, very durable and used for bridge and house construction, carts, wheels and agricultural implements. The wood is an excellent fire-wood and produces good charcoal. Bark yields a strong fiber, largely employed for marking ropes. Branches are lopped for fodder and manure.



Erythrina variegata L.

Synonym : *Erythrina corallodendron* Lour.

Common Name: Indian Coral Wood

Family : Leguminosae-Faboideae

Indian Coral Wood is a soft-wooded, spiny, ornamental tree with brilliant scarlet blossoms and variegated yellow leaves. There is also a white-flowered variant. The tree often has multiple stems ascending steeply upwards.



FIELD IDENTIFICATION

E. variegata is identified in the field by its greenish-grey bark; black conical spines on stems and branches; trifoliate leaf with rhomboid-shaped leaflets having yellowish veins; clusters of bright scarlet papilionaceous flowers with spathaceous calyx and long stamens; and elongated, cylindrical, black legumes with swellings and constrictions.

SEASONALITY

The tree sheds off leaves in winter months and flowers appear in February-March, followed by emergence of new leaves. The fruits mature during April-June.

DISTRIBUTION

Indian Coral Wood tree is primarily a coastal species on sandy soil in littoral forest with very wide distribution throughout tropical Asia. It is native to India and Malaysia but is grown in many tropical countries of the world, more frequently in Asia and Africa.

UTILITY

Indian Coral Wood tree is a popular shrub for garden because of its showy red flowers and variegated leaves. The tree is also widely grown in rural area as posts for fencing and as a support for growing climbing vegetables and pulses. The wood is soft, but durable and used for making boxes and toys. The bark is used for tanning and dyeing. Leaves are effective to relieve toothache, earache and eye ailments like conjunctivitis. The bark cures dysentery and is also used as a febrifuge.



Flacourtia inermis Roxb.

Synonym : *Flacourtia quintuplinervis* Turcz.

Common Name: Luvi-Lovi, Batoko Plum.

Family : Flacourtiaceae



Luvi-Lovi is a short-statured evergreen low-branched bushy tree with a compact round crown and drooping branches with finely tinged attractive maroon tender leaves. The fruits are fleshy and can be eaten raw or cooked. The fruits are round, cherry-size, and dark-red when ripe. Some are sweet, but most are sour and astringent, and normally used in making jam and syrups. Usually people rub the fruits between the palms of the hand before eating because bruising the flesh eliminates astringency.

FIELD IDENTIFICATION

F. inermis is characterized by its crooked trunk with longitudinal furrows; dark-green, shining, alternate, ovate leaves with coarsely toothed margin; greenish-yellow flowers with many stamens on axillary drooping racemes; and depressed-globose, bright-red, juicy fruits crowned by 4-6 peg-like remnants of style in a circle.

SEASONALITY

Flowering occurs round the year.

DISTRIBUTION

F. inermis is native to the Philippines but naturalized in tropical Asia South Africa. This tree is very common in South India, particularly Kerala, where it is commonly known as '*Loika*'. This is cultivated in Malaysia, Indonesia and Sri Lanka for both its fruit and decorative foliage.

UTILITY

Luvi-Lovi is known for its red-purple, grape-sized, sour, juicy fruits which are loaded with vitamin C. The pulp is yellow or white and sweet with an acidic tangy taste. It can be fermented to make wine. Fruits are also served as a fruit salad with spicy sauce, pickled, or sweetened with sugar to make jam or confectionaries. Immature fruit is used to prepare traditional medicine against diarrhoea and dysentery. The juice of the leaves is applied to inflamed eye-lids. In the Philippines a root decoction is taken by women after childbirth. The wood of Luvi-Lovi is hard and strong and used to make household utensils such as pestles and furniture.





MAURITIUS



127

Madhuca longifolia J.F.Macbr.

Synonym : *Bassia longifolia* L.

Common Name: South Indian Mohwa Tree

Family : Sapotaceae

South Indian Mohwa is a large handsome tree with spreading branches and linear mango-like leaves. The generic name *Madhuca* is derived from the Sanskrit word 'madhu', meaning honey. The bronze coloured new foliage and drooping yellowish-white dusk-scented bloom dripping the sweet but intoxicating nectar in the blazing summer is a solace to the languid and tired man wandering in the forest in search of food. It is the most valuable South Indian trees because its flowers are a nutritive lifeline for millions of poor people. The succulent flowers fall on to the ground just before dawn and many of the wild animals like deer, jackals, monkeys etc. compete to eat them and get intoxicated. The heavy wood of this tree has been traditionally used to build the massive temple chariots in South India – not too many woods can withstand the immense weight. It is often planted as an avenue tree.



FIELD IDENTIFICATION

M. longifolia is identified by its grey-brown bark and red coloured blaze with drops of milky latex; oblanceolate leaves with both ends tapering; cluster of yellowish-white succulent flowers with long, slender pedicels; and green, obliquely ovoid fruits.

SEASONALITY

South Indian Mohwa flowers during March-May and fruits in September-October.

DISTRIBUTION

It is a native of moist forests in SW India, and dry forests of S India and Sri Lanka.

UTILITY

The blossoms taste like pressed figs and ooze sweet juice. The flowers are eaten raw or sun-dried and are distilled into a strong country spirit. The seeds yield 'mahua butter' used in cooking. The oil cake is used as a detergent. The extremely hard, durable timber has dark reddish-brown heartwood, but is seldom used because the tree is too valuable to be felled. A decoction made out of bark can cure itching, bleeding gums, and ulcers. The leaves can arrest bleeding, and ash of the leaf mixed with butter can provide relief from burns. The flowers help cure cough. The seeds promote formation and flow of milk in young mothers.



MEXICO

128

Pterocarpus marsupium Roxb.

Common Name: Indian Kino Tree, Malabar Kino Tree

Family : Leguminosae-Faboideae

Planted by the country's representative - Mrs. Jesica Ayala Bhitto



Indian Kino is a large deciduous tree of significant timber value in deciduous and semi-evergreen forests of India. The towering trunk with articulated branches holding on the elevated crown is a dominant tree of the forest. The terminal spray of dense golden-yellow blossoms on the outside of the canopy filling the ambience with a sweet smell immediately after the rains and bunches of hanging brown-coloured roundish fruits with papery wings cluttering on the leafless tree in the summer makes Indian Kino very conspicuous in the forests. However, unregulated removal of this species for high-value wood has taken a heavy toll on its population in wild. The wide ranging therapeutic value of Indian Kino has served the wellbeing of the mankind since time immemorial.

FIELD IDENTIFICATION

P. marsupium is conspicuous in the field by its thick dark-brown or grey bark exfoliating in narrow vertical flakes; pink blaze with whitish markings exuding sticky red juice ('kino'); imparipinnate compound leaf with five coriaceous, dark green, shining leaflets; golden-yellow coloured papilionaceous flowers with rusty calyx in terminal panicles; and orbicular, pale-yellow coloured, indehiscent 1-seeded winged pod.

SEASONALITY

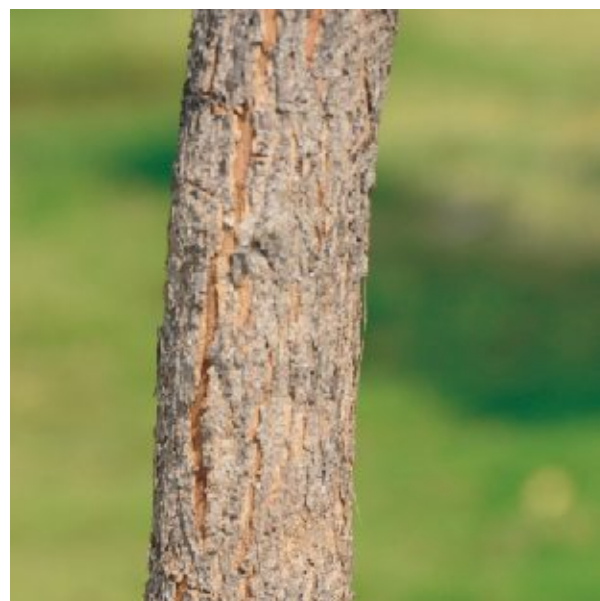
Leaves are shed by March-April. The tender pink leaves appear during May. Flowers appear during October-November. Fruits ripen in February-April, hanging on to the trees for 2-3 months even after drying.

DISTRIBUTION

P. marsupium is native to India and Sri Lanka. It prefers cool northern slope on well-drained soil.

UTILITY

The wood is hard and durable and used in constructions, door frames, furniture etc. Leaves are used as fodder and manure. A poultice made from the bark and leaves of the tree possesses astringent properties, which is useful to heal cuts, bruises and other skin conditions. It is effective in lowering blood sugar and total cholesterol level in the body. The powdered bark is mixed with *Schleichera oleosa* and taken with cold water to treat dysentery. It is externally applied to leucorrhoea. The Kino powder may be dusted on ulcers and bleeding surfaces. Leaf juice is given in purulent discharges from ear.





MICRONESIA



Oroxylum indicum (L.) Kurz

Synonym : *Bignonia indica* L.

Common Name: Tree of Damocles

Family : Bignoniaceae

Tree of Damocles is a small tree with a straight stem and a rather thin umbrella-like crown having large green leaves. The musty stink of its night-blooming purplish flower-clusters, always projecting upwards, invite the nocturnally active bats to perch on its strong and stout flowering stalk and feed the nectar. Similarly the tree is conspicuous in the summer with its bunch of erect, brown coloured scabbard-like fruits which split on the tree to flit the greyish-white winged seeds in the air. A plant of significant therapeutic value in pharmaceutical industry deserves special attention to augment its population size in the wild.

FIELD IDENTIFICATION

O. indicum is distinguished in the forest by its silvery white lenticellate bark with prominent leaf scars; large tripinnate triangular shaped compound leaves with oblique base of the leaflets; large trumpet-shaped flowers in clusters with purplish-pink wrinkled petals at the end of the very long stout peduncles; flat, woody, long sword-like capsules projecting upwards; and broad, compressed and winged seeds.



SEASONALITY

The leaves turn purplish in winter months and gradually fall and the trees remain leafless in February-May. The flowers appear from May-August and they open at midnight. The large fruits ripen during November-January.

DISTRIBUTION

The tree is native to most parts of moist deciduous and semi-evergreen forests of India, Nepal, Sri Lanka, Malaysia and China and is generally spotted in cool ravines or along streams in secondary forests.

UTILITY

The tree is planted in gardens for the large showy flowers, and purplish leaves in winter months. The extract from the stem bark is a tonic and also used as a remedy for rheumatic swellings. The root bark is effective to cure diarrhoea and dysentery. The root forms one of the ingredients of the reputed '*Dasamularistha*' formulation in Ayurveda.





MONACO

130

Dolichandrone atrovirens (Roth) K. Schum.

Synonym : *Bignonia atrovirens* Roth

Common Name: Wavy Trumpet Flower Tree

Family : Bignoniaceae



Wavy Trumpet Flower tree is a semi-deciduous, medium-sized, and straight-growing species with attractive dark-green foliage and pretty, white trumpet-like flowers. The flowers open in the night emitting the fragrance and fall off in the morning. It is a hardy tree of dry, rocky terrain, well adapted to growing in poor quality soil. This species is a regular companion of Red Sanders and grows in very rugged slopes.

FIELD IDENTIFICATION

D. atrovirens is identified in the field with rough brown bark; long-petioled, pinnately compound leaf having 3-5 pairs of leaflets with long acuminate apex, truncate base and prominent nerves; fragrant white flowers with long, slender corolla tube and spathaceous, leathery calyx; and elongated, cylindrical, brown-coloured fruits which are conspicuously specked with white dots; and flattened, rectangular, winged seeds.

SEASONALITY

Flowers during May-June and fruits ripen after rainy season.

DISTRIBUTION

This species is confined to Deccan peninsula of India.

UTILITY

It has been deployed in forestry plantation programme due to the drought resistance nature of this species and rapid growth. The plant is not browsed by cattle or goats. The wood is used for building construction and agricultural implements. It is also used as fire wood.



MONGOLIA



Swietenia macrophylla King

Synonym : *Swietenia candollei* Pittier

Common Name: Big-leaf Mahogany, Spanish Mahogany

Family : Meliaceae

The big-leaf mahogany species is a majestic tree and an integral part of the rainforest ecosystem. Its dark brown flaky bark has a sweet odor. With leaves of 50-60 cm length, it has earned its "big-leaf" name. The juvenile pink leaves give a spectacular look to this tree. It was first brought to India from British Honduras in 1872 and planted in high-rainfall areas of South India. Unfortunately, mahogany trees have been over-exploited in the wild for its prized timber which commands handsome price in the market.

FIELD IDENTIFICATION

S. macrophylla can be identified by its grey-brown, shallowly fissured bark; paripinnate compound leaf with 3-8 pairs of dark-green, glossy leaflets having asymmetrical base; greenish-white flowers arranged in branched clusters with stamens grouped together in a column; and a woody, brownish capsule, shaped like an inverted club pointing upwards.



SEASONALITY

New leaves appear in March-April. Flowers are produced abundantly in the leaf axils in April-May. Fruits take longer period for maturity, ripening during September-October.

DISTRIBUTION

Big-leaf mahogany is native to southern Mexico, Central America and into South America. It is now grown in all tropical countries of the world because of its magnificent appearance and valuable timber. Although it grows luxuriantly in high rainfall areas, it is well adapted to grow in drier climate also.

UTILITY

Mahogany has been a prized timber product - a building block for high-quality furniture and musical instruments - valued for its deep reddish color, durability and beauty. Mahogany has the reputation of being very durable, though it is not immune to dry-wood termites. It is also excellent for veneers and plywood. The bark is used as an astringent and as a substitute for Cinchona. The traditional use of seeds of Mahogany used as an antidiabetic has been validated scientifically.

Haldina cordifolia (Roxb.) Ridsdale

Synonym : *Adina cordifolia* Roxb.

Common Name: Haldu, Turmeric wood Tree

Family : Rubiaceae

Haldu is very large tall deciduous tree of India's high forest with a long clean trunk except basal longitudinal furrows for a length of 1-2 meters and spreading horizontal branches. The cordate to heart-shaped broad leaves and the small whitish-yellow flower in globose heads during the rains make it conspicuous in the forest. New leaves are often eaten away by the defoliating insects giving a ragged appearance to the foliage. It is an extremely valuable secondary hardwood species with yellowish-brown wood known for its use in turning, carving, paneling and cabinet works.

FIELD IDENTIFICATION

H. cordifolia is identified in the forest by its smooth, grey, thick bark with horizontal wrinkles and pinkish or reddish-brown blaze; opposite, orbicular-cordate large leaves on long pinkish petiole; flat, pale green to pinkish large stipules on the tip of the growing branchlets protecting the young leaves; and 2-3 globose flower heads arising from the leaf-axil with numerous tiny yellow flowers tightly packed.



SEASONALITY

Haldu is leafless for a short period in early summer with new leaves appearing in May-June. The flower-heads appear during rainy season in July-August and fruits by October but remains on the trees for 4-5 months.

DISTRIBUTION

The natural range of distribution in India runs 'bhabar' and 'terai' tract of sub-Himalayan range to deciduous and moist evergreen forest of peninsular India. It extends further down to Sri Lanka, Indo-China and South China.

UTILITY

The wood of Haldu turns brown from yellow and is used for furniture and other purposes. It polishes well but is moderately durable. 'Haldu' is accepted as grade-I commercial and moisture-proof plywood timber. It is used for wall-paneling, making combs, drums and boxes. The root is used as an astringent in dysentery. The bark is acrid and bitter and used in various ways to treat inflammation, ulcers and wounds. The leaves are used as fodder. The species is also preferred for planting by the forest department for its timber.





MOROCCO



133

Melaleuca bracteata F. Muell.

Synonym : *Melaleuca monticola* J.M. Black

Common Name: Golden Bottlebrush Tree

Family : Myrtaceae

Planted by the country's representative - Mr. Larbi Reffouh



Golden Bottle Brush is a small evergreen large shrub or small tree with drooping branches and forming a compact canopy. Its small, narrow, pine-like sharp-pointed leaves and yellowish-green foliage provides a very soothing look in summer. It produces small, white flowers that are unmistakably related to the bottle-brushes. The young leaves and twigs clothed in silky white hairs gives a velvety touch. It is grown in gardens and used in landscaping for its compact shape, numerous small cream coloured 'bottle brush' flowers and its ability to grow in a variety of agronomic and climatic conditions.

FIELD IDENTIFICATION

M. bracteata is identified by its hard, grey-brown bark with longitudinal fissures; narrow, sharp-pointed, almost needle-like leaves; long and dense inflorescence with many white flowers, in fascicles of three, borne in the axil of leaf; numerous stamens united in five bundles surrounded by deciduous corolla; and brown woody capsules in clusters.

SEASONALITY

Golden Bottlebrush tree flowers profusely at intervals in summer and continues during rainy season.

DISTRIBUTION

M. bracteata is endemic to Australia and generally seen in swamp and monsoon forests. However, it has been introduced in many gardens of tropical countries for its yellowish-green pine-like foliage.

UTILITY

Golden Bottlebrush is grown in tropical gardens for its attractive shape and spikes of white flowers for many months a year. The tree is hardy and tolerant to salinity. The timber is useful and durable, used in ship-building and railway sleepers. The valuable oil, extracted from leaves is used in the rheumatism and skin diseases. The oil also acts as a carminative, anthelmintic and stimulant. It is very effective as a mosquito-repellant.





MOZAMBIQUE

134

Saraca asoca (Roxb.) Willd.

Synonym : *Jonesia asoca* Roxb.

Common Name: Ashoka, Sorrowless Tree

Family : Caesalpinioideae

Planted by the country's representative - Mrs. Ana Chichava



Asoka is rated as India's most beautiful tree for its exquisite bright red flowers. The Indian spring is the season of fertility, when the red blossoms of Ashoka tree open towards the red sun of summer. It is believed that the Ashoka tree enhances both desire and fertility in a woman and still in some parts of eastern India, the flower buds are eaten once in a year on birthday of Lord Rama in the month of April. It is considered as a symbol of love and believed to be capable of relieving the sorrows of people. It is said that when her time was near, the mother of Lord Buddha went into the forest of *Lumbini*. There, clinging onto an Asoka tree she gave birth to the Enlightened One. – Gautama, the Buddha. The tree is intimately associated with women in India. Decoctions made from its bark are used to soothe menstrual cramps and prevent excessive blood loss during menstruation.

FIELD IDENTIFICATION

S. asoca is conspicuous by its umbrella-like crown supported by a short trunk with rough dark-brown bark; unipinnate compound leaf with 3-6 pairs of leathery dark-green leaves; drooping young leaves without chlorophyll which turns from greyish-white to pinkish and finally become stiff and dark green and yellowish-orange flowers in dense cluster on old wood.

SEASONALITY

New leaves appear during March. Flowers appear during March-April and fruits mature in May-June.

DISTRIBUTION

S. asoca is distributed in the semi-evergreen and moist forests of Western Ghat and North East forests of India. It also occurs in Sri Lanka, Myanmar and Malaysia.

UTILITY

Hindus use the flowers and leaves in religious ceremonies while Buddhists consider this tree sacred as Lord Buddha was born under its shade. This tree is frequently planted especially in gardens and near temples. The astringent bark is reported to have a stimulating effect on the endometrium and ovarian tissue and is used for treating menstrual pain and menorrhagia. A lotion made out of bark is used to heal open wounds. The water extract of the flower is said to cure blood dysentery. Leaves possess blood-purifying properties and their juice, mixed with cumin seeds, is used for stomachache. The edible seeds are diuretic.





MYANMAR

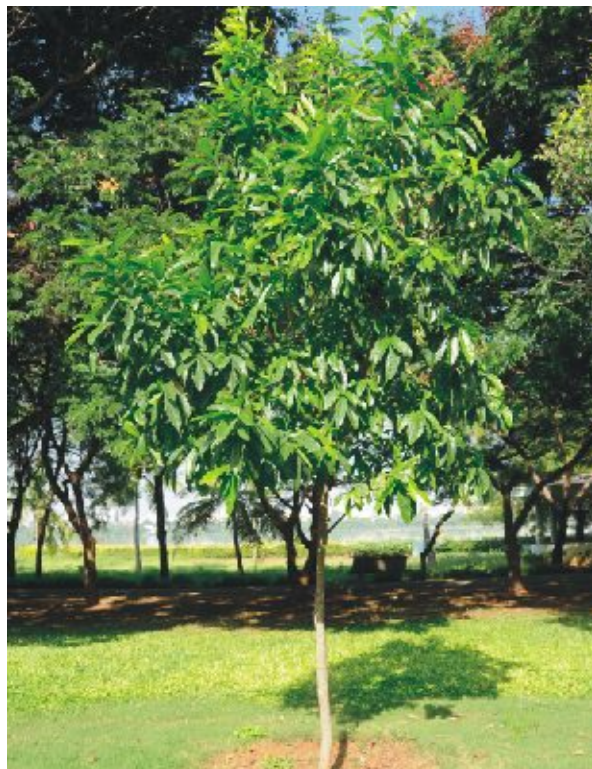


Elaeocarpus serratus L.

Synonym : *Elaeocarpus ganitrus* Roxb. ex G. Don

Common Name: Utrasam Bead Tree, Rudraksha

Family : Elaeocarpaceae



Rudraksha is a large tree from Nepal and East India grown more for its religious importance. The word 'Rudraksha', comes from two Sanskrit words – 'rudra', a synonym for Lord Shiva and 'aksha' meaning eyes. All legends pertaining to the origin of Rudraksha describe them as tears shed by Lord Shiva. According to one story, Lord Shiva once entered into a profound state of meditation for the benefit of mankind. When he emerged from this state and opened his eyes, the deep joy and peace that he felt were expressed as tears, which ran down his cheeks and fell on the earth. From his tears emerged the Rudraksha tree. The stones (seeds) are used to make prayer beads. The tree is considered as a threatened plant in north-east region of India.

SPOT IDENTIFICATION

E. serratus can be identified by its straight, buttressed trunk and grey-brown bark; serrate, shining green leaves turning red before falling; white flower with fringed petals; globose, bluish-purple drupes; and hard, tubercled stones, marked generally with 5 vertical grooves.

SEASONALITY

The flowering in Rudraksha occurs in April-June and the fruits appear in June which ripen by August-October.

DISTRIBUTION

Rudraksha is frequently found in North Bengal, Assam of India, Nepal, Bangladesh, Malaysia and Java.

UTILITY

Rudraksha stones (seeds) are cleaned, polished and used as beads for rosaries, bracelets and other ornamental objects. They are also widely used for religious purpose. Rudraksha is used in folk medicine in treatment of stress, anxiety, depression, palpitation, nerve pain, epilepsy, migraine, lack of concentration, asthma, hypertension, arthritis and liver diseases. It is also good for children who suffer from frequent fever. The paste of ten- faced Rudraksha with milk relieves prolonged cough. To cure smallpox, equal quantity of black pepper and Rudraksha is powdered and taken with water.







Cinnamomum camphora (L.) J. Presl

Synonym : *Laurus camphora* L.

Common Name: Camphor tree, Camphor Laurel

Family : Lauraceae

Planted by the country's representative - Ms. Kauna Betty Schroder



The evergreen Camphor tree, growing to a great height with its dense billowing crown having many branches and small, sweet-scented white clusters of flowers, is reminiscent of the Linden trees of Europe. The dark leaves are shiny on top and paler below, and emit smell of camphor when crushed. Most part of the camphor tree, specially the wood, can be used to distil oil that is valued for its medicinal purposes. Also another product, the white crystalline substance, known as camphor comes out of the distillation, which is so pure that it is burnt as an incense of its own - a lump of camphor placed on a green leaf in front of an idol in Hindu temples sending up a clear blue flame as it releases its distinct penetrative fragrance.

FIELD IDENTIFICATION

C. camphora is identified in the field by its thick dark grey bark with rectangular scales; dark-green elliptic leaves with acuminate apex; small, sweet-scented, yellow flowers in axillary panicles; and sub-globose drupes ripening to purplish-black with a single seed.

SEASONALITY

It is a slow growing tree and produces flowers in January-February. Fruits appear in March-May.

DISTRIBUTION

The tree is indigenous to China, Japan and Formosa but is grown in many tropical and sub-tropical countries as ornamental. It comes up well in temperate climate. The tree is also planted for commercial extraction of camphor.

UTILITY

The camphor oil extracted from leaves, wood and root is used in preparation of expensive perfumes. Camphor is used in Ayurveda locally to numb the peripheral sensory nerves and as a counter-irritant in rheumatism and sprains and inflammatory conditions. Physicians prescribe camphor internally for its calming influence in hysteria, neuralgia, and other nervous ailments. Camphor is acrid and taken in large doses, it is highly poisonous. The wood is expensive for its persistent camphoraceous odour.





NAURU



Azadirachta indica A. Juss.

Common Name: Neem, Margosa.

Family : Meliaceae



Possessed of many great virtues, this native Indian tree has been identified on five thousand years old seals excavated from the Indus Valley civilization. With its fine star-like flower, its oblong lemon-yellow colored berries and its billowing cumulus crown, Neem is very much loved and admired in India because of its antiseptic and disinfectant properties. It is thought to be protective of women and children. The tree has been described as the 'heal all', 'divine tree', and 'village pharmacy' because of curing several common ailments. Neem is considered as an excellent shade tree. The tree is considered as a religious in some parts of India. The leaves and flowers of this plant are traditionally used to mark the New Year day ('Ugadi') in Andhra Pradesh, India.

FIELD IDENTIFICATION

A. indica can be easily identified by its dark grey-brown bark with vertical furrows; imparipinnate compound leaf having 10-15 shining, obliquely falcate-lanceolate leaflets with acuminate apex, cuneate base and serrate margin; white scented flowers with spreading petals and stamens fused in a central column; and oblong green drupes turning lemon-yellow on ripening.

SEASONALITY

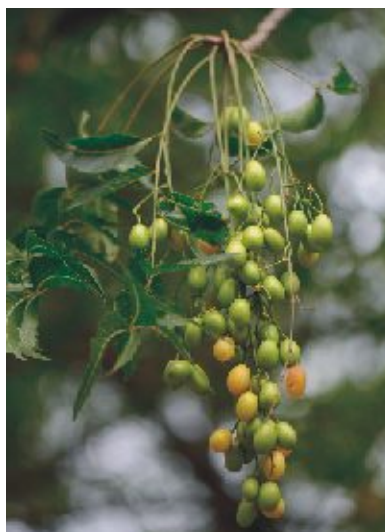
Leaves begin to fall in mid March; new pink leaves emerge quickly afterwards. Flowers appearing in April and fruits follow quickly, ripening and dropping in July.

DISTRIBUTION

A. indica is native to India but has been introduced in many parts of the world.

UTILITY

Neem is planted on the roadside as an excellent shade tree. Most parts of the Neem tree are credited with medicinal value. The seeds yield yellow bitter oil used to treat leprosy, skin diseases, ulcers and rheumatism. The neem oil is used for preparing cosmetics and it acts as an insect repellent. It is also used as a biopesticide. Bathing in an infusion of neem leaves clears away scars, and marks the ritual termination of an attack of chickenpox or measles. A paste of the leaf with turmeric powder is applied externally on smallpox pustules, itching soles, cracked heels and to heal boils and burns. Neem wood is handsome, hard and is used for high-class joinery, paneling and furniture.



Zanthoxylum rhetsa (Roxb.) DC.

Synonym : *Fagara rhetsa* Roxb.

Common Name: Prickly Ash, Badrang

Family : Rutaceae



The generic name, *Zanthoxylum*, is derived from Greek words meaning yellow wood. It refers to a yellow dye made from the roots. Indian Prickly Ash is a large deciduous tree with spreading crown and tall straight unbranched stem with corky bumps and large conical spines. The very large leaves with strong aromatic smell are crowded at the end of the branches. With the rains, emerges the massive cyme of fragrant yellow flowers remaining on the tree for a long period.

FIELD IDENTIFICATION

Z. rhetsa is identified by its thick, corky cream-coloured bark embossed with stout conical prickles with wide base; large unipinnate compound leaves with 8-20 pairs of leaflets; aromatic smell of the leaves when crushed; greenish-yellow flowers in large terminal hanging panicles; and purplish-green, pepper-sized fruits with bluish-black seeds.

SEASONALITY

Prickly Ash become leafless in summer months, new leaves arise in March-May. Flowers during June-August and fruits mature during September-October.

DISTRIBUTION

Prickly Ash is a native to moist deciduous forests of India Bangladesh, Mynamar and Sri Lanka.

UTILITY

The yellowish-grey wood is suitable for furniture and decorative paneling, carving and turnery. It is also used for manufacture of fibre boards, plywood, laminated wood, match boxes and splints. The bark has a lime-pepper flavour and used as a spice. The seeds serve as a substitute of pepper. Bark is aromatic and tonic, used in rheumatism. Tender leaves are cooked and eaten and used as a condiment. The fruits are appetizing and digestive. Fruits yield an essential oil used for the treatment of cholera. The seed oil is antiseptic and disinfectant and used in dry eczema and dandruff.



Bambusa balcooa Roxb.

Synonym : *Bambusa capensis* Rupr.

Common Name: Balcooa bamboo

Family : Poaceae



Balcooa bamboo is a tropical clumping bamboo originating from North-East India. It is a tall, densely tufted bamboo of robust appearance having long moderate sized thick-walled culms with swollen nodes having a white conspicuous ring above. New recruits are of blackish-green covered sparsely with dark-brown hairs. Several clustered branches arise with 1-3 dominant branches. Gregarious flowering in this species was noticed during 1983-1988. Balcooa bamboo is a one of the important commercial bamboo species and finds its use in construction, scaffolding and wood chip industry.

FIELD IDENTIFICATION

B. balcooa is identified in forest by its clumping habit; greyish-green, thick walled culms of 15-25 meters height and the diameter of the cavity (lumen) is one third that of culm; swollen culm nodes with a white ring above; internode length of 30-40 cm; triangular brown or orange-tinged ciliate culm sheath; the habit of developing branches from the middle of the culm to the top; and oblong leaf with short petiole.

SEASONALITY

The flowering is gregarious. Seed-setting usually occurs every 35-45 years.

DISTRIBUTION

B. balcooa is indigenous to North-East India including the eastern Himalayas, Nepal and Bangladesh. In its natural range, it grows up to an altitude of 700 meters in tropical monsoon climates with an annual rainfall of 2,500 - 3,000 mm. It is cultivated frequently in Bangladesh and India.

UTILITY

It is one of the best species of bamboos in terms of utility and extensively used for scaffolding and general building purpose. It is also used for frames of rickshaw hoods, baskets, woven mats and for agricultural and fishing implements. This species also serve as a raw material for the wood chip industry, paper pulp, Shoots are consumed as vegetables and leaves are used as fodder.



Ceiba speciosa (A.St.Hil.) Ravenna

Synonym : *Chorisia speciosa* A.St.-Hil.

Common Name: Silk Floss Tree

Family : Malvaceae

Planted by the country's representative - Mr. Andrew Bignell



With its attractive, rounded, umbrella-like crown supported by a bottle shaped green trunk studded with prominent stout conical prickles and a bloom of showy pink, hibiscus-like flowers make Silk Floss Tree most conspicuous flowering tree immediately after the rains. The common name Silk Floss Tree is derived from silky white floss present inside the fruiting capsules.

FIELD IDENTIFICATION

C. speciosa is identified by its bottle-shaped green trunk with stout triangular spines; palmately compound leaf with 6-7 leaflets; large showy flowers with cup shaped calyx and pink to rose-purple petals having yellowish-white throats with brown spots; and pear-shaped, pendulous capsule filled with seeds embedded in silky white floss.

SEASONALITY

It grows rapidly and the leaves fall off in August-September. Flowering starts in September on an almost leafless tree.

DISTRIBUTION

C. speciosa is native to tropical and sub-tropical forests of Argentina and Brazil. It prefers a tropical climate with distinct, long dry season, followed by heavy rain.

UTILITY

Silk Floss Tree is grown in gardens and roadside for its large showy pinkish-red flowers and lavish flowering when the tree is completely leafless. The silk floss is inferior to red silk cotton and is not much valued. The wood is soft and fibrous and has little use.



Melia azedarach L.

Synonym : *Azedarach sempervirens* Kuntze

Common Name: Persian Lilac, Bakain, China Berry

Family : Meliaceae

Persian Lilac is a sparsely branched, long-limbed deciduous tree with a spreading thin crown, superficially resembling *Azadirachta indica*. It is quick-growing but short-lived and reputed for its talcum-scented white and lilac flowers in spring. The attractively coloured flowers use nectar and fragrance to attract pollinators, most often moths and bees.



FIELD IDENTIFICATION

The tree can be identified in the field by its greyish-brown bark with long vertical fissures; bipinnate compound leaf with toothed leaflets; loose clusters of scented flowers with bluish-white or lilac petals surrounding deep purple central staminal tube; and hanging cluster of oval, pulpy, green to greenish-yellow drupes.



SEASONALITY

The tree becomes leafless in cold months and flowers during February-March along with the new leaves and fruits ripen by October.

DISTRIBUTION

Persian Lilac is indigenous to Baluchistan but it is well distributed in India, S.E. Asian Countries and Papua New Guinea.

UTILITY

Persian Lilac is extensively grown as an ornamental tree in parks and avenues. The wood is soft and is used in plywood and match box industry. Leaves are lopped for fodder and are highly nutritious. It is used extensively as firewood. Fruit stones make ideal beads and are used in making necklaces and rosaries. Fruits and leaves cure skin diseases. The seeds are used as a remedy for rheumatism and the leaves cure nervous disorders.



Crescentia alata Kunth

Synonym : *Parmentiera alata* Miers

Common Name: Gourd Tree

Family : Bignoniaceae

Planted by the country's representative - Mr. Ali Illiassow

Gourd Tree is a small, densely foliaceous tree but vividly unusual tree with hard, gourd-like fruit and dingy, greenish yellow flowers growing straight out of the trunk. The distinctive leathery dark green trifoliate leaves with a long winged petiole give the appearance of symbol of Christianity and therefore esteemed as a prosperity plant. The greenish yellow hard-shelled globose fruits with unpleasant-smelling sugar-rich pulp give the tree a curious appearance. The fruit is very hard to split open and hence the seeds do not get a chance to germinate easily. Coasta Rican Range horses break the hard ripe fruits with their incisors and swallow the small seeds embedded in the sugar-rich fruit pulp and the defecated seeds germinate well.

FIELD IDENTIFICATION

C. alata is identified in the field by its greyish bark, 3-foliolate leaf with long winged petiole; large trumpet-shaped, yellowish-green flowers with crisped petals arising directly from the old stem (cauliflorae) in a fascicle of 2-3; large globose or ellipsoid yellowish-brown fruits with hard rind.

SEASONALITY

It flowers mostly in summer months and fruits are seen on trees for most part of the year.

DISTRIBUTION

C. alata is native to dry forests of Southern Mexico, Guatemala and Costa Rica.

UTILITY

The wood is hard and of good quality and is used for small articles. The hard shell takes fine polish and is often used for ornamental purpose and domestic utensils. Medicinally, the fruit is used as aperients and febrifuge and to relieve headache. Roasted fruits are used for treatment of rheumatism. It is widely believed that *C. alata* helps to stimulate insulin production, fights bacterial strains such as *Staphylococcus aureus*, and assists in regulation of blood pressure.





NIGERIA



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Khaya senegalensis (Desr.) A.Juss.

Synonym : *Swietenia senegalensis* Desv.

Common Name: African Mahogany

Family : Meliaceae

African Mahogany is a deciduous, monoecious, medium-sized tree with straight trunk having many branches with compound leathery leaves arranged spirally at the ends of the branches. It has been introduced from Africa in many parts of the world as an ornamental tree. In its natural home, it occurs in riverine forests and is scattered within the higher-rainfall savannah woodlands. Its strong, deep taproot makes it one of the most drought-hardy species. African Mahogany is one of the hardest timber species and has over harvested due to its high timber value in its homeland. Apart from its wide-ranging medicinal uses, African Mahogany is considered as a magic tree used in various rituals in many parts of its homeland.



FIELD IDENTIFICATION

The tree is identified by its greyish-brown bark and pinkish red blaze; paripinnate compound leaves with 3 pairs of spatulate-oblong, leathery leaflets; creamy-white, sweet-scented, 4-merous unisexual flowers with an urn-shaped staminal tube in long terminal pedunculate cyme; erect, greyish-brown, globose dehiscent capsules.

SEASONALITY

Trees gradually lose their leaves in dry season. New leaves appear immediately. Flowering occurs at the end of the dry season. Fruits mature in 3–5 months.

DISTRIBUTION

K. senegalensis occurs from Mauritania and Senegal east to northern Uganda. It occurs in savanna woodland, often in moist localities and along watercourses.

UTILITY

African Mahogany wood is used for construction and cabinet making. The bitter-tasting bark is highly valued in traditional medicine. Bark decoctions is widely taken against malarial fever. An extract of the bark of *K. senegalensis* is commonly used in African traditional medicine for pain and inflammation. In Cameroon, the bark is in demand as an additive in local beer brewing. Seed oil is rubbed in to treat rheumatism. In Ghana, the bark is used for dyeing cloth brownish. The seed oil is used in cosmetics and for cooking. The wood ash is added to stored grain to prevent insect attack.



Coccoloba uvifera (L.) L.

Synonym : *Coccolobis uvifera* (L.) Crantz

Common Name: Seagrape Tree

Family : Polygonaceae



Seagrape is a medium-sized slow-growing tree, resembling more like a Ficus tree, with a multi-stemmed vase shaped crown. The beautiful bronze coloured young leaf turning to a greyish-green leathery stiff orbicular one makes the tree more attractive. The leaves frequently



turn completely red before they are shed in winter. The inconspicuous ivory flowers are produced on long racemes and are followed by dense clusters of small green grapes, ripening to a luscious deep purple in late summer. The fruit is very tasty, and can be used for jam or eaten directly from the tree.

FIELD IDENTIFICATION

C. uvifera is conspicuous in the field by its greyish-brown thin bark; broadly ovate, roundish, thick leathery leaf with rounded base and pinkish-red mid-rib and veins; creamish white tiny flowers on slender erect spikes from the base of the leaf; and closely-packed red-coloured succulent pendulous fruits.

SEASONALITY

The species flowers in April-May and fruits appear in packed clusters along the flowering axis during rainy season.



DISTRIBUTION

Seagrape is native of coastal beaches throughout tropical America and the Caribbean of America.

UTILITY

Seagrape is most often used in landscaping. The twisting and upright branching habit makes Seagrape a picturesque shade tree. Requiring full sun and sandy, well-drained soils, it is excellent for seaside locations since it is highly salt and drought tolerant. Fruits are sweetish-acid. The reddish fruits of the seagrape may be eaten raw, cooked into jellies and jams, or fermented into seagrape wine. Wood is employed for cabinet work. Bark extract (Jamaica Kino) is used as an astringent.





NORWAY



Commiphora caudata (Wt. & Arn.) Engl.

Synonym : *Protium caudatum* Wight & Arn.

Common Name: Hill Mango

Family : Burseraceae

A medium-sized, deciduous, aromatic tree found in the drier boulder hill regions with cooler climate. The crooked leaning stem with its spreading dome-shaped canopy with greenish-yellow foliage gives an attractive look to the rugged terrain in summer. The bark peels off easily leaving a greenish-grey appearance which makes the tree conspicuous in the crevices of boulders. The leaves and the bark have the smell of mangoes due to presence of oleo-resin.



FIELD IDENTIFICATION

C. caudata is identified by its thin green bark, peeling off as thin papery flex, mango-like smell when bark and leaves are crushed; long-petioled, imparipinnate compound leaf having 3-7 leaflets with acuminate apex and unequal base; small greenish-yellow flowers on long-peduncled dichotomous panicles; and round pea-sized, fleshy, 1-seeded drupes with persistent calyx.

UTILITY

Fruits are used for pickles. Oleo-gum-resin obtained from the stem (commercially known as ('Myrrh')) is fragrant and has been used as perfume and for medicinal purposes. Also it is used as incense. The bark and leaves are used for diabetes, low back pain, sciatica, arthritis, urinary retention and fever. Fruit is a good source of tannins and used as an astringent, cooling, aphrodisiac, diuretic and anti-diabetic. Wood is suitable for ply and veneers.

SEASONALITY

Young leaves and flowers of Hill Mango appear in March.

DISTRIBUTION

It is native to India and Sri Lanka mostly in the hilly tracts. Hill mango grows mostly in gravelly soils.



Bauhinia purpurea Linn.

Synonym : *Bauhinia coromandeliana* DC.

Common Name: Butterfly Tree, Mountain Ebony

Family : Leguminosae-Caesalpinioideae

Planted by the country's representative - Mr. Mahamed Al Arami



Mountain Ebony is a small tree with a short, crooked trunk supporting a compact, pleasant-to-look canopy. The camel's hoof shaped bilobed leaves and the showy rose-pink flowers in branched clusters at the ends of the branches make the tree quite distinct in the forest. The rattling pods splitting in the dry summer wind and strewing of the flat brown seeds on the ground is conspicuous. This species is quite common in parks and gardens and only occasionally as a street tree.



FIELD IDENTIFICATION

B. purpurea is conspicuous in the field by its greyish-brown bark with prominent lenticels; bilobed, leathery leaves with lobes overlapping along the inner margin and cordate base; ribbed, velvety flower buds and large, spreading, scented flowers of purple, rose-pink or lilac colour with petals striped with dark pink lines.

SEASONALITY

Leaves fall off in March-April and renewed in May. Flowering from October and continues during winter. Fruit ripen and split open between February and April.

DISTRIBUTION

The species is native of lower Himalayan region and found in forests of Terai region, Assam, Meghalaya, Western peninsula of India and Bangladesh.

UTILITY

Mountain Ebony is popularly grown as an ornamental flowering tree in many parts of the world. The heartwood is hard, strong and easy to work. It is mostly used for agricultural implements. The astringent bark is employed for canning, dyeing and rope-making. The root and flowers are used in traditional medicine as a tonic and laxative. The flowers are pickled or eaten fresh as pot herb. The leaves make nutritious fodder.



Bambusa striata Lodd. ex Lindl.

Synonym : *Bambusa vulgaris* Schrad var. *striata*.
Common Name : **Golden Bamboo**
Family : **Poaceae**

Golden bamboo is a tropical and sub-tropical open-clumping tufted bamboo. It is mostly used as an ornamental element in the landscaping of the parks and resorts. The yellow colour of the stem with green longitudinal stripes gives a spectacular appearance to this bamboo species. The clump formation in this species takes place rapidly. In its natural habitat, it often occurs spontaneously or naturalized on river banks, roadsides, wastelands and open ground, generally at low altitudes. In cultivation it grows very vigorous on moist soil and under humid conditions but tolerates a wide range of climatic conditions and soil types.

FIELD IDENTIFICATION

B. striata is identified by its culms of 8-10 meters height and 4-7 cm in diameter; conspicuously golden-yellow colour with light green stripes or at times green with yellow stripes; inter-nodes 15-25 cm long thick-walled inter-nodes; culm sheaths similar to *B. vulgaris*, but more yellowish and little smaller; and linear-oblong leaf with truncate and ciliate leaf-sheath. The young shoots emerge as yellowish-brown and streaked having leaf-sheath with dark-brown adpressed hairs and distinctly falcate auricle.

SEASONALITY

In dry season, the bamboo plants may become completely defoliated but recuperate once rainy season starts. The gregarious flowering in this species has so far not been noticed. The propagation is usually done through vegetative propagation.

DISTRIBUTION

Golden Bamboo is native to Thailand, Burma and India.

UTILITY

Golden Bamboo is often planted as an ornamental bamboo or to form hedges to border land. It is mainly used for ornamental planting. It is widely planted and used for a variety of purposes, primarily for use in light construction such as houses, huts, scaffolding, furniture, musical instruments and handicrafts. This bamboo is also an excellent raw material for paper and pulp production. Split stems are used for brooms, baskets. It is used for support to banana plantations.



Holoptelea integrifolia Planch.

Synonym : *Ulmus integrifolia* Roxb.

Common Name: Indian Elm

Family : Ulmaceae



Indian Elm is a tall deciduous tree with ascending branches from low height and buttressed stem with vertical ridges and many uneven outgrowths. Its dominant presence with dark green new leaves in late summer when most of the vegetation in deciduous forests is dry and leafless is pleasant to the eyes. The crushed leaves and bruised bark emit an unpleasant odour.

FIELD IDENTIFICATION

H. integrifolia is distinguished by its ash brown bark with patches of chaffed scale; alternate, smooth, shining, coriaceous leaves; small, yellowish-green flowers in dense clusters in leafless branches; and orbicular samara type of green fruit, turning straw-colour on ripening.

SEASONALITY

The leaves are shed in February-March and renewed in May. Flowers appear on bare branches during March-April. Fruits develop quickly and ripen from green to brown in April-May.

DISTRIBUTION

The plant is found in the tropical regions of Asia, including India, Nepal, Sri Lanka, Indo-China, Cambodia, Laos, Myanmar, Vietnam, Burma and China. It is also found in the lower Himalayan belt to Travancore, the southern part of India.

UTILITY

In Ayurveda, the bark and leaves are considered useful for treating oedema, diabetes, leprosy and other skin diseases. The mucilaginous juice squeezed from the boiled bark is used as an external application to relieve rheumatic swellings. The paste of the seeds and stem bark is used externally to treat ringworm and scabies respectively. Wood makes good fuel and charcoal. The branches are lopped for fodder.





PANAMA



Averrhoa carambola L.

Synonym : *Averrhoa acutangula* Stokes

Common Name: Carambola, Star fruit

Family : Astringentaceae

Planted by the country's representative - Mr. Dario Luque



Carambola is a small to medium-sized, bushy evergreen tree. The plant bears small lilac color, bell-shaped flowers in clusters, which subsequently develop into oblong fruits with characteristic 5-angled edges (sides or ribs) that appear like starfish in cross section. Carambola fruits feature light green to yellow with attractive smooth waxy surface. The crispy, juicy pulp can either be mildly sweet or extremely sour depending on the amount of oxalic acid content.



FIELD IDENTIFICATION

A. carambola is conspicuous by its finely fissured light brown bark; compound leaves of 15-20 leaflets; small, pinkish flowers with deep-pink throat arising mostly from old wood; oblong, yellowish-green, 5-deeply ridged fruits; and 5 small arillate seeds in each lobe.

SEASONALITY

The tree produces copious flowers from April-June and fruits during September-October.

DISTRIBUTION

Carambola is native to Malayan peninsula and cultivated in many parts of Southeast Asia, Pacific islands and China for its fruits.

UTILITY

The ripened sweet fruits are eaten raw, whereas sour ones are made into refreshing drinks or pickles. Good quality squash, jelly preserves and candy are also prepared from the fruits. In traditional medicine, the fruit is used for treating ailments such as cough, food poisoning and sore throat; the root for treating chronic headache, epistaxis and spermatorrhoea; the leaves for treating boils, colds, gastroenteritis; while the flowers for treating fever and malaria. Root extract is considered as an antidote for poisoning; crushed leaves are used for curing chickenpox, ring worm and scabies.



Brownea ariza Benth.

Synonym : *Brownea princeps* Linden

Common Name: Scarlet Flame Bean

Family : Caesalpinioideae



FIELD IDENTIFICATION

The tree is conspicuous by its smooth, greyish-black bark; long dark-green shining paripinnate compound leaf; 6-12 pairs of oblong-lanceolate, coriaceous leaflets with acuminate apex; pendulous inflorescence with scarlet-red flowers in dense umbels with monadelphous stamens; and a long, flat, dehiscent legume.

UTILITY

Scarlet Flame Bean is mainly grown in gardens mainly for its showy appearance and beautiful scarlet red flowers. The wood is very hard and resistant to termites, and is utilized in the buildings and in handicrafts. The bark contains a powerful haemostatic.



Scarlet Flame Bean is a gracious medium-sized evergreen tree having a short trunk with spreading and pendulous branches forming an umbrella-shaped crown. The dark green shining mature leaves in contrast to the new, juvenile, light-purple pendulous leaves is conspicuous in the field. Flaccid young leaves with pale pinkish buff, then pinkish brown are produced during summer and early rains. Large dense round cluster of bright red blossoms are mostly produced inside the canopy is distinctive feature of this species. The genus '*Brownea*' is in the honour of Irish Botanist, Patrick Browne and the species '*ariza*' is the one utilized by the natives of Colombia.

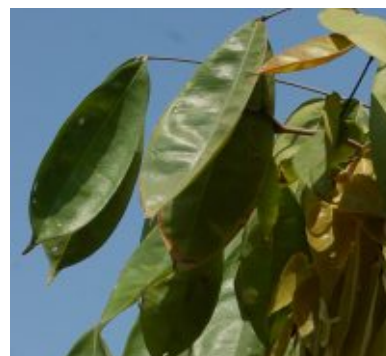


SEASONALITY

New pendulous leaves are produced almost throughout the year, more frequently in hot months. Flowers appear from March-April.

DISTRIBUTION

This plant is native to Colombia, Ecuador, Peru and Venezuela, where it grows in the humid forests at low altitudes.





PARAGUAY



153

Mitragyna parvifolia (Roxb.) Korth.

Synonym : *Nauclea parvifolia* Roxb.

Common Name: Kaim Tree

Family : Rubiaceae

Planted by the country's representative - Mrs. Isabel Gamattee de fox

A large deciduous tree with a tall straight cylindrical bole upto a considerable height, Kaim displays the trait of apical dominance in its favoured niche. Kaim seeks out moist place or gravelly beds of seasonal streams and shows a clear preference for black cotton and alluvial soil. The flowers are fragrant, and remind one of the better known 'Kadamba' (*Neolamarckia cadamba*) flowers.

FIELD IDENTIFICATION

M. parvifolia is conspicuous in the dry deciduous forests by its smooth, ashy grey bark with exfoliating scales forming shallow depression on the trunk; opposite decussate, coriaceous, obovate leaves with rounded or cuneate base; and creamy-white, fragrant globular flowering heads in dichasial cymes.

SEASONALITY

The tree is leafless for a short period in the spring and then the flowers appear from April-July.

DISTRIBUTION

Kaim grows gregariously throughout the drier parts of India, Pakistan and Sri Lanka.



UTILITY

Kaim is an important secondary timber of Indian origin. The wood is used for planks, construction of building, furniture, turnery and carving. In Ayurvedic medicine, the bark of the tree is used for blood-related diseases. The bark and roots are used for fevers, colic, muscular pains, burning sensation in the stomach and cough. Wounds and ulcers may be dressed with bruised leaves to promote healing, while extracts of the fruits are used to kill pain. The leaves are a nutritious fodder. The flowers serve as an excellent bee-forage.





PERU

154

Ficus amplissima Sm.

Synonym : *Ficus tjiela* Miq.

Common Name: Jadi Fig Tree, Bat tree.

Family : Moraceae



Jadi Fig is a large handsome fig tree with untidy masses of aerial roots emerging from the upper part of the trunk and lower branches but not quite reaching the ground. It can be easily confused with *F. virens* because of its form and foliage. However, its strong, sinewy aerial roots not reaching the ground, pale yellowish-green bark and deep purple, stalkless figs with deep scars at their apices make it distinct.

FIELD IDENTIFICATION

F. amplissima is identified by its smooth pale yellowish-green bark; broadly ovate leaves with a round to lightly cuneate base and acuminate apex with bluntly pointed tip; 3-5 cm long petiole with a terminal gland, and 7-10 pairs of lateral veins with mid-rib raised above; and stalkless, smooth, depressed-globose syconia (figs) crowded at the ends of the twigs that ripen into deep purple.



SEASONALITY

New flush of leaves appear in May. Figs ripen after the rainy season, from August to October.

DISTRIBUTION

Jadi Fig Tree is native to deciduous forests of peninsular India, Sri Lanka and Maldives.

UTILITY

Jadi Fig Tree is mostly used as avenue tree due to its large canopy. The wood is grey, soft to moderately hard. The bark is used for making rope. In some parts of India, the bark is boiled with salt and boiled water in equal proportions and the blue warm solution is given for the treatment of colic and also used for jaundice. The bark contains anti-oxidant and anti-inflammatory properties.





PHILIPPINES



Ficus arnottiana Miq.

Synonym : *Ficus courtallensis* (Miq.) Baill.

Common Name: Indian Rock Fig

Family : Moraceae

Indian Rock Fig is a small tree or large shrub specially occurring in dry rocky places of deciduous forests. This fig is devoid of aerial roots. The tree goes unnoticed in the forest unless the event of new flushes of leaves changing the colour from red to brown through many different intermediate shades till it settles into a deep, glossy green is arrived. The broadly ovate cordate leaf with long petiole and crinkly undulate margins often confuses this species with *F. religiosa*. However the short pointed apex of *F. arnottiana* and dark-green shade of the leaves is different from the elongated tail and pale-green leaf colour of *F. religiosa*.



FIELD IDENTIFICATION

F. arnottiana is distinguished by its greyish-brown bark; broadly ovate, leathery leaves with heart-shaped base, shortly caudate tip, and long (10-15 cm) petioles. Wavy margin and bright pink colour of the petiole and veins of young leaves; and green-dotted red or deep-purple syconia (figs) arising in pairs and crowded at the twig ends.

SEASONALITY

Leaves are shed in late winter and the tree remains bare during March- April. New foliage appears in May. Figs ripen in April-June.

DISTRIBUTION

The natural range of this lithophytic Fig extends from sub-Himalayan range to Bengal, and outwards from central India into eastern Rajasthan and down the Indian peninsula and Sri Lanka.

UTILITY

The bark of Indian Rock Fig is used for cordage. Leaves and bark are used in cutaneous affections. The leaves are lopped for fodder.





POLAND

156

Ficus benghalensis L.

Common Name: Banyan Tree

Family : Moraceae

Planted by the country's representative - Mr. Janusz Zaleski

Called "The Many-Footed" after the aerial roots striding from its trunk to form a small forest, the canopy of a single Banyan tree has been known to spread to an extensive area. Banyan Tree is characterized by its aerial prop roots that reach the ground and thicken into "pillar roots" which can eventually become trunks in their own right and then often become free from the mother tree. '*Thimmamma marrimanu*' in Anantapur district of Andhra Pradesh, India was listed as the world's largest Banyan tree in Guinness World Records in 1989. The tree is situated in and is named after '*Thimmamma*' who committed sati on her husband's funeral pyre. Banyan is a sacred tree and being worshipped at many places by Hindus as the male consort of the Peepal (*Ficus religiosa*).

The Banyan Tree is the National Tree of India. The name Banyan is said to have been given by the British when the British traders who followed King James's ambassador observed that the Indian merchants ('*baniyas*') assemble for business under this great tree, considering a contract made in its shade to be binding.



FIELD IDENTIFICATION

F. benghalensis is spotted easily in the field by its huge size with numerous aerial roots; greyish-white smooth bark exfoliating in irregular flakes; thick, coriaceous, ovate leaves with 5-7 basal nerves; oozing milky latex when injured and bright red syconia (figs) in pairs at the twig ends.

SEASONALITY

The figs ripen from February to April.

DISTRIBUTION

The Banyan is native to Indian sub-continent where it is widely distributed.

UTILITY

The figs are eaten by birds, bats, monkeys and squirrels. The leaves make good fodder. The crushed seeds and the milky latex from the twigs are applied externally to relieve pains, sores, ulcers and bruises. The same mixture is also used for healing cracked and burning soles. The seeds are considered cooling and tonic. A paste of the leaves or the heated leaves is applied as poultice to promote healing of abscesses. The infusion of the bark is a powerful tonic and useful for treating diabetes, dysentery and diarrhoea. The red tips of the young aerial roots are eaten to cure obstinate vomiting. The paste of the aerial root tips is also applied to relieve bleeding piles.



PORTUGAL



Fernandoa adenophylla (Wall.ex G.Don) Steenis

Synonym : *Heterophragma adenophyllum* Wall A. DC.

Common Name: Katsagan, Mostan Phul Tree

Family : Bignoniaceae

Planted by the country's representative - Mr. Daniel Campelo



Katsagan is somewhat an untidy tree with an irregular and dry-looking crown of large compound leaves of rough texture. The dangling contorted bunch of long fruits with yellowish-brown pubescence, looking like hanging snakes on the streets of Delhi, are a common sight after the monsoon. Rusty-tomentose trumpet-like flowers of Katsagan look much similar to those of Sausage (*Kigelia africana*) flowers except for the colour. The flowers mostly remain closed in the day and open up at night. This tree adapts to dry climate fairly well.

FIELD IDENTIFICATION

F. adenophylla is identified by its smooth, greyish bark with deep, vertical fissures; a pair of ear-like leafy stipules near the base of the main leaf stalk; large, paripinnate compound leaf of 4-6 dark-green rough leaflets; yellowish-brown, bell-shaped flowers with crisped petals in a terminal paniculate cyme; and long, hanging, cylindrical, ribbed, curved fruits with many winged seeds.

SEASONALITY

The leaves turn purple and then yellow before being shed in March-April. New leaves sprout quickly. Flowers appear during June-July and fruits soon after the flowering and remains on the tree for several months.

DISTRIBUTION

Katsagan is native to Assam, Andamans of India and Myanmar.

UTILITY

First cultivated at the Indian Botanic Garden, Calcutta and in recent times becoming popular as an avenue tree in many parts of India because it is drought resistant, fast-growing and not browsed by cattle. Its timber is orange-yellow streaked with brown and has the reputation of being hard and termite resistant. Wood is suitable for cabinet making. A thick tar extracted from wood is used for skin diseases.





QATAR

158

Dalbergia latifolia Roxb.

Synonym : *Dalbergia emarginata* Roxb.

Common Name: Indian Rosewood, Malabar Rosewood

Family : Faboideae



Rosewood has been in the honour list of the Swedish brothers Nils and Carl Dalberg. The generic name in Latin means broad-leaved. Indian Rosewood is predominantly a single-stemmed large deciduous to evergreen tree having cylindrical, fairly straight bole with rounded crown of lush green foliage. Rosewood timber is stronger and much harder than Teak and ranks among the finest woods for furniture and cabinet work. The honey of Rosewood is dark amber and strong flavoured. It is known to be a nitrogen fixing tree like other legumes. The species is planted as a shade tree in coffee plantations.



FIELD IDENTIFICATION

D. latifolia is identified by thin grey bark, exfoliating in fibrous longitudinal flakes; compound odd-pinnate leaf having 5-7 alternate, unequal-sized, orbicular leaflets with a notch at the tip; creamy white flowers fascicled on branched panicles which arise on old wood below the upper leaves; and oblong-lanceolate brown pods with rounded apex.

SEASONALITY

In drier natural habitats, Rosewood has a partial or complete leaf-shed by the end of January and fresh foliage appears in April-May. Flowering begins by August-September. Immediately, green legumes appear and mature during December-January. They are normally wind-dispersed.



DISTRIBUTION

Indian Rosewood is native to India and Indonesia, but is also grown in Nigeria, Kenya, Vietnam, the Philippines, and the other parts of tropical Africa and Asia.

UTILITY

Indian Rosewood has exceptional dimensional stability, and retains its shape very well after seasoning. The heartwood is rated as very durable, and is generally highly resistant to attack by termites. It is used to make premium-grade furniture, cabinets, valuable decorative articles, interior and exterior joinery, panelling and veneers. Leaves are used as fodder. Medicines are made from the tannins in the bark for diarrhoea, worms, indigestion, and leprosy. These tannins also produce an appetizer.



Citrus maxima (Burm.) Merr.

Synonym : *Citrus grandis* (L.) Osbeck

Common Name: Pomelo, Pummelo, Shaddock

Family : Rutaceae

Planted by the country's representative - Mr. Jin han kim



Pomelo is an evergreen medium-sized tree with uniformly spreading branches. It is the largest of all *Citrus* species, with rather large leaves, flowers and fruits. Its short and crooked trunk crowned by a dense evergreen canopy gives a beautiful landscaping element apart from its host of medicinal uses. One of the largest flowers of *Citrus* species, the fragrant white flowers of Pomelo with its orange anthers makes it more conspicuous in the garden. Pomelo is cultivated for its fruits in many SE Asian countries.

FIELD IDENTIFICATION

C. maxima is identified in the field by its smooth, dark grey or brown bark; broadly ovate to elliptic leaf with a round base and a broadly-winged petiole; leathery, strongly aromatic and dark green glossy leaf surface; fragrant yellowish-white flowers with 4-5 prominent bundles of white stamens with orange anthers; and greenish-yellow, large pear-shaped fruit with juicy pulp.

SEASONALITY

The tree flowers in February-March and the fruits ripen from July-November.

DISTRIBUTION

The Pomelo is a native of Malaysia, but is now grown in most of the tropical countries.

UTILITY

Like other Citrus fruits, Pomelos are rich in vitamin C. They are generally eaten fresh and they store well. The juicy pulp is eaten in desert and made into salads; marmalade is made from the outer rind. The juice is also used in various beverages (both alcoholic and non-alcoholic), and the peel may be candied. In traditional medicine the fruit is used for treatment of coughs, fevers, and gastrointestinal disorders. The leaves are said to cure epilepsy and cough. Seeds are effective in curing dyspepsia, cough and lumbago. The aromatic flowers are picked and processed into perfume in Vietnam. The wood is heavy and hard-grained and used for making tool handles.



Brachychiton rupestris (T.Mitch.ex Lindl.) K.Schum.

Synonym : *Sterculia rupestris* (T.Mitch. ex Lindl.) Benth.

Common Name: Queensland Bottle Tree

Family : Malvaceae

Planted by the country's representative - Mr. Lazar Chirica



Queensland Bottle tree is tall unbranched with a round compact crown. Its grossly swollen trunk, like a bottle, presents a remarkable spectacle in the tropical lands of Kangaroos. Its swollen trunk is primarily used for water storage. Aboriginals historically carved holes into the soft bark to create reservoir-like structures. On every tree, the palmate leaves are variable from narrow and elliptic to deeply-incised. Clusters of yellow-coloured bell shaped flowers are hidden within the foliage, and are followed by woody curved fruits. As a succulent drought-deciduous tree, it is tolerant to a wide range of soils and temperatures.

FIELD IDENTIFICATION

B. rupestris is quite conspicuous by its bottle-shaped trunk with greenish-grey bark; palmately lobed leaves with 5-7 linear, oblong-lanceolate leaflets having long pinkish petioles; small, creamish-yellow flowers having somewhat recurved petals with reddish-brown bands in small racemes; and bunch of follicles on a long peduncle.

SEASONALITY

The tree sheds its leaves prior to flowering, during the months of October and December. Flowers appear abundantly in summer. The characteristic bottle-shaped trunk develops in approximately five to eight years.

DISTRIBUTION

Queensland Bottle Tree is native to New South Wales and Queensland, Australia. It grows in a soil that consists of a medium to heavy clay, silt, sand and volcanic rocks.

UTILITY

Bottle Trees are commonly found planted in streets, parks as a conspicuous ornamental plant.





ROMANIA



161

Triplaris weigeltiana (Rchb.) Kuntze

Synonym : *Triplaris surinamensis* Cham.

Common Name: Mulato Tree, Ant wood Tree

Family : Polygonaceae



Mulato is a deciduous tropical monoecious tree growing up to more than 30 meters tall with a linear narrow canopy. It is graceful with its whitish bark and drooping compound clusters of white or reddish-purple flowering racemes. It looks more elegant when the triquetrous winged fruits from female tree are dispersed in the air like numerous small samaroids gyrating down to the ground. It has earned the name as "Ant wood tree" because numerous ants often makes nest inside the hollowed thick branches. It prefers moist areas in lowland and a potential weed of rainforest, waterways and disturbed sites.

FIELD IDENTIFICATION

T. weigeltiana is identified by its straight trunk with smooth, greyish-white bark, peeling up in flakes exposing the green under surface; alternately arranged oval shaped leaves with prominent veins and yellowish-brown hairs along the underside of midrib; large compound cluster of numerous small white and reddish-purple flowers in spikes of male and female trees respectively; and 3-winged, 1-seeded brown coloured fruits.



SEASONALITY

The flowering occurs after winter and the fruits mature at the end of summer season.

DISTRIBUTION

Mulato is native to South America – Brazil, Guyana, Suriname, Venezuela, Colombia, Ecuador and Peru. It is indigenous to the flood plains of the Amazon basin.

UTILITY

The trunk houses a specific species of ant. Bark infusion is used to treat intestinal infections and diarrhoea. The bark juice is used to treat the tooth ache. Also used as vermifuge and cure of herpes.





RUSSIA

162

Delonix regia (Hook.) Raf.

Synonym : *Poinciana regia* Hook.

Common Name: Gulmohar, Flamboyant Flame Tree

Family : Caesalpinioideae

Planted by the country's representative - Mr. Nuritdin Inamov

Gulmohar is a familiar ornamental tree with a spreading, sometimes flat-topped crown of thin, feathery foliage and arching branches. The generic name *Delonix* is derived from the Greek words '*delos*' (meaning conspicuous), and '*onyx*', (meaning claw), referring to the appearance of the spectacular flowers. Its fern-like bright green foliage and flamboyant display of flowers of vivid red/vermillion/orange/yellow flowers is an exceptionally delightful and striking sight. It is rated by some as one of the most beautiful of all flowering trees.

FIELD IDENTIFICATION

D. regia is distinguished in the field by its greyish-brown lenticellate bark; bipinnate compound leaves with a pulvinate petiole; large crimson red flowers on loose terminal or axillary panicle; flowers with 5 crispy petals out of which 4 are scarlet and 1 is white with scarlet and yellow splashes; and long, flat, woody pods hanging from the tree.

SEASONALITY

The tree sheds off leaves in January-February. Flowers and new leaves arise almost simultaneously during March and continue till rain sets in June. The fruits persist for many months, often till March or April of the following year.

DISTRIBUTION

Gulmohar is native to dry deciduous forests of western part of Madagascar. In the wild it is endangered, but is cultivated as a popular ornamental tree in many parts of the world including India.



UTILITY

It is widely grown as a magnificent flowering tree along roads and in gardens throughout the warmer parts of the country. Seeds strung together as ornamental beads. In 'Siddha' system of Indian medicine, the leaves are reportedly used to treat constipation, inflammations and arthritis. The wood is white, soft and light and of little value except fuel wood.



RWANDA



163

Ficus drupacea Thumb.

Synonym : *Ficus mysorensis* Heyne ex Roth.

Common Name: Brown-woolly Fig, Mysore Fig

Family : Moraceae

Planted by the country's representative - Mr. Stanislas

Brown-woolly Fig is a strangler fig with a large spreading canopy and with only a few short aerial roots wrapped around its trunk. Its new leaves, shoots and figs are intensely hairy. The plant often begins life as an epiphyte, growing on the branch of another tree; as it grows older it sends down aerial roots which reach the ground quickly form roots and become much thicker and more vigorous. They supply nutrients to the Fig, allowing it to grow faster than the host tree. The aerial roots gradually encircle the host tree, preventing its main trunk from expanding, whilst at the same time the foliage smothers the foliage of the host. Eventually the host dies, leaving the Fig to carry on growing without competition.

FIELD IDENTIFICATION

F. drupacea is identified by its yellowish-brown woolly pubescence bloom over the young shoots, petioles and undersurface of the young leaves; thick, greyish, lenticillate bark and white blaze with rapid, copious milky latex; broadly elliptic-oblong or ovate leaf with sub-cordate base; sessile, oblong or obovate, densely pubescent syconia (figs) in axillary pairs which turn orange-yellow colour on ripening.



SEASONALITY

Leaves are shed during February and new leaves appear in March. The Figs ripen in November-April.

DISTRIBUTION

The species is evergreen and commonly found in the deciduous forests of India, Sri Lanka, Myanmar and Vietnam.

UTILITY

The species has been used as a shade tree in coffee plantation in various parts of Karnataka, India. Extensively used in avenue plantation. A fibre is obtained from the bark and a weak rope can be made from it. The fruits are edible. The roots are an effective vulnerary when powdered and applied to the wounds.





Dendrocalamus giganteus Munro

Synonym : *Bambusa gigantea* Wall. ex Munro

Common Name: Giant Bamboo

Family : Poaceae

Planted by the country's representative - Mr. R.t.e Kamanzi



Giant Bamboo forms a massive clump with large number of pole-like bigger-girth culms. It is a very tall bamboo with close culms and slender branches. Culms 20-25 meters tall, 15-25 cm diameter, usually 1.5-2 cm thick, dull green, covered with white waxy powder when young; internodes 35-40 cm long, lower nodes with root scars. Young shoots cone-shaped, initially violet-brown, glaucous green with age; auricles very small; leaves sharply pointed, generally reflexed. This species has been introduced in Forest Research Institute, Dehardun, Uttarakhand and many other States in India.

FIELD IDENTIFICATION

D. giganteus is identified by its densely caespitose nature of rhizome; 30 meters tall culms of 15-25 cm diameter which are generally naked at the base and branchy above; hairy nodes and internode of 35-40 cm, with white waxy scurf when young; culm sheath as broad at the base as at the summit, 25-50 cm long and clothed with golden or brownish hairs; recurved, wavy auricles; large, broadly lanceolate leaves with round base and cuspidate-acuminate apex; and striate petiole sheath and long ligule.

SEASONALITY

The gregarious flowering of *D. giganteus* has not been reported so far. Flowering cycle is about 40 years.

DISTRIBUTION

This species is native to Malaya and Myanmar, cultivated in India and frequently cultivated in West Bengal and North-Eastern States.

UTILITY

In NE India, Giant Bamboo is used for construction of houses, mast of boats, flower vases, various other decorative items and also as water pitcher. Also it can be used for paper manufacturing, cardboards etc.





Phyllostachys nigra (Lodd. ex Lindl.) Munro

Synonym : *Arundinaria stolonifera* Kurz

Common Name: Black Bamboo

Family : Poaceae



Nothing is more impressive in the landscape than Black bamboo with jet black culm supporting the radiant plumes of lemon-green foliage. Plants spread rapidly forming loose clumps via creeping underground rhizomes that produce upright culms of 3-7 meter high from their nodes. These culms are greenish when young but turn blackish or purplish-black in colour as they age. They are usually 1-4 cm thick and banded with horizontal rings at the nodes and are grooved longitudinally between the nodes. There is always a contrast of light and dark culms balanced by slender, dark green leaves. This bamboo is initially slow to spread, but picks up quite vigorous growth as it matures. With proper care and

maintenance, Black bamboo can be the focal point of any landscape.

FIELD IDENTIFICATION

P. nigra is a monopodial evergreen bamboo, 10-20 mm thick and 8-12 cm diameter, and has erect culms in compact clusters. The important features of this species are purple colour culms; internodes of 20-25 cm long; yellowish-brown culm sheath; 4-6 oblong or lanceolate, glabrous leaves on each twig having alternative arrangement (but clustered on short shoots which grow from branches); and ciliate margin of leaf-sheath.

SEASONALITY

Flowers and fruiting is very rare.

DISTRIBUTION

P. nigra is a native of southern China and Taiwan and generally seen in fertile soil of stream banks at an altitude of 1100-1200 meters. It occupies the riparian habitat in its natural zone. Due to its impressive appearance in landscaping and gardens, it was introduced in the subtropical and temperate environments of many countries as an ornamental bamboo.

UTILITY

Its feather-like foliage and purple-black colour of the culms make it suitable for gardens. It is used for lumber, food and musical instruments. The leaves are antipyretic and diuretic. They are used internally in the treatment of fevers (especially infantile convulsions), vomiting and nose-bleeding. The leaves are harvested during growing season and dried for later use. The juice of the stem is taken for lung infection, cough and phlegm.



Terminalia arjuna (Roxb. ex DC.) Wt. & Arn.

Common Name: White marudah, Arjun

Family : Combretaceae



White Marudah is a massive tree with a broad oval crown, smooth bark and buttressed trunk usually found growing along water courses in dry deciduous forests. Its superficial shallow root system spreads radially along stream banks. The silvery white bark with exfoliating irregular sheets makes it very prominent in the forest. Ancient Hindu scriptures describe the Arjun as combining the virtues and essence of all herbs. The Arjun's great service to medicine lies in its bark extract, which is used in clinical treatment of hypertension.

FIELD IDENTIFICATION

T. arjuna can be identified in the field by its buttressed and fluted stem with grey or pinkish-green bark; large drooping crown; leathery leaves with 2 prominent glands at the unequilateral leaf-base; numerous, white, cup-shaped small flowers in short, axillary drooping spikes; ovoid-oblong, dark-brown to reddish-brown indehiscent drupes with 5-7 stiff wings.

SEASONALITY

New leaves appear during February-April. Flowers begin in April after a brief period of leaflessness. The fruit ripens the following February-May.

DISTRIBUTION

T. arjuna is native to India. It occurs naturally along banks of streams and rivers and seasonally dry water courses at low elevations.

UTILITY

The Arjun tree's medicinal value comes from its use in cardiac drugs. A decoction or powder made out of its bark, if taken regularly along with milk and jaggery every morning, stimulates the heart. It is used to treat asthma and, if taken with honey, it strengthens fractured bones. A paste made out of the bark mixed with honey cures pimples. Ash made out of the bark is applied on the area stung by scorpion. The leaves are used for feeding '*tasar*' silkworms to produce '*tasar*' silk.

Timber is locally used for carts, agricultural implements, boat building and house building. It makes excellent charcoal and firewood. The bark is used as tanning and dyeing material. The bark, containing large amount of lime (calcium carbonate), is often burnt to produce lime for chewing with betel.





SAMOA



169

Bambusa multiplex (Lour.) Raeusch.ex Schult.

Synonym : *Arundo multiplex* Lour.

Common Name: Green Hedge Bamboo

Family : Poaceae

Planted by the country's representative - Mr. Tufuga goal eatatau



Green hedge bamboo is a thickly growing, evergreen caespitose bamboo with many branched culms of short height giving the appearance of a reed. The change of colour of the culms from green to yellow makes it more attractive in gardens. It is hard to find a denser or faster growing privacy screen than Green hedge bamboo.

SEASONALITY

Green hedge bamboo flowers during December-January.

DISTRIBUTION

B. multiplex is indigenous to Nepal, China and Japan and was introduced in Indian Botanic Garden, Calcutta in 1794 and in Europe around that time.

FIELD IDENTIFICATION

B. multiplex is identified by its caespitose nature of the clump; glabrous, smooth, green culms of 2-4 meters high and 1.5-2.5 cm diameter that turns yellow on ageing; much branched culms from the base with prominently thickened nodes; linear-lanceolate, pale glaucous leaves of 5-20 cm long, 8-13 mm broad with broadly cuneate base and velvety-hairy undersurface; and short, diffuse, leafy panicle with solitary or clustered spikelets.

UTILITY

B. multiplex culms are arched for good poles and there is too small a volume for significant pulp production, in spite of good fibre dimensions. It splits easily and are fairly flexible. They are used as a source of weaving material for mats, baskets and handicrafts. The Green hedge bamboo is preferred for planting in gardens as a good screen or hedge and landscaping.



Oncoba spinosa Forssk.

Common Name: The Snuff Box Tree

Family : Flacourtiaceae



The Snuff Box is a large woody spiny shrub or small tree native of tropical Africa, now introduced in tropical gardens. Its common name is derived from the fact that the snuff boxes can be made out of the wood of this tree. The showy white blossoms with bundles of yellow overlapping stamens, resembling a fried egg, emit sweet smell. The dark reddish-brown, hard-shelled fruit with shiny brown seeds embedded in the sour yellowish pulp along with the shining glossy leaves make it an appropriate plant for the garden.

FIELD IDENTIFICATION

O. spinosa is identified by its mottled-grey smooth bark; conspicuously lenticelled old branches with short straight spines; oblong-elliptic, glabrous, leathery glossy leaves with crenate margin; axillary, solitary fragrant flowers with white spreading petals having numerous yellowish stamens in the center; and sub-globose reddish-brown fruit with a hard shell.



SEASONALITY

The flowers and new leaves are produced at the same time and the tree blooms for up to three months. In Indian gardens, it flowers from September to January. Fruits can be found on the tree from April to July.

DISTRIBUTION

O. spinosa is widely distributed along the eastern side of Africa as far as South Africa, mainly in dry woodland or open savanna in a wide range of sites from river valleys to rocky hills.

UTILITY

The Snuff Box tree is planted in gardens because of its beautiful fragrant flowers. Small apple-like fruits are edible. The seeds yielded drying oil used in paints and varnishes. The roots are used in dysentery and bladder complaints. The wood is light brown in colour suitable for cabinet work.





Adansonia grandidieri Baill.

Common Name: Grandidier's Baobab

Family : Malvaceae

Grandidier's Baobab is the biggest and most famous of six species of Baobabs reported from Madagascar Island. The architecture of this charismatic tree is so curiously designed that it appears as if someone has hoisted some windmills to generate power. The spectacle of the massive cylindrical trunk with a flat top canopy made by its horizontal branches is imposing. The showy fragrant flowers open at the dusk attracting various species of nectar-feeding bats and lemurs thereby effecting the pollination. The trunk of the tree stores water to a great extent. It appears that the Baobab overcomes the drought by storing water within the fibrous wood of the trunk, as the tree's diameter fluctuates with rainfall. This iconic tree is endemic to the island of Madagascar, where it is listed as an endangered species threatened by fire, slash-and-burn farming, over-grazing and over-exploitation.

FIELD IDENTIFICATION

A. grandidieri is conspicuous in open ground by its massive cylindrical trunk with smooth, reddish-grey bark; palmately compound leaf with 6-9 narrowly elliptic, densely hairy leaflets; large, solitary flowers having reflexed sepals with reddish-brown hairs outside, twisted white petals and numerous white stamens in the middle; and many-seeded large oblong-ovoid berry covered with reddish-brown hairs.



SEASONALITY

Leaves are produced from October-May, flowers appear between May and August and the fruits ripen in November- December.

DISTRIBUTION

A. grandidieri is endemic to the dry deciduous forests of south-west Madagascar.

UTILITY

The fruit pulp and seeds are eaten fresh. Cooking oil is extracted from the seeds. Spongy tissues of wood used as thatch. Rope is made out of the thick and fibrous bark. The outer bark is removed and broken into small pieces and sold as calcium-rich raw drugs.



Pseudobombax ellipticum (Kunth) Dugand

Synonym : *Bombax ellipticum* Kunth

Common Name: Shaving Brush Tree

Family : Bomacoideae

Planted by the country's representative - Mr. Bandar Saud P.L. Sand

Shaving Brush Tree is an ornamental, soft wooded, deciduous tree with long succulent bare branches closer to the stem giving a weird appearance. The tree looks cute when young with swollen stem at the base that looks like a green rock melon. But the tree earns its prominence from its bright red juvenile leaves and attractive bloom of silky red flowers with shining purple stamens on the leafless tree. A variant of the species is also seen with white flowers and white stamens. An artistic display of splashes of myriads of colour in the form of strips of greens, yellows, browns and white on the main trunk makes the tree more attractive. While glorifying the tree, people in Central America have domesticated the species in their garden and decorate their home and churches with its flamboyant flowers.



FIELD IDENTIFICATION

P. ellipticum is distinguished in the field by its smooth, greyish-green bark; digitate compound leaves with 4-6 oblong or obovate leaflets having rounded apex; large flowers in terminal clusters with thick and fleshy petals which are deep purple outside and light pink inside; and numerous purple stamens.

SEASONALITY

It is quick-growing tree and becomes leafless in winter. The flowers appear in February-March followed by emergence of dark-brown to deep coppery young leaves.

DISTRIBUTION

P. ellipticum is a native of southern Mexico, El Salvador, Guatemala and Honduras.

UTILITY

Shaving Brush Tree is grown as an ornamental for its showy flowers and equally fast growth. The wood is used for making tea boxes. Its wood is used for fuel and for carving handicrafts.





SENEGAL



Ficus microcarpa Linn.f.

Synonym : *Ficus aggregata* Vahl.

Common Name: Laurel Fig

Family : Moraceae

Planted by the country's representative - Mr. Souleye Ndiaye



Laurel Fig is a large evergreen tree with a dominating presence, usually with a few or no aerial roots wrapped around the top of a short, grey trunk or dangling in the air. It has got the remarkable tenacity to grow in the most recalcitrant crevices of bare rock or old fort and prosper into a huge tree with low-branched, spreading crown with dense foliage. The anchorage and the centre of gravity of the massive crown are ensured by the array of aerial roots clasp the hard surface in which the Laurel Fig grows. Very often this Fig tree is encountered in rocky ravines with water not too far below which is explored by its powerful aggressive root system. The bright red juvenile foliage in blazing summer followed by the deep glossy green foliage makes it an appropriate species in landscaping and avenue planting.



FIELD IDENTIFICATION

F. microcarpa is located in the field by its smooth greyish bark; short-stalked, coriaceous, dark-green, smooth and shining, broadly ovate leaves with circular outline and obtuse apex and ovoid to globose syconia (figs) in pairs in crowded clusters which turn dark purple or yellow when ripe.

SEASONALITY

New red leaves emerge in April-May and figs ripen from June-August during rains.

DISTRIBUTION

It is native to India and China but widely planted in tropics. Probably the availability of the pollinating Fig wasp (*Eupristina verticillata*) associated with *F. microcarpa* is one of the main factors of its naturalizing.

UTILITY

Laurel Fig is best known as evergreen avenue tree, capable of casting a dense shade over an immense area. The pounded leaves and bark are applied as poultice in rheumatic headache, wounds and bruises. The juice of the bark (in milk) is considered as useful in liver disease. The timber is unusual among fig trees for being moderately hard, pale reddish-grey and beautifully mottled.

Guaiacum officinale L.

Synonym : *Guaiacum bijugum* Stokes

Common Name: Lignum-vitae

Family : Zygophyllaceae

Planted by the country's representative - Mr. Mirko Grubisic and Telimaducic

Lignum-vitae, meaning 'tree of life' in Latin, is an evergreen, slow-growing small tree from West Indies. The Spanish encountered *Guaiacum* wood when they conquered San Domingo. It was introduced in Europe where it acquired an immense reputation in the sixteenth century as a cure for syphilis and certain other diseases. The brilliant blue flowers fade gradually to bluish white before they fall. The tree tends to branch out early and may have multiple trunks, which form a large and relatively low canopy. When the tree blooms, usually in the early summer, it produces small blue flowers which fade gradually to bluish white before they are shed off. *Guaiacum* flower is the national flower of Jamaica.



FIELD IDENTIFICATION

G. officinale is identified by its smooth, greenish-white bark; paripinnate compound leaf with 4-6 obovate, leathery bright green leaflets; blue flowers arranged in umbellate bunches at the base of the leaves; obovate, somewhat flattened, green fruits which turn bright orange when ripe; and red-arilled seeds.

SEASONALITY

Flowers are produced in abundance towards the end of the cold season.

DISTRIBUTION

It is native to West Indies and tropical America, but now grown in the gardens of tropical and mild sub-tropical climate for its beautiful blue flowers.

UTILITY

It is one of the most beautiful blue flowering trees in the world and a popular garden plant. *Guaiacum* resin is used as fat stabilizer. It is used to prevent rancidity and loss of flavour of preserved products. It is the heaviest and densely grained wood of the world and traditionally used for carvings. Gum *Guaiacum* has a local stimulant action which is sometimes useful in sore throat. The resin is used in chronic gout and rheumatism, whilst the wood is an ingredient in the compound concentrated solution of sarsaparilla. The wood and gum both are used for the cure of chronic cutaneous and syphilitic conditions.





SEYCHELLES



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Thyrsostachys siamensis Gamble

Synonym : *Bambusa regia* Thomson ex Munro.

Common Name: Monastery Bamboo, Thai Bamboo

Family : Poaceae

Planted by the country's representative - Mr. Rolph Payet



Monastery Bamboo derives its name from the original place of its growing around Buddhist Monasteries in Thailand and surrounding places. It is a small, tight-clumping tufted bamboo with dark-green purplish clean culms growing tight and upright upto 2/3rd of its height and then out-curving while managing to keep a tight crown. Its dense habit makes it a great screening plant and wind barrier. The epidermis is extremely strong with high silica content. It attains an attractive creamy yellow colour once dried.



FIELD IDENTIFICATION

T. siamensis is identified in the forest by greenish-brown young shoots which later turn green; average culm height of 5-7 meters long and 2-4 cm diameter which tend to arch towards the top and internode length of 20-30 cm; thick-walled culm with very narrow lumen; persistent culm sheath around the base of the culm; white band below hardly thickened node; linear-lanceolate, erect, triangular-shaped leaf of 10-13 cm long with blade tapering at the base and margin incurved; short petiole and long sheath with brown hairy margin; and a large graceful pale panicle.

SEASONALITY

The sporadic flowering occurs during November-December.

DISTRIBUTION

T. siamensis is native to Thailand and Myanmar. However, it is cultivated in Malaysia, China, Myanmar, India and Bangladesh.

UTILITY

In Thailand, Monastery Bamboo is one of the important bamboos being used for basket making handicrafts, umbrella handles, furniture etc. Tender shoots are considered as delicacies. Poles are used for fencing decorative applications. In Myanmar, it is mainly planted in gardens as an ornamental bamboo.



Gmelina arborea Roxb.

Synonym : *Gmelina sinuata* Link

Common Name: White Teak, Gamhar

Family : Verbenaceae

White Teak is a versatile tree of dry and moist deciduous forests. It is conspicuous in summer with its blazing yellowish-brown flowers with full of nectar on completely leafless branches offering their large yellow petals as launching pads for the foraging bees and other nectar feeding insects. A characteristic smell fills the air during the flowering season. It can reach to great height with straight, unbranched trunk in the moist areas but attains a modest height and size in the drier areas of Central India. This is one species whose area occupancy is more in plantation sector in other countries than its native countries of natural occurrence in India and Southeast Asia.

FIELD IDENTIFICATION

The tree is identified in the field by pale greyish-white, smooth bark flaking off in large plates leaving behind shallow depressions; broadly heart-shaped, long-petioled, pale-green leaves with 2 large glands at the junction of the lamina and petiole; trumpet-shaped scented flowers with 4 yellow and 1 brown petal; and ovoid, green, 1-seeded, pulpy fruits, yellow when ripened.



SEASONALITY

Leaves are shed towards the end of winter and flowers appear with the sprouting of new leaves in March-April. Fruits are set quickly after flowering and ripen during May-June.

DISTRIBUTION

White Teak is native to India, Pakistan, Nepal, Myanmar, Sri Lanka, and other Southeast countries. It was introduced as a captive plantation crop in many of the South African, South American and Asian countries for timber and paper pulp but susceptible to a wide range of insect pests.



UTILITY

The Gamhar wood is renowned in the market for its timber value which combines lightness with strength. The wood is light weight, soft and yellowish-brown which is used mainly for decorative works, carving, making toys, furniture and cabinets. The wood ash and fruits yield a yellow dye. Root is used for treating indigestion, fever and gout. Its root is one of the components of '*Dasamularistha*' of Ayurveda medicine. The leaves are lopped for fodder and are used in rearing silkworms.

Ficus auriculata Lour.

Synonym : *Ficus pomifera* Wall. ex King

Common Name: Elephant Ear Fig Tree

Family : Moraceae

Planted by the country's representative - Dr. Lena Chan

Elephant Ear Fig is an evergreen, low-branched, spreading small fig tree with very large rounded leaves, reminding one of elephant ears. The young leaves are intensely red, and turn green as the leaves mature. The complete absence of aerial roots and large cluster of pinkish rounded figs arising out of the main trunk at the ground level and remaining for extended periods make it very impressive. The species is mostly found in sacred groves of India.

FIELD IDENTIFICATION

F. auriculata is very conspicuous by its short spreading stature; grey and warty bark; very large, broadly ovate to round leaves with shallow cordate base and irregular margin; triangular stipule; and fairly large, depressed-globose or pear-shaped figs with conspicuous white or rusty flakes arising in massive clusters from the basal part of the trunk.

SEASONALITY

Young glossy leaves tinged with pink or bronze become pale or yellowish green before turning green, are showy. The fruits ripen to greenish brown or purple colour from November-May.

DISTRIBUTION

This plant has an extensive distribution range from east of India to Nepal, China, and Southeast Asia.

UTILITY

In SE Asia, the figs of this species are considered edible and quite delicious. The fruit is eaten fresh or added to pineapple juice for a refreshing drink. The latex from the stems is applied to cuts and wounds. The roasted fruit is used in the treatment of diarrhoea and dysentery. The 'Chakma' tribes of Bangladesh use its crushed bark as a relief for hydrophobia, a symptom of rabies. The bark yields a coarse fibre. The leaves are lopped for fodder.



Murraya paniculata (L.) Jack

Synonym : *Murraya exotica* L.

Common Name: Orange Jasmine, Chinese box

Family : Rutaceae



Orange Jasmine is an evergreen straggling bushy shrub or small tree in cool shady places of moist hilly forests with greyish-yellow, longitudinally-fissured corky bark and compact dense crown displaying glossy-green, strongly aromatic foliage. Flowers are scented orange and hence it earns the common name 'Orange Jasmine'. It is believed that in Indonesia, especially in the history of Jogjakarta Sultanate located in Java islands, Orange Jasmine was considered as a royal plant that represents the symbol of wisdom. The plant is used in wedding ceremonies as a symbol of praise for the couple in order to have fruitful and joyful married life just like the intense fragrance of the flower. Genus name is in honour of Johan Andreas Murray, a Swedish Botanist.

FIELD IDENTIFICATION

M. paniculata is conspicuous in the field by its characteristic light-yellow, longitudinally fissured corky bark; pinnately compound, aromatic, glossy dark-green leaf with 5-7 ovate leaflets arranged alternately on the rachis, terminal being the largest; sweetly scented, pure white flowers in dense axillary clusters; and shiny, ovoid, 2-seeded berry seated on persistent calyx, ripening to red.



SEASONALITY

Flowering in March-May and fruiting during April-May. However, when introduced in garden under domestication, it flowers almost throughout the year.

DISTRIBUTION

It is a native to China and extends down to India to Australia.

UTILITY

Orange Jasmine is a popular garden plant for its glossy evergreen dark green leaves, strongly fragrant white flowers and red ornamental fruits. It can be used as an excellent hedge plant with proper pruning. Wood is very hard and strong and is made into tool handles, walking sticks and engraved articles. Extract of the leaf is used in the treatment of diarrhoea and inflammation. Flowers and leaves are used in cosmetics, perfumes and traditional ceremonies.





SLOVENIA



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Roseodendron donnell-smithii (Rose) Miranda

Synonym : *Tabebuia donnell-smithii* Rose

Common Name: Gold Tree

Family : Bignoniaceae

Planted by the country's representative - Mr. Janez Premoze

Gold Tree, a native of Central America, is a large deciduous ornamental species with rounded or spreading crown. The showy clusters of large bell-shaped golden yellow flowers when leafless are breathtaking. The large paired palmately compound leaves and very long, narrow cigar like seed capsules make the tree prominent in the field. *R. donnell-smithii* was named in honour of Joseph N. Rose and Captain Donnell Smith.



FIELD IDENTIFICATION

R. donnell-smithii is identified in the field by its dark-brown bark with longitudinal splits; long-stalked digitate compound leaf with 6-7 oblong to ovate leaflets with long-pointed apex, crenate margin, and rounded or truncate base; bright yellow, trumpet-shaped flowers in terminal axillary clusters; long, pendulous, brown dehiscent fruits with many longitudinal ridges; and many flattened round seeds with papery wing along border.

SEASONALITY

Gold Tree becomes leafless in December-January and new leaves emerge in April. Flowering takes place in the leafless tree in February-April. Pods mature 4 months after flowering releasing the winged seeds.



DISTRIBUTION

The species is native to Mexico and Guatemala. However, it has spread to different parts of the world because of its impressive yellow floral display.

UTILITY

Gold Tree is a preferred species for growing in gardens and parks. The heartwood is pale brown with highly attractive greyish-black banding. The wood is used for furniture, cabinet work, veneer and flooring. It is also used as fuelwood.

Callistemon polandii F.M. Bailey

Synonym : *Melaleuca polandii* (F.M.Bailey) Craven.

Common Name: Gold-tipped Bottlebrush

Family : Myrtaceae

Gold-tipped Bottlebrush was named after Rev. Poland. It is a small, hardy, adaptable tree or large shrub, with drooping branches, reaching a height of 5-6 meters. With its dense and compact canopy having silvery pink new foliage and nice deep-red brush-like flowers displaying the exposing yellow anthers make this species very pleasing in the landscaping panorama. Needless to say that it is an excellent tree for attracting birds from the noisy lorikeets to the tiny honey-eaters.

FIELD IDENTIFICATION

C. polandii is identified by its thick, coriaceous, lanceolate leaves; spikes with crowded flowers appearing like bottle brush; dark red filaments with yellow anthers; and cup-shaped, woody, brownish fruits, dehiscing on the top.

SEASONALITY

This slow-growing evergreen tree produces flowers in almost each branch during February-April. Clusters of light-purple new leaves appear at intervals.

DISTRIBUTION

C. polandii is native of Queensland, Australia. It occurs along the strip of coast between Rockhampton and Townsville.



UTILITY

Gold-tipped Bottlebrush is preferred for planting in gardens and parks because of its attractive colour of new leaves and flowers and its adaptability to come in wide-ranging edaphic conditions. The tree is useful as a hedge, windbreak or screening plant attracting small birds to the garden. The fibrous papery bark of the trees is also useful for attaching orchids and bromeliads to add another dimension to the planting scheme.



SOMALIA



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Malpighia glabra Linn.

Synonym : *Malpighia biflora* Poir.

Common Name: Barbados Cherry

Family : Malpighiaceae

Planted by the country's representative - Mr. Abdirahman sh. Ibrahim



Barbados Cherry is a large shrub to small multi-trunked tree with many slender branches forming a fairly delicate canopy. Red juvenile leaves, pink flowers and luscious red cherries make this species a useful plant in the garden. A single fruit contains the recommended vitamin C daily requirements. Fruit resembles the common cherry, with a tasty sweet flavour having a slight bite of acid. Fruits lose their flavour and nutritional content upon harvest and therefore fruits should be hand-picked and eaten within a few hours to preserve the taste.



FIELD IDENTIFICATION

M. glabra is identified by its shining, ovate or elliptic leaves with entire margin; rose-red coloured flowers in 3-5 flowered umbels with fringed petals; and roundish, red or scarlet fruit having one or more furrows with large, quadrangular seed embedded in a sour reddish pulp.

SEASONALITY

Flowering can occur any time during the year depending on the local rainfall and can last year-round. After flower set, fruits soon follow and ripen in just 3-4 weeks. Barbados Cherry fruits from March-September.

DISTRIBUTION

M. glabra is a native to West Indies but grows in tropical countries for its edible fruits and also grown as an ornamental plant.

UTILITY

Barbados Cherry is acidic and used for jams and preserves. The fruits are considered useful in dysentery, diarrhoea and liver disorders.

Latania lontaroides (Gaertn.) H.E.Moore

Synonym : *Latania borbonica* Lam.

Common Name: Red Latan Palm

Family : Arecaceae

Planted by the country's representative - Mrs. Lulu Xingwana

The Red Latan Palm is an attractive, medium to large, fan-shaped palm with rounded crown, restricted to a small strip of coastline on a single island in the southern Indian Ocean. This large striking fan palm is well known for its stunning reddish colour leaf stems. The palm has a single clean trunk lined with closely packed rings where the leaf sheaths have fallen away. Young palms have reddish leaves, petiole, leaf margins and veins; hence this palm's common name Red Latan Palm. The surface of each leaf is covered with a whitish, waxy deposit, providing a silvery appearance to the palm. The Red Latan Palm is a relatively hardy species with a high salt tolerance. However it is threatened to habitat loss in the wild.

FIELD IDENTIFICATION

The palm is characterized by a straight deep-grey trunk lined with closely packed rings; large, palmate, fan-shaped, stiff leaves with long red petiole which become completely green as the leaf matures; cluster of tiny yellow flowers in 2 meter long inflorescence originating between leaves; and spherical, brownish-green, 1-seeded fleshy fruits.

SEASONALITY

In spring, it produces small yellow flowers followed by the fruits after 2-3 months.

DISTRIBUTION

Red Latan Palm is endemic to the Reunion Island of Indian Ocean where it occurs on the coast between Petite Ile and Saint-Philippe. However, it has been introduced as an ornamental palm in many countries due to its red-veined fan-type leaves.

UTILITY

Red Latan Palm being an attractive palm plant, is generally planted in landscaping. It makes an excellent pot plant and becomes very eye-catching once it matures. It has a very unique appearance with reddish colour on stems. The fruit is fleshy and edible.





SPAIN



183

Dalbergia latifolia Roxb.

Synonym : *Dalbergia emarginata* Roxb.

Common Name: Indian Rosewood, Malabar Rosewood

Family : Leguminosae

Rosewood has been in the honour list of the Swedish brothers Nils and Carl Dalberg. The generic name in Latin means broad-leaved. Indian Rosewood is predominantly a single-stemmed large deciduous to evergreen tree having cylindrical, fairly straight bole with rounded crown of lush green foliage.

Rosewood timber is stronger and much harder than Teak and ranks among the finest woods for furniture and cabinet work. The honey of Rosewood is dark amber and strong flavoured. It is known to be a nitrogen fixing tree like other legumes. The species is planted as a shade tree in coffee plantations.

UTILITY

Indian Rosewood has exceptional dimensional stability, and retains its shape very well after seasoning. The heartwood is rated as very durable, and is generally highly resistant to attack by termites. It is used to make premium-grade furniture, cabinets, valuable decorative articles, interior and exterior joinery, panelling and veneers. Leaves are used as fodder. Medicines are made from the tannins in the bark for diarrhoea, worms, indigestion, and leprosy. These tannins also produce an appetizer.



FIELD IDENTIFICATION

D. latifolia is identified by thin grey bark, exfoliating in fibrous longitudinal flakes; compound odd-pinnate leaf having 5-7 alternate, unequal-sized, orbicular leaflets with a notch at the tip; creamy white flowers fascicled on branched panicles which arise on old wood below the upper leaves; and oblong-lanceolate brown pods with rounded apex.

SEASONALITY

In drier natural habitats, Rosewood has a partial or complete leaf-shed by the end of January and fresh foliage appears in April-May. Flowering begins by August-September. Immediately, green legumes appear and mature during December-January. They are normally wind-dispersed.

DISTRIBUTION

Indian Rosewood is native to India and Indonesia, but is also grown in Nigeria, Kenya, Vietnam, the Philippines, and the other parts of tropical Africa and Asia.





SRI LANKA

184

Chloroxylon swietenia DC.

Synonym : *Swietenia chloroxylon* Roxb.

Common Name: Indian Satin Wood

Family : East Indian Satin Wood tree

Planted by the country's representative - Mr. Anura Yapa

A medium-sized strongly deciduous tree with diffused crown is predominantly seen in the drier tracts of mixed forests in India. Its striking presence can be noticed in summer by the display of its conspicuous lemon-yellow coloured foliage before leaf-fall followed by prolific flowering with abundant white flower in clusters on the bare trees giving the resemblance of patches of white clouds in the blue sky. The characteristic extravagantly furrowed and ridged bark flanged with corky tissue – an adaptation of the species to cope with the regular annual fire-burning of the species in the wild – makes out the Satin wood tree distinct in the forest. The non-browsability of aromatic foliage of the species, root suckering and strong coppicing ability, and the production of abundant seeds are the survival strategies of Satin wood species for the harsh habitats of dry deciduous forests.



FIELD IDENTIFICATION

C. swietenia is conspicuous by its characteristic greyish-brown, deeply fissured corky bark and light-yellow powdery blaze; light bluish-green, aromatic, paripinnate compound leaf with 20-30 pairs of asymmetrical leaflets having oblique base; terminal and axillary panicles at the twig ends having many cream-coloured, small flowers; clawed, spathulate, spreading petals surrounding the fleshy, lobed disc with 10 stamens; and oblong-ovoid, 3-valved dehiscent, brown capsules.

SEASONALITY

Leaves are shed in February- March. Flowering in March-April when the tree is completely leafless and the fruits mature and dehisce on the tree releasing the winged seeds in May-June.

DISTRIBUTION

The Satin wood tree is endemic to Indian peninsula and Sri Lanka. The tree occurs in gregarious patches due to its ability to produce numerous root suckers around the mother tree.

UTILITY

The wood is light brown, strong, hard, heavy and durable. It is valuable timber for building, panelling, furniture and cabinet work. The tree yields amber of reddish brown gum. The wood yields an essential oil. The bark is used as an astringent. The leaves are applied to wounds and also prescribed in rheumatism.





SUDAN



Phoenix sylvestris (L.) Roxb.

Synonym : *Elate sylvestris* L.

Common Name: Wild Date Palm

Family : Arecaceae

Planted by the country's representative - Mr. Hassan A. Helal

With its slender, curved stem with stubby leaf scars and plumose crown having long spiny compound leaves with inner ones erect and outer ones drooping gracefully, Wild Date Palm is a commonplace feature of Indian landscape. Unlike true '*khajurs*' of Middle East countries, these fruits are relatively dry and astringent. Wild Date Palm prefers moist but well-drained sites where they form dense stand. It is a multi-purpose tree with its tapped juice and ripened fruits serving as a food security among the rural folk, fruits relished by birds, stems used for construction and dried leaves collected for thatching and weaving mats.

FIELD IDENTIFICATION

P. sylvestris is distinguished in the field by its tall, slender single-stemmed trunk; long, feathery, greyish-green leaves with numerous sharp-pointed leaflets forming a dense crown at the apex; inner leaves and drooping outers gracefully drooping; yellowish-white, scented male flowers and greenish-brown female flowers on different trees (dioecious) in pendulous long panicles; and olive-sized bright orange-yellow fruits in large dense clusters.

SEASONALITY

Leaf-fall and renewal happens on regular basis. Flowers appear during February-March and fruits ripen during June-July.

DISTRIBUTION

Wild Date Palm is native to India and Myanmar. Usually it occurs in grooves along the village outskirts and scrub forests. Sometimes it occupies the areas of high pH.



UTILITY

The leaves are woven into floor-mats, baskets, fans and brooms, and the leaf stalks yield rope. Fresh juice obtained from upper part of stem is refreshing. Juice fermented to prepare a cooling beverage – 'toddy'. The juice is boiled to produce molasses or 'jaggery', a popular source of sugar in rural areas. The fruit and seeds are used in folk medicine as a tonic. Sap of the plant is nutritious, cooling and laxative. Root is used in toothache and in nervous debility. Gum is useful in diarrhoea and genito-urinary diseases. Fruit is tonic and restorative. Being a sedative and nerve tonic, the fruit is usefully employed for relieving.



Ficus amplissima Sm.

Synonym : *Ficus tjiela* Miq, *F. tsiela* Roxb.

Common Name: Jadi Fig Tree, Bat tree.

Family : Moraceae

Planted by the country's representative - Mr. John Ilauski



Jadi Fig is a large handsome fig tree with untidy masses of aerial roots emerging from the upper part of the trunk and lower branches but not quite reaching the ground. It can be easily confused with *F. virens* because of its form and foliage. However, its strong, sinewy hanging aerial roots not reaching the ground, pale yellowish-green bark and deep purple, stalkless figs with deep patches at their apices make it distinct.



FIELD IDENTIFICATION

F. amplissima is identified by its smooth pale yellowish-green bark; broadly ovate leaves with a rounded to lightly cuneate base and acuminate apex with bluntly pointed tip; 3-5 cm long petiole with a terminal gland, and 7-10 pairs of lateral nerves with mid rib raised above; and stalkless, smooth, depressed-globose syconia (Figs) crowded at the ends of the twigs that ripen into deep purple.

SEASONALITY

New flush of leaves appear in May. Figs ripen after the rainy season, from August to October.

DISTRIBUTION

Jadi Fig is native to deciduous forests of peninsular India, Sri Lanka and Maldives.

UTILITY

Jadi Fig Tree is mostly used as avenue tree due to its large canopy. The wood is grey, soft to moderately hard. The bark is used for making rope. In some parts of India, the bark is boiled with salt and boiled rice water and the blue warm solution is given for the treatment of colic and jaundice. The bark contains anti-oxidant and anti-inflammatory properties.



Dypsis decaryi (Jum.) Beentje & J. Dransf

Synonym : *Neodypsis decaryi* Jum.

Common Name: Triangle Palm

Family : Arecaceae

Planted by the country's representative - Dr. Jameson D. Vilakati

Triangle Palm is a very striking palm, introduced in many parts of the world as an ornamental palm purely for its architectural form and soft greyish-green feathered foliage with tan coloured petiole caressed with a white bloom. The leaves point upwards from the trunk but then arch gracefully about one meter from the tip. Though a true crown shaft is not formed, the tightly overlapped and bulging leaf bases form a stocky triangle above its relatively short trunk. Distinctive long straps frequently hang down from above the short trunk. The bold and formal appearance of the triangular palm dominates the landscape.

FIELD IDENTIFICATION

D. decaryi is spectacular in the field by its typical arrangement of the leaf bases in three vertical columns on the tree trunk overlapping each other and forming a triangular shape in cross section; grey-green compound leaves which project upwards and arching; brown petiole clothed with a white bloom; branched, pendulous inflorescence of yellowish-green flowers originating from between the lower leaves; and the round black fruits.



SEASONALITY

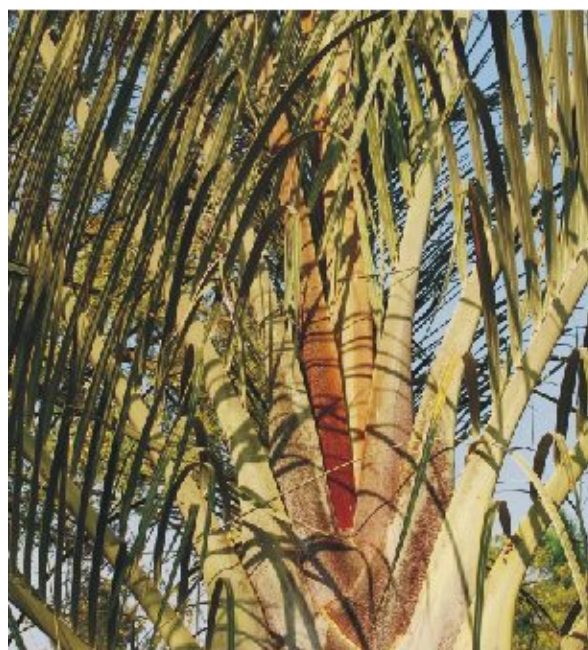
Long pendulous inflorescence appears during March-April and the fruits are formed during May-June and remain on the tree for few months.

DISTRIBUTION

Triangle Palm is native to the rainforest of Madagascar Island.

UTILITY

The palm is of ornamental value and grown in house and courtyards. It is also planted in open places in parks, gardens, median of roads. Its salt and drought tolerant ability make it suitable to be planted on a wide range of sites.





SWEDEN

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Millingtonia hortensis L.f.

Synonym : *Millingtonia dubiosa* Span.

Common Name: Indian Cork Tree, Tree Jasmine

Family : Bignoniaceae

Planted by the country's representative - Mr. Per Wrathner

Indian Cork Tree is a tall, evergreen, slender, narrow-crowned, graceful tree with vertically growing long branches drooping at the tip. The tree can grow to very great height but attains a stunted size in dry climate. The profusion of drooping silvery white soft fragrant flowers fills the air and hence preferred to locate in the temple precinct. The tree propagates mostly from root suckers. The genus *Millingtonia* is named in the honour of Sir Thomas Millington and the species name *hortensis* is derived from latin word 'hortus', meaning garden.

FIELD IDENTIFICATION

M. hortensis is identified in the field by its yellowish corky bark with vertical furrows and ridges; bipinnate or tripinnate compound leaf of bright green colour having ovate-lanceolate leaflets with crenate margin and acuminate apex which gives a bright green appearance; and white, scented flowers drooping in clusters with long slender corolla tubes; and long, slender, curved hanging fruits with many light winged seeds.

SEASONALITY

The flowering occurs from April until the rains and again in November and December. The fruit-setting occurs sparingly.

DISTRIBUTION

It is native to Myanmar and Malayan Archipelago.

UTILITY

It is a popular garden and avenue tree for its fast-growing habit, bright green foliage and fragrant long drooping white flowers. With the brittle wood, the tree is susceptible to be broken by strong wind or storm damage. The wood is soft and yellowish and it is suitable for carving and design. A low quality cork is obtained from bark. The bitter bark is reportedly used in Indonesia as an antipyretic.



Madhuca longifolia var. *latifolia* (Roxb.) A. chev.

Synonym : *Bassia longifolia* L.

Common Name: South Indian Mohwa Tree

Family : Sapotaceae

Planted by the country's representative - Mrs. Sylvia Martinez



South Indian Mohwa is a large handsome tree with spreading branches and slender mango-like leaves. The generic name *Madhuca* is derived from the Sanskrit word '*madhu*', meaning honey. The bronze coloured new foliage and drooping yellowish-white dusk-scented bloom dripping the sweet but intoxicating nectar in the blazing summer is a solace to the languid and tired man wandering in the forest in search of food. It is the most valuable South Indian trees because its flowers are a nutritive lifeline for millions of poor people. The succulent flowers fall to the ground just before dawn and many of the wild animals like deer, jackals, monkeys etc. compete to gather them. The heavy wood of this tree has been traditionally used to build the massive temple chariots in South India – not too many woods can withstand the immense weight. It is often planted as an avenue tree.

FIELD IDENTIFICATION

M. longifolia var. *latifolia* is identified by its grey-brown bark and red coloured blaze with drops of milky latex; oblanceolate leaves with both ends tapering; cluster of yellowish-white succulent flowers with long slender pedicels; and green, obliquely ovoid fruits.

SEASONALITY

South Indian Mohwa flowers during March-May and fruits in September-October.

DISTRIBUTION

It is a native of moist forests in SW India, and dry forests of S India and Sri Lanka.

UTILITY

The blossoms taste like pressed figs and ooze sweet juice. The flowers are eaten raw or sun-dried and are distilled into a strong country spirit. The seeds yield '*mahua butter*' used in cooking. The oil cake is used as a detergent. The extremely hard, durable timber has dark reddish-brown heartwood, but is seldom used because the tree is too valuable to be felled. A decoction made out of bark can cure itching, bleeding gums, and ulcers. The leaves can arrest bleeding, and ash of the leaf mixed with butter can provide relief from burns. The flowers help cure cough. The seeds promote formation and flow of milk.



Magnolia champaca (L.) Baill. Ex Pierre

Synonym : *Michelia champaca* L.

Common Name: Golden Champa, Champak

Family : Magnoliaceae

Planted by the country's representative - Dr. Akram Issa Darwish

Golden or Yellow Champa is a majestic tall evergreen tree with a straight cylindrical bole carrying a conical to cylindrical crown with sweetly fragrant deep-yellow flowers. These are the flowers you don't have to stick your nose in as the scent exudes from the tree. Nectar insects appear frantic, driven like drug addicts, bashing into each other to get into the heart of every flower on the tree and get intoxicated with the heavenly smell. In south India where the tree grows abundantly, women wear a closed Golden Champa in their long hair, allowing their body heat to cause the flower to open into a scented blossom as the evening progresses. A large part of India's tribal population traditionally uses the stem bark of the Golden Champa as a contraceptive agent. The genus '*Magnolia*' is named after Italian Botanist Peter A. Michel and the specific epithet '*champaca*' comes from the Sanskrit word Campaka, meaning sweet smelling.



FIELD IDENTIFICATION

M. champaca is conspicuous in the forest by its smooth grey bark; spirally arranged, shining dark-green, ovate-lanceolate leaves; fairly large and fragrant flowers of yellowish-orange colour with 12-15 petals that curve upwards towards the tips; and greenish grey to brownish, waxy follicles in dense cluster which split on one side exposing the

hanging red seeds from the funicles.

SEASONALITY

Flowers appear in March-June and fruits ripen in August to September bursting open the red-arilled seeds.

DISTRIBUTION

M. champaca is native to India, where it occurs in humid tropical evergreen forests. It is found throughout Indo-China, Malaysia, Sumatra, Java, and southwestern China. It has been widely planted throughout SE Asia and Indonesia.

UTILITY

M. champaca is sacred to Hindus and Buddhists and it is often planted in temple grounds and around homes. Perfume is produced from the essential oils extracted from the fragrant flowers. Wood is fine grain and used for the construction of buildings, furniture, cabinet work, toys, and carvings. It is also utilized in the production of packing cases, crates, tea chests and as plywood.

A decoction of the bark is prescribed for gastritis and urinary problems. The young leaves are crushed in water to make a cooling antiseptic lotion used as eye drops. The juice of the leaves is given with honey for colic. The seeds are known to be effective in expelling intestinal worms. Mixed with curdled milk, the dried root and root bark are reportedly used as



Kavalama urens Roxb.

Synonym : *Sterculia urens* L.

Common Name: Indian-tragacanth, Gum Karaya Tree

Family : Malvaceae



Indian-tragacanth is a handsome deciduous tree of the dry forest with a short bole which is often gnarled and having a much expanded canopy. This tree is always conspicuous in hot season from its light coloured, almost white smooth bark. A dry exudates from *K. urens*, known as 'Gum Karaya' is one of the least soluble gums used for many industries such as petroleum and gas, textiles, paper and pulp, pharmaceuticals, medicine and several other products. Commercial tapping of 'Gum Karaya' is done by blazing, peeling or by making deep cut at the base of the tree trunk. However, the large scale unsustainable harvesting is done by using improper instruments has resulted in drastic reduction of the population of this money-making tree from the forest.

SEASONALITY

Trees shed leaves in December-January and remain leafless till May. New leaves appear from April-June. The flowers appear from December to March. The fruits ripen in April-May.

DISTRIBUTION

K. urens is native of deciduous forests of dry rocky hills and tablelands of tropical climate. It is indigenous to India and Sri Lanka.

UTILITY

"Gum Karaya" is the source of livelihood for the tribal communities since there is a large demand for the gum in the market. Black seeds are roasted and eaten. The gum is used for preparation of pharmaceutical and medicinal preparations like lozenges, emulsions, lotions, sprays and pastes. The root, pounded with black pepper, is taken with water to relieve fever. A paste of the young leaves is used externally to relieve chapped or cracked skin. The wood is chiefly used for building construction work, furniture, cabinet work, carts, tool handles etc. It is suitable for heavy packing cases and turnery. The bark yields a good fiber.

FIELD IDENTIFICATION

K. urens is conspicuous in the forest by its smooth and shining white bark with outer layer peeling off as thin flakes; palmately 5-lobed leaves with long petiole; greenish-yellow purple flowers with thick glandular pubescence; and 5-follicled, radiating, brownish-red fruits with many stinging hairs which becomes stiff bristles on maturity.



Aegle marmelos (L.) Correa

Synonym : *Feronia pellucida* Roth.

Common Name: Bael Tree, Stone Apple

Family : Rutaceae

Planted by the country's representative - H.E. Dr. Pitnaya Pookaman

Bael is a small to middle-sized thorny tree with short erect trunk carrying an irregular crown. With its strikingly beautiful greenish-yellow tender foliage in the spring and the conspicuous cannon-ball like pendulous yellowish-orange ripening fruits from the downward-arching branches in the blazing sun of summer, Bael is an unmistakable tree to locate in the dry deciduous forest. The tree is inextricably associated with Hindu mythology. The trifoliate leaves symbolize the three eyes of 'Lord Siva'. It is said that offerings of water sprinkled on these leaves at any shrine will always remain fresh. Both sustaining as food and curative as medicine of great value, Bael is traditionally called by the Indians as "fruit of plenty" and hence it is no irony that legends from epics describe the fruit of Siva's austere tree as the breasts of the Goddess of Plenty.



FIELD IDENTIFICATION

A. marmelos is identified by its trifoliate leaves with typical spicy fragrance when crushed; straight, sharp, axillary spines on older branches; greenish, sweet-scented flowers in axillary clusters; and globose, grey or yellowish fruit with hard rind and orange-coloured, sticky sweet pulp.

SEASONALITY

Bael sheds its leaves during summer and renews its leaves during March. Dull white flowers appear in March-May. Fruits appear immediately but ripen in the summer of the following year.

DISTRIBUTION

The species is native to India and extends to Myanmar and most of the SE Asian countries. Within its natural habitat, Bael has remarkable ability to grow in recalcitrant sites ranging from dry rocky to stiff-clayey and even high pH sodic soil.

UTILITY

The pale tawny flesh of the fruits are eaten fresh, its aromatic pulp typically diluted with water and sweetened with tamarind to make a delicious cooling drink during summer which is used as an appetizer. It is an excellent curative for dysentery, acidity and for purifying blood. A decoction of leaves is favourite remedy for ailments that often occur during seasonal changes – fevers, influenza, and fatigue. The root is used as an ingredient of the famous Ayurvedic drug known as '*Dasamula*'.





Carissa spinarum L.

Synonym : *Carandas edulis* (Forssk.) Hiern

Common Name: Bengal Currant

Family : Apocynaceae

Planted by the country's representative - Mr. Filip Ivanov



SEASONALITY

Flowers profusely in March-April and fruits ripen in May-June.

DISTRIBUTION

It is met in the dry scrub forests throughout India, Myanmar and Sri Lanka.

UTILITY

The ripe fruit is acid-sweet, edible and particularly suitable for tarts, puddings and jellies. Unripe fruit is sour and is used for pickles. The wood is used for making spoons and combs. The root is bitter and used for stomachic and anthelmintic problems. A decoction of the leaves is given in the early stages of remittent fevers.

Bengal currant, a common species of dry deciduous scrub forest, is low straggling, thorny, dwarf, multi-stemmed bush. It is often seen in the countryside, the cowherd boys gather around the bush in summer to pluck and bring home the dark purple luscious sour berries with care from the clumsy spiny branches. The species shows a clear affinity for dark trap soil and in such sites, it forms pure patches.

FIELD IDENTIFICATION

C. spinarum is identified in the field by its dark-brown bark with narrow vertical scale; long opposite-forked spines; broadly ovate to oblong, thick leaves in opposite pairs exuding copious milky latex; white flowers, softly fragrant, in terminal dense cymes with the petals overlapping to the right; ovoid or ellipsoid, red berries turning purplish-black when ripe.



Adansonia perrieri Capuron

Common Name: Perrier's Baobab

Family: Bombacoideae

Perrier's Baobab is found in northern Madagascar, growing in a well drained soil with some water and lots of sun light. It is a massive tree with huge trunk about three metres in diameter and the whole plant can reach 25 or even 30 metres in height. It is an endangered species in Madagascar due to habitat loss by recurrent annual fire and the extensive extraction of firewood and timber. The species is named in honour of the French Botanist Joseph Marie Henry Alfred Perrier de la Bâthie.

FIELD IDENTIFICATION

A. perrieri is a very conspicuous large tree which can be located by its massive cylindrical trunks, with smooth, reddish-grey bark; flat-topped bluish-green digitate compound leaf with long brown petiole; dark-brown floral buds opening into large creamish-yellow flowers with a long staminal column with many stamens encircling a red carpel; and the large fruit of brown colour with many kidney-shaped seeds immersed inside the edible pulp

SEASONALITY

The pale yellow to pale orange flowers can be seen in November to December while the leaves remain till the end of the wet season.



DISTRIBUTION

This species is endemic to Madagascar and confined to the northern tip of Madagascar.

UTILITY

Perrier's Baobab is used as an ornamental tree. The wood can be used for paper pulp. Fruit is used to cure biliousness and dysentery. Bark yields a strong fibre for cordage.





TOGO



Ceiba pentandra (L.) Gaertn.

Synonym : *Bombax guineensis* Schumach.

Common Name: White Silk Cotton Tree, Kapok Tree

Family : Bombacoidae

Planted by the country's representative - Mr. Ouro-Djeri

White Silk Cotton is a tall deciduous tree with a straight trunk and pronounced buttresses at the base. The whorled horizontal branches with a light crown and short sharp spines all over the trunk and branches make the plant very conspicuous. The crowded creamish-yellow flowers at the twig ends and the pendulous straw-coloured capsules from the leafless branches are quite characteristic of the species. The capsules seldom burst on the tree revealing the floss. Flowers open in the night, emitting a powerful odour attracting the bats to feed nectars produced at the base of the flower.



FIELD IDENTIFICATION

C. pentandra is distinguished in the field by its smooth, green young bark with conical prickles; palmately compound leaf with 5-7 elliptic, acute leaflets on long, slender, green petiole; axillary clusters of flowers with campanulate green calyx and creamy white or pale pink petals; and drooping, oblong, green capsules tapering at both ends with long pale yellow or grey silky floss.



SEASONALITY

The leaves are shed in January and the new ones appear in March when the flower-setting takes place. Fruits mature in May.

DISTRIBUTION

This species is a native of Andamans, Malaysia, tropical America and eastern India.

UTILITY

The wood is soft and light and used for toy making. Fruits yield white floss (Kapok) that is used for stuffing cushions. Decoction of the boiled roots is used to treat oedema; gum is eaten to relieve stomach upset; tender shoot decoction is a contraceptive and leaf infusion is taken orally against cough and hoarse throat. The root extract of the tree is said to cure diabetes. The gum from stem trunk is used for the treatment of stomach ailments. The bark is a febrifuge and the fruit is effective in migraine.



Phyllanthus acidus (L.) Skeels

Synonym : *Cica acida* (Linn.) Merr.

Common Name: Star Gooseberry

Family : Phyllanthaceae



Star Gooseberry, a close relative of Indian Gooseberry (*Phyllanthus emblica*), is a small tree of home gardens. The dense canopy of delicate feathery foliage with leaves arranged in two rows on opposite sides of the twigs displaying a bright yellowish-green tone in the winter brings substance to the garden. The summer brings prolific loose clusters of greenish-yellow fruits, hanging from the trunk and main branches. The fruit is akin to Indian Gooseberry but much smaller and slightly angled. Few eat raw star gooseberries due to its pungent and astringent taste. The flesh is juicy, watery, crisp and densely compact. It is richest source of vitamin C. The fruits do not ripen further once plucked from the tree, and are therefore harvested once they begin to drop.

FIELD IDENTIFICATION

P. acidus is identified in the field by its grey bark and scars of prominent fallen deciduous branches; pinnately distichous leaves that are small and ovate; slender drooping greenish-white or pinkish-green racemes carrying female flowers on top and male flowers crowded down below; and greenish-yellow, depressed-globose, 6-8 lobed fruits with a hard stone at the centre surrounded by fleshy covering.

SEASONALITY

Flowers appear from April-May. Fruits appear from May-July. However, the trees have a tendency to bear fruit sporadically throughout the year.

DISTRIBUTION

Star Gooseberry is probably native to the coastal region of north-eastern Brazil. It has now been naturalized and cultivated pan-tropically in India and most of the south-east Asian countries.

UTILITY

Fruits are generally too tart for fresh eating but are esteemed for jellies, preserves and pastries. Unripe fruits are used in preparation of pickle. The fruits are used as a blood purifier and appetite stimulant. They are also used to remedy bronchitis, biliousness, and treat digestive disorders such as urinary concretions, diarrhoea, and piles. Star gooseberry concoctions act as a liver tonic and blood enrichment remedy. Another concoction includes making a leaf poultice with added pepper to treat sciatica and rheumatism.





TUNISIA



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Tamarindus indica L.

Synonym : *Tamarindus officinalis* Hook.

Common Name: Tamarind

Family : Caesalpinioideae

Planted by the country's representative - Mr. Nabil Hamada

Tamarind is a very large handsome, long-lived tree with short stout trunk with a few burrs and a high spreading crown of feathery compound foliage. As the dark brown pulp made from the fruit resembles dried dates, the Arabs called it '*tamar-u'l-Hind*', meaning 'dates of India', and this inspired Linnaeus when he named the tree in the 18th century. Usually it is seen in the outskirts of the villages in the form of grooves and on sides of the highways. The tree is of greatest value to the poor tribes who inhabit the forests of India. In times of famine, they husk the tamarind seeds, which are then boiled and powdered into flour to make bread. Even the leaves and flowers are also eaten.



FIELD IDENTIFICATION

T. indica is identified in the field by its rough, fissured greyish-brown bark; paripinnate compound leaf with 10-20 leaflets with conspicuous midrib and with a tuft of yellow hairs at the base; small, yellowish flowers with pink stripes in few-flowered lax racemes; indehiscent, rusty-brown, sub-cylindrical pods with constrictions between the seeds; round and the reddish-brown compressed seeds embedded in a sticky edible pulp.

SEASONALITY

Flowering generally occurs in synchrony with new leaf growth, during April-May. The brown fruits mature in summer and hang on the trees for many months.

DISTRIBUTION

Tamarind is indigenous to India. It also occurs in East Africa, especially in Tanzania. Its extensive root system contributes to its resistance to drought and wind.

UTILITY

The unripe and ripe fruits rich in vitamin C are sour and eaten raw. The fruit pulp is the chief ingredient for flavouring curries, sauces, chutneys, pickles and certain beverages throughout India. The lotions or poultices of the bark is be used to relieve sores, ulcers, boils and rashes. Leaf extracts exhibit anti-oxidant activity in the liver, and is a common ingredient in cardiac and blood sugar reducing medicines. Young leaves are used in fomentation for rheumatism, applied to sores and wounds, or administered as a poultice for inflammation of joints to reduce swelling and relieve pain. A sweetened decoction of the leaves is good against throat infection, cough, fever, and even intestinal worms. Filtered hot juice of young leaves and a poultice of the flowers are used for conjunctivitis. Powdered seeds may be given to cure dysentery and diarrhoea.



Careya arborea Roxb.

Synonym : *Careya orbiculata* Miers

Common Name: Wild Guava Tree

Family : Lecythidaceae



Wild Guava is a handsome medium-sized deciduous tree with a short stout trunk and a compact crown with a wonderful display of colour transition of the foliage during various seasons of the year. The exhibition of lavish, powder-puff flowers with whitish-pink tinge in bunches on the tips of bare branches during summer is striking. The foetid smell of the flowers attracts the swarms of bees and nectar-feeding birds in the morning hours. This orchestrated flowering event is preceded by the leaf shedding during late winter when most of the leaves turn bright scarlet. The fruits ripen are shed and strewn on the forest floor during monsoon season and these are merrily eaten by wild animals.



FIELD IDENTIFICATION

C. arborea is identified by its thick, dark-brown bark with longitudinal fissures; crowding of leaves at the ends of the branches; large, obovate leaves with base conspicuously narrowing into a short petiole and obtuse apex; large, showy, unpleasant-smelling flowers with 4 reflexed green petals; numerous stamens with long filaments in a ring, out of which the outer ones spreading and scarlet at base and the inner ones white; green ellipsoid guava-like berry carrying the remnants of persistent calyx at the top with the remains of protruding style.

SEASONALITY

Leaves turn deep red or orange before falling in late winter. Flowers appear in March-April on leafless branches followed by new leaves which start with purple colour and then change to green. The fruits ripen during June-July.

DISTRIBUTION

Wild Guava is distributed in the open savannah woodlands or relatively moist hilly forests, avoiding both the drier tracts and the humid rainforests. It is native to India, Sri Lanka and Myanmar.

UTILITY

The wood is durable and used for making furniture. Bark provides good cordage. Elephants relish the mucilaginous bark. Ripe fruits are aromatic and edible, often boiled and cooked before eaten. The decoction of the bark is used for dysentery. Its astringent fruits are edible though the seeds are reported to be poisonous. The bark juice is used to cure cough and colds. Leaves are used in ulcers. It is a fish poison. Its inner bark rubbed on shoes keeps off leeches.





TURKMENISTAN



Acacia chundra (Rottl.) Willd.

Synonym : *Mimosa chundra* Rottler

Common Name: Red Cutch

Family : Mimosoideae



Red Cutch is a moderate-sized deciduous tree having a crooked trunk with scurfy bark and a feathery crown. Its high regeneration capacity and hardiness makes this species ideal to colonize the new or degraded sites. The species can be introduced as live fence due to its sharp recurved stipular spines. The erect dense whitish long spikes and the rattling pods are striking. In many places an inferior type of cutch is extracted from its wood.

FIELD IDENTIFICATION

A. chundra is identified by its rusty-brown bark peeling off in thin flakes; pale purplish-brown branchlets; bipinnate compound leaf having with 10-15 opposite pairs of pinnae with sulcate rachis and glands at the basal and the two upper most pinnae; presence of recurved stipular spines; yellowish-white flowers in axillary spikes; dark brown, stipitate, flattened and dehiscent legume with 6 ovoid greenish-brown seeds.

SEASONALITY

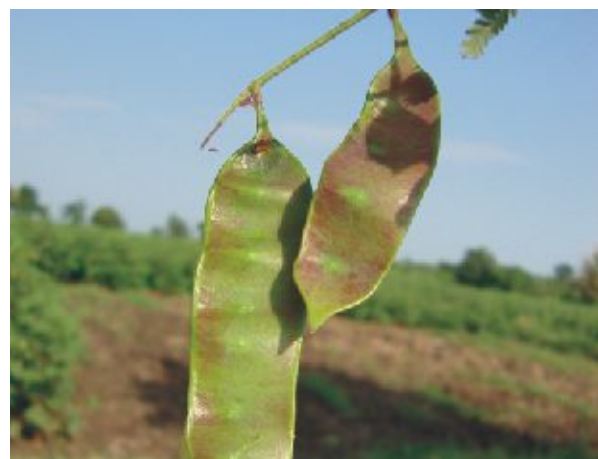
The leaf shedding occurs during February-March and new leaves appear in April-May. Flowering in May-June. The fruits mature during winter.

DISTRIBUTION

It is confined to the foothills of drier tracts of India, Sri Lanka and Myanmar.

UTILITY

Bark and leaves of the leaves are used medicinally. The stem bark is astringent and is applied to boils and ulcers as an antiseptic. A paste prepared from the bark and leaves is used externally to relieve abscesses. The wood is used for extraction of a low quality 'kutch'. The timber is eminently suitable for agricultural implements, tool handles, and house posts. It is also used as good firewood and for making charcoal because of its high calorific value. The leaves of this species are a good fodder for goats. Because of its hardy nature, it is one of the most desirable species for barren-hill afforestation programme.



Syzygium cumini (L.) Skeels

Synonym : *Syzygium caryophyllifolium* (Lam.) DC.

Common Name: Indian Black Berry Tree

Family : Myrtaceae

Indian Black Berry is one of the most striking trees of Indian forests. At a time when the entire deciduous forests looks dry and leafless, the Indian black berry tree is one of the first trees to produce a flush of coppery tender leaves. The ripening fruits of the Indian black berry tree signal the approach of summer season, a time when children and parakeets compete for its heavy purple berries and every mouth is stained with its juice. It is a favourite avenue tree in India because it retains its dense, shady crown through the dry season.

FIELD IDENTIFICATION

S. cumini is identified in the field by its silvery grey bark with dark flaky patches; leathery, glossy elliptic leaves in opposite pairs with a conspicuous intra-marginal vein and acuminate apex; greenish-white sweet-scented flowers in dense clusters of three with long, spreading, white stamens originating from a yellow centre; and glossy deep-purple, spherical, fleshy 1-seeded fruit.

UTILITY

Indian Black Berry is a popular shade tree in India. The tree is sacred to Hindus and Buddhists. The fruit is employed in folk medicine in diabetes, dysentery and diseases of spleen, as a tonic and to strengthen the teeth and gums. In the wild, the fruits are eagerly devoured by jackals. The decoction of the stem bark is used as a gargle for sore throat and a mouthwash for ulcer and spongy gums. The fresh bark juice, mixed with goat's milk, is used to treat infantile diarrhoea. The fresh fruits as well as the extracts of bark, seeds and leaves are used in the treatment of diabetes. The heavy, beautiful reddish-brown heartwood is extensively used, especially for structures that remain underwater.



SEASONALITY

New leaves appear during March-April. The flowering takes place in March-April. Fruits ripen by June-July.

DISTRIBUTION

The species is widely distributed in tropical and subtropical parts of India and Sri Lanka, Malaysia, Thailand, Philippines and Australia.



UGANDA



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Manilkara zapota (L.) P.Royen

Synonym : *Achras latiloba* Lundell

Common Name: Sapodilla Tree; Sapota Tree

Family : Sapotaceae

Planted by the country's representative - Dr. Epheaim Kamuntu



Sapodilla is a large evergreen tree from tropical America with a characteristic sympodial branching with young branches arranged horizontally. The cylindrical bole carrying the round dense canopy of spirally arranged dark-green glossy foliage makes a pleasing appearance. It produces the familiar 'chikoo' fruit. Its main commercial product is not so much the fruit as the milky latex- 'chicle' – which in the past was once the main ingredient of chewing gum.

FIELD IDENTIFICATION

M. zapota is identified in the field by its brown or greyish bark with deep vertical fissures; spiral arrangement of coriaceous, dark-green, shining leaves around shoot tips; bell-like, small, greenish-white, star-like flowers on slender brown pubescent peduncle; and egg-shaped, brown-coloured fruits with brownish sweet-scented flesh inside.



SEASONALITY

The tree flowers in May-June and fruit take about 4 months to mature.

DISTRIBUTION

M. zapota is a native of Mexico, Brazil, and Central America. It is a species of the lowland rainforest.



UTILITY

M. zapota is mainly cultivated for its fruit, which is highly prized and considered one of the best in Central America. It is eaten raw or made into jam, preferably when slightly overripe. Seeds contain hydrocyanic acid and should be removed before eating the fruit. Fruits, soaked in melted butter, are preventive against biliousness and febrile attacks. A leaf decoction is taken for fever, haemorrhage, wounds and ulcers. Bark is reputed tonic and febrifuge.



Terminalia catappa L.

Synonym : *Terminalia badamia* DC.

Common Name: Indian Almond Tree

Family : Combretaceae



The Indian almond tree has a characteristic pagoda-shaped crown with horizontally spreading branches in whorls from the main stem. As the tree gets older, the crown becomes flattened and spreads like vase-shape. This is one of the few tropical trees changing the leaf colour to reddish-purple before falling out. The fruits are almond-shaped and green, turning brown to purple when ripe. The fibrous shell surrounds an edible nut.



FIELD IDENTIFICATION

T. catappa is identified by its pyramidal canopy with whorled horizontal branches; glossy, dark-green, coriaceous, large obovate leaves with rounded or cuneate base; crowding of leaves in rosette at the apices of branchlets; small white flowers in slender axillary spikes – few in tip are females with the rest males; ellipsoid fruit with two distinct ridges covering the nut-like seed with fibrous and fleshy red coloured rind.

SEASONALITY

Leaves are shed during November-December and new leaves arise in February. Flowers appear during March-May. Fruits ripen from August to October.

DISTRIBUTION

T. catappa is seen on rocky or sandy coasts of the Indo-Pacific Oceans. The ability to float in water retaining its viability for a very long period makes the seed dispersed to long distance.

UTILITY

The Indian almond tree is a highly ornamental tree, much planted in avenues, households and gardens. The wood is rather light and often used for making boxes. The seed within the fruit is edible when fully ripe, tasting almost like almond. The fruit is astringent to the bowels and is used to treat biliousness and bronchitis. The leaves act as sudorific and are applied to relieve rheumatic joint pain. The juice of the young leaves is used to cure skin diseases and for the treatment of headache and colic. The bark extract is said to be a remedy for dysentery and bilious fever.





Hymenodictyon orixense (Roxb.) Mabb

Synonym : *Hymenodictyon excelsum* (Roxb.) Wall.

Common Name: Mountain Sage, Bridal Couch Tree

Family : Rubiaceae



Mountain Sage is a large deciduous tree with heavy spreading branches forming a pyramidal crown. The splash of yellow colour of senescent leaves in the resplendent winter morning and the emerging tender foliage of copper-red colour in the humid air of incoming monsoon makes the presence of Mountain Sage conspicuous in the forest. It is generally associated with Sal (*Shorea robusta*) in the 'Bhabar' and 'Terai' tract of Indo-Gangetic plains. Mountain Sage prefers the dry boulder sites in dry deciduous forests. The bitter and astringent bark of this species made it a useful medicinal tree in rural ethno-medico practices.

FIELD IDENTIFICATION

H. orixense is identified in the field by its diagnostic thick, rusty-brown bark with raised corky scales; opposite decussate leaves in pair getting clustered at the branch tips; large obovate leaves with narrowed base and midrib of light purplish tone; conspicuous interpetiolar stipules; pale green flowers with leafy persistent bracts (turning chestnut brown) in long pendulous spikes; and 2-valved, ellipsoid, erect capsules on stout decurved peduncle containing many winged seeds.

SEASONALITY

Leaves turn yellow before they are shed in November-December and the tree remains completely leafless till May-June. The copper-red new leaves appear during onset of monsoon followed by flowers. Fruits remain on leafless tree till it dehisces during April-May.

DISTRIBUTION

Mountain Sage is a component of both moist and dry deciduous forests but found mostly in dry mixed forests. The distribution range of the species extends from India, Sri Lanka to Malaysia, Indonesia, Thailand, Vietnam and Bangladesh.

UTILITY

The pale brown wood of Mountain Sage is fine and close grained and used as planks in building houses and boats, for making boxes, toys and matches. The wood is also used for plywood. The branches are lopped for fodder. As antiperiodic, bark is used as substitute for Cinchona bark. Bitter bark is used as astringent and febrifuge and to relieve thirst. Whole plant decoction is used in babies for diarrhoea and dysentery.

Barringtonia racemosa (L.) Spreng.

Synonym : *Barringtonia excelsa* A.Gray

Common Name: Powder-puff Mangrove Tree

Family : Lecythidaceae

Planted by the country's representative - Mr. Richard Benyon

Powder-puff Mangrove is a small estuarine deciduous tree with an unbranched stem that leads to a rounded crown. The attractive pinkish white flowers in drooping long racemes and the pinkish-red foliage before leaf-fall are distinct in the coasts of mangroves. Half the flowers bloom simultaneously emitting a pungent, yet faintly sweet odour. Pollination of the night-opening fragrant flowers is generally by bats or insects (mainly moths), which are attracted to the copious nectar. After shedding the flowers, the inflorescences are often crowded with ants attracted by the nectar. The genus '*Barringtonia*' is named after the Hon. Daines Barrington and the specific name '*racemosa*' means 'having racemes'.



SEASONALITY

The leaves turn copper red before shedding in late winter and the new leaves appear in March. Showy pink flowers on long drooping branches appear in summer and early part of rainy season.

DISTRIBUTION

B. racemosa is mainly a coastal species that thrives under very humid, moist conditions. It is common along tropical and sub-tropical coasts in the Indian Ocean, starting at the coast of South Africa. It is also common in Mozambique, Madagascar, India, Sri Lanka, and other south-east Asian countries. It grows well under dry conditions also.

FIELD IDENTIFICATION

B. racemosa is identified in the field by its rough, greyish-brown bark with longitudinal cracks; clustering of leaves at the branch-ends; large obovate or oblanceolate leaves with narrow tapering base running into the petiole; cream-coloured flowers with many pink stamens on long pendulous racemes; and ovoid, 1-seeded fruit with a fibrous rind.

UTILITY

The wood is light and soft and is used for light work that does not require great strength. The wood being soft is used mainly as fire wood. The fruit is used as a remedy for cough and asthma and seeds for jaundice, colic and ophthalmia. The root is treated as febrifuge. Seeds contain saponins, which are used as a fish poison. The bark yields tannin.



Prosopis cineraria (Linn.) Druce

Synonym : *Prosopis spicata* Burm. f.

Common Name: Indian Mesquite

Family : Leguminosae-Mimosoideae

Planted by the country's representative - Dr. Tereza Huvisa

Indian Mesquite is predominantly a dry-land species with deeply fissured bark and feathery, light bluish-green foliage that droops delicately from the tips of branches. It is a tree of plains or gently undulating ground, and ravine country and seldom extends into the hills. The tree exhibits considerable hardiness. It is well adapted to browsing by animals, such as camels and goats. Young plants assume a cauliflower-like bushy appearance in areas open to goat browsing. This tree has been associated with Hindu mythology and worshipped in many places. The leaves of this auspicious tree are exchanged during 'Dashera' festival. In the dry Deccan areas, we find this species in the field bunds of agricultural fields and the branches are lopped to provide green manure. The pods are filled with a sweetish pulp and hence relished by cattle.

FIELD IDENTIFICATION

P. cineraria is identified in the field by its ashy-grey thick bark with deep longitudinal fissures; short conical spines that are randomly scattered all over the twigs; bluish-green paripinnate compound leaves; creamy-yellow flowers crowded in slender spikes arising from the leaf axils; and bunches of long, slender, cylindrical, slightly curved, straw-coloured legumes containing 10-15 compressed, light-brown seeds.



SEASONALITY

The tree is evergreen and produces new flushes of leaves before summer. The flowers appear from March and continue up to May. Fruits ripen during May-June.



DISTRIBUTION

The tree is confined to the drier tracts of western India, peninsular India, Pakistan, Afghanistan and Iraq.

UTILITY

The wood is suitable for interior construction and agricultural implements, tool handles and small turnery articles. The pods are used as fodder for livestock. The bark is used for tanning and the leaves are used for green manuring. The bark is used as a remedy against rheumatism, cough, and common cold.



Mangifera indica L.

Synonym : *Mangifera austroyunnanensis* Hu

Common Name: Mango Tree

Family : Anacardiaceae



With its distinctive shape and succulent golden-yellow flesh, the mango is perhaps India's best known fruit and rightly called as King of fruits. Fortunately for Indians, the mango tree fruits in the hot summer months. As mangoes are highly effective against sunstroke, a variety of summer drinks are made from pulped mango pulp throughout India to lower body temperature and assuage thirst during summer. Strained with black salt, molasses and cumin, raw mango juice becomes '*panna*'. Strongly scented, and with a slightly astringent taste in their sweetness, mangoes are rich in Vitamin C.

FIELD IDENTIFICATION

M. indica can be identified easily by its rough grey-brown bark; pink or purple juvenile leaves which are slender with tapering apex; tiny, strongly-scented, greenish-yellow flowers in huge, branched clusters; and smooth-skinned, pulpy fruits which turn into golden-yellow from green when ripened.

SEASONALITY

In India, the tree flowers profusely in bunch from November to March. Fruits ripen in 4-5 months after flowering.

DISTRIBUTION

This species is believed to have been originated from Indo-Myanmar region. It has been extensively planted for its delicious fruits.

UTILITY

The wood is extensively used for low-cost furniture, window frames, heavy packing cases, match splints and agricultural implements. It is suitable for manufacture of commercial plywood. Ripe mango fruit is recommended as a laxative and diuretic. It is a restorative tonic and is useful for treating heat-strokes. The rind of the fruit is astringent and is used for treating stomach debility. Dried flowers are used for curing dysentery. The astringent seed kernel is used to treat diarrhoea and the juice can be inhaled to stop nasal bleeding. The leaves are chewed to give tone to the gums. The ash of the burnt leaves is a household remedy for burns and scalds.

Dillenia pentagyna Roxb.

Synonym : *Dillenia augusta* Roxb.

Common Name: Dog Teak

Family : Dilleniaceae

Planted by the country's representative - Mrs. Raquel Lejtregger Tamara



Dog Teak is a large deciduous tree of hillside forest. Tall and straight, the greyish-brown unbranched trunk supports a round crown. The young leaves with densely covered white hairs, overwhelming number of small yellow flowers and fruits swarming the old, leafless branches in summer gives a spectacular look to the hills. It prefers the moist sites and hence one often finds the tree coming up on the slopes of the valleys. Many species of birds flock around the flowers for feeding nectar. Tribal communities in Madhya Pradesh, India worship the plant on 'Dipawali' festival day thinking it as 'Goddess Lakshmi'.

FIELD IDENTIFICATION

D. pentagyna can be located easily in the field by its smooth, grey bark with white blotches; large, oblanceolate leaves with narrow and often semi-amplexicaulous base; chartaceous leaves with strong secondary nerves, each ending with sharp point at the margin; numerous fragrant bright yellow flowers in fascicles on leafless old branches; and cherry-like orange-yellow, globose, succulent, edible fruits surrounded by the enlarged calyx.

SEASONALITY

The leaves turn yellowish-brown and fall off in January-February and the tree remains leafless for 2-3 months. Flowers appear in March-April before emergence of new leaves. The fruits ripen in June-July.

DISTRIBUTION

The species is native to India, Sri Lanka and Myanmar.



UTILITY

Fruits are relished by frugivorous birds, wild animals, monkeys and squirrels. Buds and fruits are eaten raw or cooked by tribal. The timber is used for house construction, small furniture and as rafters and planks. Dry leaves are used for polishing ivory and horns. The bark contains tannin and yields a fibre suitable for making rope. Root decoction is used for the relief of body pain. Bark powder is used in the treatment of diarrhoea and dysentery. Leaf poultice is administered in bleeding piles.



Brucea mollis Wall. ex Kurz

Synonym : *Brucea acuminata* H. L. Li

Common Name: Brucea Tree

Family : Simaroubaceae

Brucea is a short-height evergreen tree reaching up to a height of 10 meters, having a dense, spreading canopy on a short trunk. Its round, close canopy with dark-green glossy leaves provides soothing feeling in summer days.



FIELD IDENTIFICATION

B. mollis can be identified in the field by its dark-brown bark with shallow longitudinal fissures; densely white lenticellate branchlets; dark-green, glossy, broadly lanceolate leaves with acuminate tips; minute, light-yellow flowers on long hanging panicles with spoon-shaped petals; and small, ovoid, crimson-red fruits with foetid-smelling pulp.

SEASONALITY

Flowers appear during February-March and fruits ripen during May-June. The viability of the seeds is low.

DISTRIBUTION

Brucea is mainly distributed in the tropical Eastern Hemisphere and found in Vietnam, China, India, Bhutan, northern Australia, and other SE Asian countries.

UTILITY

Brucea is an excellent tree for avenues because of its dense canopy and dark-green evergreen foliage. The tree comes up very well in hot climate. Red fruits are eaten by birds and squirrels. Wood used for making match stick and toys. The root decoction is reported to have anti-malarial activity.





VANUATU



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Anogeissus acuminata (Wall. ex DC.) Guill. & Perr.

Synonym : *Anogeissus fischeri* M.G.Gangop. & Chakrab.

Common Name: Button Tree

Family : Combretaceae



Button Tree is tall and graceful with light canopy and slender drooping branchlets. The densely silver-hairy light green tender leaves on new shoots, and abundant button-shaped pale yellow flowers looks outstanding in summer on stream banks. Though predominantly a riparian species, it is also scattered in plain dry lands. Button tree represents an important component of stressed ecosystem and arid forestry. It produces abundant seeds but majority of the seeds are empty which leads to poor natural regeneration of this species in the forest. It is a very useful tree for timber and rural healthcare.

FIELD IDENTIFICATION

A. acuminata is distinguished by its smooth grey-white bark with exfoliating irregular thin scales; elliptic or lanceolate small leaves with undersurface densely hairy; tiny, light yellowish flowers in dense globose heads and small compressed fruits with two wings and a short beak. It can be confused with *A. latifolia*, from which it differs in having dark-grey rough bark, leaves acute at both ends, and fruit with dentate margin.

SEASONALITY

New leaves appear before flowering in January-February. Flowers appear in March-April and abundant seeds are dispersed by wind during May-June.

DISTRIBUTION

The species is native to India, Myanmar and Sri Lanka. The species tolerates the periodical inundation of its root system in water. It is also seen on the plains of the Thar desert and at foothills of the Aravallis.

UTILITY

Button wood is a source of fuel, fodder, gum, tannin and timber. The timber is useful where strength and shock-resisting qualities are required. It is ideal for making handles of tools, rafters, bobbins, wheel spokes and furniture. Traditionally the wood is used for making the 'Chariots of Lord Jagannath' during annual Car Festival in Puri, India.

The plant is used by local people for cure of several common ailments. The bark is effective in anemic conditions and urinary discharges, piles. Bark is remedy for chronic cough. Decoction of bark, two spoons daily is useful as remedy against cough. Gum is used as tonic and generally consumed after delivery. Leaf juice is given in purulent discharges from the ear. The young leaves are crushed in water to make a cooling antiseptic lotion and used as eye drops. The seeds are known to be effective for de-worming.

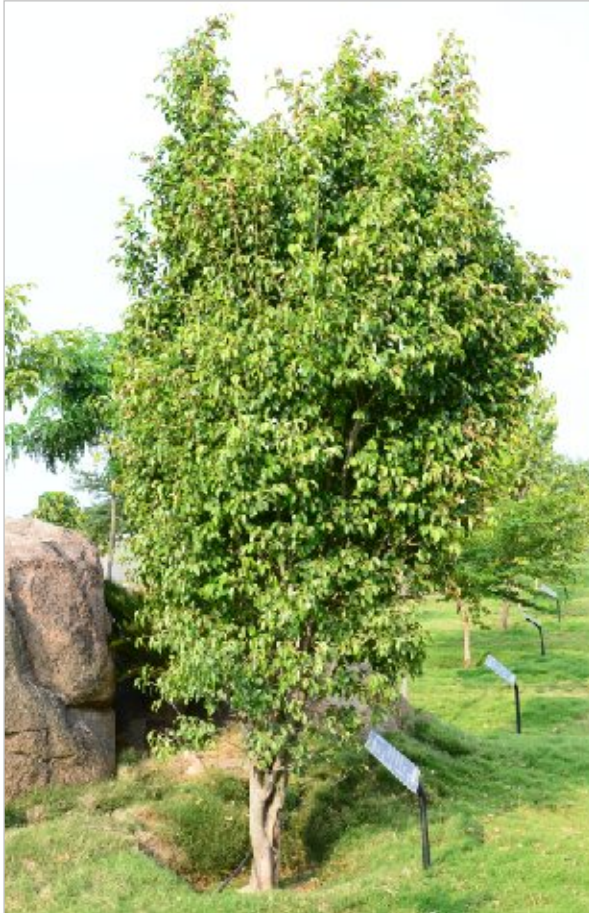
Ficus benjamina L.

Synonym : *Ficus comosa* Roxb.

Common Name: Weeping Fig

Family : Moraceae

Planted by the country's representative - Mrs. Yoliangel Rivas Orta



In its moist natural habitat, Weeping Fig is a large, handsome evergreen tree of dense, round, spreading crown with gracefully drooping branchlets. The thick, glossy evergreen foliage generously clothes the long branches. The prolific fruiting with small globose orange to deep red figs all over the canopy adorns the tree and enhances the soft look of this handsome tree. Birds and squirrels chatter in summer competing for its fruits. Three separate varieties of the species and numerous ornamental hybrids are distinguished, causing much confusion in identification.

FIELD IDENTIFICATION

F. benjamina is identified in the field by its smooth grey bark; ovate or elliptic leaves with short acuminate tips; glossy, dark-green leaves with many secondary parallel veins; syconia (fig) in axillary pairs which become yellowish orange or red when ripe; and oozing copious milky latex when any part of the plant gets injured.

SEASONALITY

New leaves are produced in early summer and the main crop of the figs is found almost at the same time. This species shows marked variation in growth habit, leaf shape, size and colour of the figs.

DISTRIBUTION

The tree is indigenous to eastern Himalaya, Assam and the Andamans in India; Chittagong in Bangladesh, Malaysia, Myanmar and southern China.



UTILITY

The dense, round canopy and graceful drooping branches of Weeping Fig made it quite popular as a landscape tree. It is also grown as a house plant in containers. Wood is suitable for making of packing cases, match boxes etc. Leaves are used for the treatment of ulcer and milky latex for treating the eyes of young babies.





VIETNAM



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Bridelia retusa (L.) A. Juss.

Synonym : *Bridelia crenulata* Roxb.

Common Name: Spinous Kino Tree

Family : Phyllanthaceae

Spinous Kino is a middle-sized deciduous tree with irregular crown. The shining glossy green pendant leaves with conspicuous parallel nerves and stout blunt spines on the young branches makes the tree distinct in the forest. The yellow or red colour of the foliage before falling in spring and the pale pink tender leaves towards the end of summer make the canopy look beautiful for an extended period. The profuse flowering in the autumn brings in lot of butterflies and birds for feeding on the nectar. The luscious small little purplish-black fruits are preferred by squirrels and monkeys. Known for its



strong timber, the wood has been traditionally in use for several household items and agricultural implements.

FIELD IDENTIFICATION

B. retusa is identified by its pale grey bark turning dark brown and flaky on maturity; strong straight spines on the coppice shoots; elliptic or obovate leaves on a short petiole with cuneate or round leaf base and obtuse apex; strong parallel nerves on the leaves; small greenish-yellow to pinkish-green, monoecious flowers in axillary clusters towards the ends of branchlets; and green, 2-seeded globose fruits, turning to purplish-black on ripening.

SEASONALITY

The leaves are shed in winter months and flowers appear in August-September. Fruits ripen during December-January.

DISTRIBUTION

This species is widely distributed in the dry deciduous forests of India and Myanmar. It withstands moderate shade. It is capable of surviving on dry shallow soil. It coppices well and produces root suckers.

UTILITY

Fruits are edible and taken by forest dwellers only as food supplement during distress. Birds relish the dry fruits. Leaves are used as fodder. The tree yields a durable timber of great demand for house construction, door and window shutters, furniture, cards, bills, agriculture implements and other tool handles. Bark contains tannin and it is valuable astringent and used in rheumatism. A decoction of the bark is prescribed for gastritis and urinary problems.





Thespesia populnea (Linn.) Sol. ex Corr.

Synonym : *Hibiscus populneus* L.

Common Name: Large-leaved Tulip Tree

Family : Malvaceae

Planted by the country's representative - Mr. Abdoroaz Salah

Large-leaved Tulip is an evergreen tree of coastal beaches with a dense, compact, round canopy. The glossy leathery foliage with flowers changing colour like chameleon almost throughout the year is a striking. The cluster of hanging green fruits enhances the look of the tree. *T. populnea* is pantropic along sea coasts, often in locations where sandy beaches covered by *Casuarina equisetifolia* give way to coral outcrops and *Barringtonia* vegetation. The trees provide a good protection against surging sea waves the wind damage. The generic name '*Thespesia*' is derived from the Greek word 'thespesios'- divine, supposedly because *T. populnea* was frequently planted round temples. The specific name '*populnea*' means looking like the popular tree.

FIELD IDENTIFICATION

T. populnea is identified by its dark brown, rough and deeply cracked bark; almost triangular shaped leaves with broad heart-shaped base; bell-shaped, half-opened solitary flowers with 5 lemon-yellow contorted petals with a dark purple centre; flowers fading to pink before falling down; depressed-globose, 5-valved, black fruits with disc-like persistent calyx; and obovoid brownish-black seeds covered by matted silky hairs.

SEASONALITY

Tulip tree is a fast-growing species and bears large colourful flowers throughout the year. Bunches of green fruits are formed during rainy season which ripen in winter.

DISTRIBUTION

The species is native to coastal tracts and tidal forests in South India, Africa and the Pacific Isles.



UTILITY

The species is planted as a popular avenue tree. The fine-grained, strong, hard and durable wood is used for light construction, flooring moulds, musical instruments, utensils and vehicle bodies. As it is very durable under water, it is popular for boat building as well. The wood and the yellow gum from the fruit and flowers yield a dye, and the bark produces tannin. The cooked fruit crushed in coconut oil provides a salve, which, if applied to the hair, will kill lice. Juices from the pounded fruits mixed with pounded leaves are ingredients of a poultice to treat migraine and itches. A decoction of the astringent bark is used to treat dysentery. Seeds are purgative.





ZAMBIA

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Tectona grandis L.f.

Synonym : *Tectona theca* Lour.

Common Name: Teak

Family : Verbenaceae

Planted by the country's representative - Mr. Wylbur C. Simuusa

Teak is a prime species of South and Central India, reputed for its commercial timber. It is a large, deciduous species with a very straight trunk and spreading canopy. For considerable time of the year, the tree either does not have leaves or leaves are severely affected by skeletonizing insects giving a bare look. The basal part of the trunk is distinctly fluted and the leaves are very coarse textured. The gregarious flowering of sweet-scented white bloom after the arrival of rain makes the whole forest beautiful. A rare combination of superior physical and mechanical properties makes Teak a paragon of timber, and there is no likelihood of it being eclipsed by any other.

FIELD IDENTIFICATION

T. grandis is identified in the field by its brown, fibrous bark with shallow longitudinal fissure; large, broadly oval leaves in opposite pairs with very rough texture; red stain on the palm when young leaves are crushed; faintly sweet-smelling, white flowers in large, dichotomously branched terminal panicles; and globose fruits that are enclosed in an inflated persistent calyx.



DISTRIBUTION

Teak is native to dry and moist forests in peninsular India. It extends beyond peninsular India to Myanmar, Thailand, Malaysia and Laos. Extensive areas in India and other Asian and African countries have been planted with Teak for its valuable timber.

UTILITY

The wood is a medium-weight and rather soft. The heartwood is often dull-yellowish when freshly cut but turns golden brown. It is the best building timber in India, Myanmar and Bangladesh. It is largely used for furniture, ship-building and other purposes for which a good durable timber is required. In traditional medicine, a wood powder paste has been used against bilious headaches and swellings and internally against dermatitis or as a vermifuge. The bark has been used as an astringent and the wood as a hair tonic. Flowers are used as a remedy for bronchitis. The flowers, roots and seeds are diuretic.



SEASONALITY

Leaves are shed in November- December. Flowers appear from July-August and fruits ripen in November-December and remain on the tree for 3-4 months.



ZIMBABWE



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Manilkara hexandra (Roxb.) Dubard

Synonym : *Manilkara emarginata* H.J. Lam

Common Name: Ceylon Ironwood

Family : Sapotaceae

Planted by the country's representative - Mr. Francis Nhema



The Ceylon Ironwood is a wide spreading evergreen tree with stunted crooked trunk supporting stiff branches. The dense canopy with shiny, dark-green leathery foliage provides a cool shade. The sweet and astringent golden-yellow coloured ripened fruits in the summer are relished by children. It prefers very dry conditions especially exposed rocky areas of Deccan plateau. Often Ceylon Ironwood is found in sacred groves where it attains to huge size and age.



FIELD IDENTIFICATION

M. hexandra is conspicuous in the field by its dark-grey to black rough bark with rectangular scales; milky latex oozing out when injured; shiny, stiff and leathery, rounded leaves with a notch at the apex; creamish-white, fragrant flowers with many small petals arranged in 2 circles; and olive-shaped, orange-yellow coloured fruit.

SEASONALITY

Leaves are more or less evergreen but in dry forest new flushes of leaves come out in April-May. Flowering in January and fruits in April-May.

DISTRIBUTION

Ceylon Ironwood is distributed in many parts of India specially the drier parts of Central and South India. Its natural range extends to Sri Lanka and Parts of South-East Asia.

UTILITY

The ripe fruits taste similar to Sapota and are eaten either fresh or dried. They are sweet and astringent. It is a popular wild edible fruit tree of tropical Asia and India. Edible oil called 'Rayan oil' is extracted from the seeds. Bark is used as febrifugal medicine. The tree yields a gum and its bark contains tannin, which may be used for tanning purposes. The wood is used for sugar mills and oil presses, posts, agricultural implements, tool handles, turnery, furniture etc. The plant is used as a root-stock for Sapota grafts.





SPECTRUM AND NETWORKS OF LIFE

An exposition on the National Biodiversity Museum in India

Foreword

Nature services us every hour, every day. It supports us 'for free'. Cleaning up of air and water, crop pollination, pest control, climate regulation, soil nutrients, and a diversity of plants and creatures, among other things are testimony of the fact that interdependence among organisms and their environments sustains the conditions needed for survival of life on earth either as the inhabitants of the Animalia or those of the Plantae Kingdom.

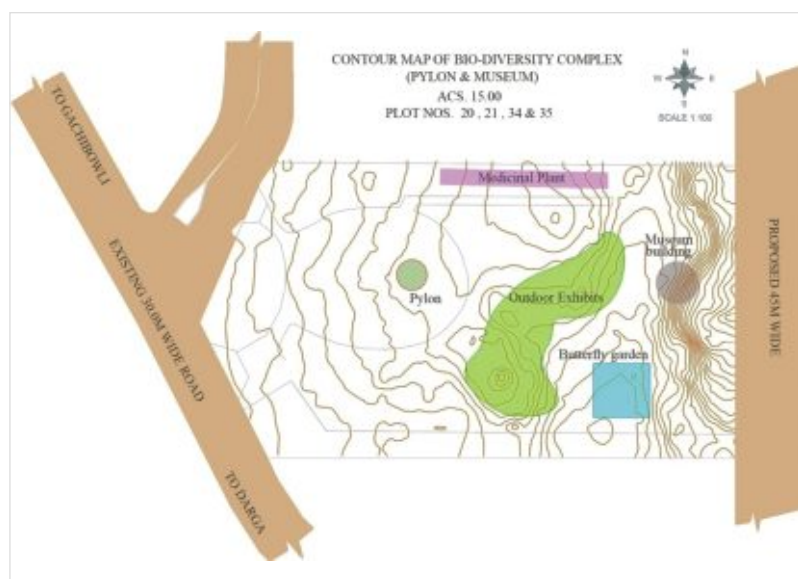
Ecosystems regulate climatic processes, breakdown wastes and recycle nutrients, filter and purify water, buffer against flooding, maintain soil fertility, purify air, and provide natural resources such as wood, textiles, soil and of course food. All agriculture depends fundamentally on Biodiversity, as do marine and freshwater food resources. To allow continued biodiversity loss means losing the essential services that biodiversity provides, and prevents handing down an invaluable gift to future generations. Earth is home to as many as 20 million species, but only a tiny fraction are known and scientifically classified till date. The issue, however, is to know the spectrum in entirety, so as to understand their interrelations - the networks.

The link between disappearing species and human well-being is not common knowledge; awareness of tangible values of the ecosystem services is scarcer; as a result, the importance of biodiversity is undervalued, as free things often are. Biodiversity in India as measured by the number of plants and vertebrate species found in an ecoregion is the greatest in the Western Ghats and the Eastern Himalayas. The presence of tropical rainforests, typically the richest habitats for species diversity,

in these areas helped life proliferate in all its varieties in those locations. Naturally, these ecoregions are included in the world's list of *hotspots* for biodiversity: regions with a significant reservoir of biodiversity, yet that are under threat from humans. Of the two, the Western Ghats have more endemic species. But, species are disappearing at an alarming rate, claiming its toll on individual genes and entire ecosystems - and, along with them, jeopardizing the blueprints for a healthy planet and all its inhabitants and components. Some ecologists predict that half of all mammals and birds could be extinct within the next century; with similar losses in plants, marine life, and other species. Each loss carries with it a missing piece of life's intricate puzzle and the benefits it brings to human well-being. The price we pay for these losses is incalculable. It is of critical importance to realize that preserving the biodiversity is just not something good to do - it is plain inevitable. Thus the first tool for biodiversity conservation is awareness - concrete scientific knowledge among the

masses so that the idea gets transformed into affirmative actions. Appreciating this premise and in commemoration of the eleventh conference of the parties to the convention on Biological diversity (CoP- 11 to the CBD) held in Hyderabad in October 2012, Ministry of Environment and Forests, Government of India decided to set up a National Biodiversity Museum (NBM).

The central idea conceived to set up NBM is to create awareness among the masses about the importance of conservation of the biological diversity and genetic integrity of plants, animals and microorganisms in their totality as part of the natural ecosystems, to ensure self-perpetuation and unhindered evolution of the living resources. Ministry of Environment and Forest, Government of India, and CMD (Creative Museum Designers) has jointly formed a strategy to raise awareness about biodiversity among the general population including professionals, community members, students and other stakeholders and



encourage them to take action and play their part. It has been decided to implement this strategy through establishment of NBM at Hyderabad, Andhra Pradesh, where people are expected to fall in love with the diversity of life. NBM aims to light a path between our everyday activities and the loss of species and biodiversity. It intends to inspire an understanding of biodiversity, its origins, and importance to humans through interpretive, interactive story-telling, research, education and outreach. It shows how biodiversity contributes to the quality of our lives through health, climate, energy, culture, design and sustenance. Its goal is to demonstrate the potential to harness nature's amazing designs to build a future in which needs of life are met in harmony with nature. Through dynamic exhibits, interactive activities and rotating temporary gallery exhibitions visitors can increase their knowledge and understanding of the interconnectedness of all life on Earth.

The physical infrastructure of the museum building and the interpretive outdoor exposition is likely to span total area of 20 acre. The one-of-its kind museum as per the plan is set to come up on a sprawling hilly landscape typical of the Deccan plateau located along the Mehdiapatnam-Gachibowli stretch. Apart from this, the venue, which already has a biodiversity pylon standing tall in the vicinity, will also make way for an outdoor biodiversity park. Creative museum Designers (CMD), a company wholly owned and controlled by the National Council of Science Museums (NCSM) under Ministry of Culture (MoC), Government of India has been offered to prepare a Detailed Project Report (DPR) for the proposed



National Biodiversity Museum (NBM). A Technical Expert Committee (TEC) has also been set up by the ministry to guide and evaluate the preparation of DPR by CMD. Along with preparation of Detailed Project Report, CMD has been appointed to offer its expertise for development of concepts and themes, providing technical assistance in installation and commissioning of exhibits and technical assistance in manpower requirement and training.

The museum along with required infrastructural and visitors' facilities would be built over an area of around 17000 square metres. After a detailed discussion with the Technical Expert committee, 9 thematic galleries, each with an area of about 1000 Sq.Mt., has been finalised. An outdoor biodiversity park is to be set up as a part of the project. The 20 acre museum project will require an estimated cost of about 160 Cr INR. The detailed area break up is as follows:

Facility	Area Requirement (in Sq. Mt.)
Nine Thematic galleries	9000
Auditorium	1000
Lobby, Stairs, Visitors' holding Space	2283
Library	500
Temporary Exhibition Hall	500
Workshop and Stores	1500
3D theatre	100
AC Plant & Workshop	1500
Toilet	420
Digital Interpretation Centre	200
Students' activity Corner	500
Total	16603

Curatorial Concept

Awareness is the first critical step in changing our individual and collective outlook from one that exploits nature to one that nurtures it; and from a mindset that every natural resource around us exists to serve human beings to one that makes us part of the nature. Biodiversity, the natural biotic capital of the earth, is fundamental to the fulfilment of human needs and vital for the survival of this planet. Biodiversity has often served as an early-warning system that has foretold threats to the ecosystems even before sufficient data is collected to detect effects directly.

Rachel Carson's (1962) *Silent Spring*, for example, established a strong case against the use of pesticides primarily on the basis of threats to wildlife populations. India is an identified mega diverse country, rich in biodiversity and associated traditional knowledge and culture. With only 2.5% of the world's land area, India accounts for 7.8% of the recorded species of the world including 45,500 recorded species of plants and 91,000 recorded species of animals. India is also rich in traditional and indigenous knowledge, both coded and informal. It possesses an exemplary diversity of ecological habitats like forests, grassland, wetlands, coastal and marine ecosystems, and desert ecosystems. In this tune it is planned to showcase the 10 bio-geographic zones of India and the ecosystem services associated with those specific regions. This may be showcased in an interactive and experimental way to establish the rationale to protect our biodiversity, a critical national priority as it is linked to local livelihoods of millions of people in the country and sustainable use of our biodiversity.

The need to inculcate environmental stories among the masses has never been greater. Earth is steadily crossing increasingly alarming thresholds of climate change and other environmental challenges. Biologists view human impact as the primary contributor to an emerging mass extinction. Some scientists believe the present rate of extinction could eliminate most species on Earth within the life span of our great-grandchildren. This museum will unfold the realm of biodiversity by purposeful scheme to offer fresh perspectives demonstrating that humanity is itself, an essential piece of this system, and provide focus and impetus towards biodiversity conservation. Extinction perhaps is not the only fate of the story. With efforts and careful analysis we may reconstruct or at least arrest the damage that are seen today as harbingers of large potential problem. Themes for the museum are presented in the following galleries:

Biodiversity is life

This gallery uncovers the extent of our link with natural world and showcase ecosystem services. Variety of life, at different levels, plants and animals – an intricate web of life – is to be demonstrated. Interconnected plant and animal world occurs within the biosphere of the earth in the form of an intertwined network of individuals, populations and interacting systems. But, for an uninitiated but inquisitive person the question is – Where is Biodiversity? From genes to ecological communities, the prodigious number of species that have coevolved from the inception of life produces an incredible species diversity. The story of species with different life histories living in the same place at the same

time by living differently would make an interesting study in terms of timeline displays and models.

Biodiversity, spring of our well-being:

Biodiversity and healthy ecosystems can provide important natural buffers against natural disasters by providing life sustaining goods and services which supports food security, dietary health and livelihood sustainability. Biodiversity is also an important resource for medical resource to combat epidemics and securing the lives of our future generations. Link of our life to major ecosystem services like Provisioning services, Regulating services, Supporting services and, Cultural Services would be demonstrated in this gallery. This being the first and introductory gallery will elucidate the economic value of biodiversity. It would be of critical importance to show that the services of ecological systems and the natural capital stocks that produce them are critical to the functioning of the Earth's life-support system. They contribute to human welfare, both directly and indirectly, and therefore represent part of the total economic value of the planet.

India - the web of life Trans-Himalaya and Himalaya, North-East

Following the elucidation of basic ideas needed to understand Biodiversity, the museum will make a visual documentation of Biogeographic zones of India, first of which would be the entire mountain chain running from north-western to northeastern India, comprising a diverse range of biotic provinces and biomes, 7.2 % of the country's landmass. Along with the Trans Himalayas, an extension of the Tibetan plateau, harbouring high-

altitude cold desert in Laddakh (J&K) and LahaulSpiti (H.P) comprising 5.7 % of the country's landmass may be covered. The plains and non-Himalayan hill ranges of northeastern India, with a wide variation of vegetation form 5.2% of the country's landmass that would also be part of documentation for this gallery. Covering frozen desert, high altitude wetlands, migratory birds, spectacular species plants as well as animals – this gallery will make an interactive visualization of the unique biodiversity features of Trans Himalayan, Himalayan and North-Eastern region.

India - the web of life

Gangetic plains, Semi-Arid and Desert

The Gangetic plain is one of India's most fertile regions. The soil of this region is formed by the alluvial deposits of the Ganges and its tributaries. So, a major task of this gallery would be depicting the Epicentres of origin and evolution of agriculture in India. To show the soil diversity of the region, the four important surface differences recognized in the geomorphology of the plains would be highlighted. With the help of cast out soil samples and demonstration of agricultural practices followed on their basis the following soil types will be covered:

- **Bhabar** - pebble studded zone with porous beds
- **Terai** - marshy tract
- **Bhangar** - older alluvium of the flood plain
- **Terai** - marshy tract
- **Khadar** - newer alluvium

The Gangetic plains stretching from eastern Rajasthan through Uttar Pradesh to Bihar and West Bengal are mostly under agriculture. The large



forest area is under tropical dry deciduous forest and the southeastern end of the Gangetic plain merges with the littoral and mangroves regions of the Sunderbans. A separate section will be dedicated to the biodiversity of the Sundarbans.

Through the desert of Rajasthan, the Rann of Kutch and the semi-arid regions of Punjab and Gujarat, the natural vegetation in Indian deserts consists of tropical thorn forests and tropical dry deciduous forests, sandy deserts with seasonal salt marshes and mangroves that are found in the main estuaries. Typical shrubs are Phog growing on sand dunes. Sewan grass covers extensive areas called pali. Thar Desert possesses most of the major insect species. 43 reptile species and moderate bird endemism are found here. No niche of the Thar is devoid of birds. The black buck was once the dominant mammal of the desert region, now confined only to certain pockets. The gazelle is the only species of the Indian antelope of

which the females have horns. Nilgai the largest antelope of India and the wild ass, a distinct subspecies, is now confined to the Rann of Kutch which is also the only breeding site in the Indian subcontinent for the flamingoes. Other species like desert fox, great Indian bustard, chinkara and desert cat are also found.

The semi-arid region in the west of India includes the arid desert areas of Thar and Rajasthan extending to the Gulf of Kutch and Cambay and the whole Kathiawar peninsula. The natural vegetation here consists of tropical thorn forests and tropical dry deciduous forests, moist forests and mangroves. The sandy plains have a few scattered trees of Acacia and Prosopis. The gravelly plains have Calotropis, Gymnosporia, etc. The rocky habitats are covered by bushes of Euphorbia while species of Salvadora and Tamarix occur mainly near saline depressions. A very special mention in this gallery would be the lion of Gir that is the endemic species in this zone.

India - the web of life

Eastern ghats, Western ghats, Deccan Peninsula

The Western Ghats region is considered as one of the most important biogeographic zones of India, as it is one of the richest centres of endemism. Due to varied topography and micro-climatic regimes, some areas within the region are considered to be active zones of speciation. The region has 490 arborescent taxa, of which as many as 308 are endemic. This endemism of tree species shows a distinct trend, being the highest (43%) in 8°N-10°30'N location and declining to 11% in 16°N - 16°30'N location. About 1500 endemic species of dicotyledonous plants are reported from the Western Ghats. 245 species of orchids belonging to 75 genera are found here, of which 112 species in 10 genera are endemic to the region. As regards the fauna, as many as 315 species of vertebrates belonging to 22 genera are endemic, these include 12 species of mammals, 13 species of birds, 89 species of reptiles, 87 species of amphibians and 104 species of fish. Magnificent mammals, large number of endemic species, sacred groves, the biological hotspot – Western ghats have it all. Along with Western ghats this gallery will tell interesting story of biodiversity of Eastern ghats and Deccan peninsula.

India - the web of life

Coasts and Islands

The diversity of the Indian coral reefs is very impressive with about 200 coral species belonging to 71 genera (Untawale and Dhargalkar 1993). The richest being Andaman and Nicobar Islands which alone harbours 179 species (Subba Rao 1989). The natural vegetation along coasts consists of mangroves. Animal

species include dugong, dolphins, crocodiles and avifauna. There are 26 species of fresh water turtles and tortoises in India and 5 species of marine turtles, which inhabit and feed in coastal waters and lay their eggs on suitable beaches. Tortoise live and breed mainly on the land. Over 200,000 Olive Ridley turtles come to Orissa to nest in the space of three or four nights. The highest tiger population is found in the Sunderbans along the east coast adjoining the Bay of Bengal.

Lakshadweep consists of 36 major islands - 12 atolls, 3 reefs and 5 submerged coral banks - make up this group of islands more than three hundred kilometers to the west of the Kerala coast. The geographical area is 32 sq. km. and the usable land area is 26.32 sq. km. The fauna consists mainly of four species of turtles, 36 species of crabs, 12 bivalves, 41 species of sponges including typical coral, ornamental fishes and dugongs. A total of 104 scleractinian corals belonging to 37 genera are reported. 'Deserts' of sand dunes, 'forests' of sea grasses and mangroves, and spectacular coral reefs, conservation and cultural practices are the key features of display in this gallery.

Cultural connections

How biodiversity become an integral part of our traditional culture and the worldviews will be the main scheme of representation. Since their first appearance on Earth, humans have engaged in a creative dialogue with biological diversity. People shape and manage the living world, contributing to the diversity of its species, ecosystems and landscapes. Cultures have in turn been shaped by their natural environments, a process that has contributed to an astounding variety of practices, ways of life and worldviews. This is particularly evident amongst indigenous and local communities, who have elaborated and continued to maintain complex systems of knowledge and practice as a result of their long-standing histories of interaction with their natural surroundings. Indigenous and local communities play a key role in biodiversity conservation. Their territories are among the most biologically diverse on the planet. Traditional indigenous territories are estimated to cover up to 24% of the world's land surface and contain 80% of the Earth's remaining healthy ecosystems. Many protected areas are located on indigenous lands. This remarkable spatial convergence is due in part to indigenous people's actively managing the biodiversity of their lands, and protecting them from outside exploitation. This presents an enormous opportunity and a considerable challenge to conservation managers. This anthropological and cultural connections of Biodiversity will be depicted through Audio-visual documentation of food practices, festivals, clothes, religious practices and special efforts of the indigenous people in restoring biodiversity. Success stories like Chinkara preservation will be of special mention.

Indigenous and local communities have in-depth Traditional Knowledge (TK) and know-how about the living world. Their intimate understanding of genetic biodiversity has allowed them to create and maintain an astounding array of plant varieties, animal races and bacterial cultures. Examples include the taro and yam clones that abound in Pacific horticultural gardens, the thousands of



cheese types sustained around the world through the discerning application of bacteria, the hundreds of rice varieties cultivated throughout India. This biodiversity serves both practical and symbolic ends. A higher diversity of crops ensures resilience and flexibility in the face of climate change, while some varieties are cultivated exclusively for use in festivities or rituals. The Indian effort of creating the TKDL (Traditional Knowledge Digital Library) will be demonstrated interactively in this gallery.

The worldviews of many indigenous peoples are founded upon relationships of reciprocity and respect that traverse the boundaries between people and nature, and interlink of ecosystems and social systems. A primary goal of this gallery would be to demonstrate the fundamental difference from

“Western” conservation philosophies, which tend to separate humans and nature. This Indian-ness deserves recognition as a pathway towards successful collaborative ecosystem management. Landscapes reflect the human relationships and attachments that create them. Local communities may confer special status on animal and plant species, mountains, lakes or forest groves by identifying them as sacred sites. These sacred places, protected by local custodians, often become islands of high biodiversity in otherwise degraded environments. They may serve as important reservoirs of genetic and species diversity, which can help protect ecosystems from future environmental degradation.

A very special effort of this gallery would be to delve into the relation between Biodiversity and languages. Nearly half of the 7000 languages spoken in the world today are in danger of disappearing during this century. Languages are vehicles for knowledge transmission, but they also demonstrate the way the speaker views and understands the world. Useful and meaningful knowledge of biodiversity may be carried in complex terminology that will be lost when a language dies. By monitoring the vitality and diversity of indigenous languages, we may be able to identify trends in traditional knowledge relevant to biodiversity conservation. There is a visible overlap between the global mapping of the world’s areas of biological “megadiversity” and areas of high cultural and linguistic diversity. For example, in 9 countries, which together account for 60% of human languages, 6 of these are centres of cultural diversity and contain exceptional numbers of unique plant and animal species.



Biotechnology and Biodiversity. Biodiversity Education as practiced by several curricular and extracurricular streams will be reviewed and demonstrated.

Together we live

Biodiversity conservation cannot be separated from natural resources utilization. Human appropriation of nature inflows minerals, water, solar energy and principally living beings (biomass) from ecosystems. World statistics indicate that almost half the inhabitants of the planet are still people engaged in the appropriation of natural resources. This appropriation is carried out by a myriad of rural or primary producers through the management of terrestrial, marine and freshwater ecosystems. Human activity & interdependence, human fingerprint, conservation initiatives are the key ideas followed in this gallery.

Women and Biodiversity: The core of existence

As the twenty-first century approaches, rural women in developing countries hold a key to the future of the earth's agricultural systems and to food and livelihood security. They are responsible for the selection of seed, management of small livestock and for the conservation and sustainable use of plant and animal diversity. Rural women's roles as food providers and food producers link them directly to the conservation and sustainable utilization of genetic resources for food and agriculture. Centuries of practical experience have given women a unique decision-making role and knowledge about local crop and farm animal management, ecosystems and their use. A part of this gallery will be dedicated to the celebration of the role of Indian

women in nurturing Biodiversity quite naturally.

Losing Paradise

An overall view of about the major driving forces behind biodiversity loss, the sustainability issues & Conservation is the main theme for this gallery. This gallery will deal with sub-themes like Threats to Biodiversity in India, Illegal poaching, wildlife trade, Invasion of alien species, Bio-piracy, Convention on and Financing Biological Diversity etc. Other areas of interest will be: Biodiversity for food and water security, Biodiversity for fair and equitable sharing of benefits, Biodiversity for livelihood of people, Conservation practices in India – sacred groves, sacred gardens and water harvesting structures. A conjectural study will be made to understand Future Directions

Saying Adieu?

An account of the endangered and extinct Indian species will be presented in this gallery with an idea to convey the message of Sustainable living.

More to experience

A museum is not made by just the displays and interactives. As a visitor one always looks for helps, explanations, interpretations, sources to respond to further queries. So, to make the museum complete in all respects, CMD, the developer of the theme and concept of the National Biodiversity Museum proposes to include following visitor facilities in the museum:

3D Theatre

3D theatres around the world offer an immersive experience to visitors

and complement the museum exhibits meaningfully. Today they have become an indispensable part of every museum that transcends visitor experience. The proposed 3D theatre with a seating capacity of 50 visitors in a single show and 100 Sq.mt. area will display the subtle and intricate relationships between living world and human, the life of deep ocean, the microscopic life of viruses and germs can be displayed through this 3D theatre. These specially designed motion pictures can be a powerful tool to substantiate visitors' knowledge and understanding of biodiversity.

The highly sophisticated hardware and software deployed in the 3D theatre will bring an immersive viewing experience which will be converted into high visitor footfall figure and may able contribute towards museum's sustenance by generating good revenue. 3D theatre is the tested model which has been hugely successful to draw visitors' attention in any kind of museum around the world. But, content is the king as ever. There are several 3D educational content available all over the world. But none concerning Indian Biodiversity is found in our literature survey. So, it is proposed that using the indigenous capability of CMD to develop live 3D movies one documentary of Indian Biodiversity of 30 minutes duration may be developed to start with. The technology has enormous scope to accommodate further diversified contents.

Digital Species Repository

National Biodiversity Museum will have a facility of state-of-the-art digital species repository which may play a critical role in preserving visual and textual data on different species including rare ones and providing a

window to serious research in biodiversity. This repository will receive and manage collections from different organizations engaged in biodiversity research across India and other countries.

Medicinal Plant Garden

The medicinal plant garden in NBM is planned to have all those herbs, plants etc. which have medicinal value and used as natural resources for producing medicine. They are also important for their economic values. The plants which are suitable for the climatic condition and soil of the museum location will be planted. The medicinal plant garden will come up in 2000 Sq.Mt. area.

Auditorium

This is an exquisite part of the museum which aims to conduct seminars, workshops, symposiums, faculty development programmes and other museum related activities. It will be equipped with high end projection facility, public address & quality acoustical systems etc. which ensures highest level of technology integration and audio design. Interior atmosphere significantly enhances passive cooling, while natural lighting and ventilation that surround the auditorium will provide the audience a rejuvenating feeling. This Hall will be characterized by an eye-catching architecture which creates inspiration for viewers. This hall will occupy 1000 Sq.Mt. area and provide space for accommodating 200 people.

Library

The library will occupy 500 sqm area and the only centralized location where new and emerging information technologies is combined with traditional knowledge resources in a user-focused, service-rich environment that supports today's social and educational patterns of learning, teaching, and research. The museum will have a visitor oriented library combined with computing and interactive media functions which will suffice not only visitors' queries but will also enable the researchers and curators to advance their learning.

Digital Interpretation Centre

The digital interpretation centre will be a 200 Sq.Mt. space where the topics related to biodiversity such as interdependence of different species, causes of biodiversity loss, the ecosystem services of biodiversity etc. will be depicted in digital platform. This place will engage visitors with its novel human interfaces and will interpret each case to the visitors in a meaningful way.

Marine and Freshwater Aquarium

The marine and freshwater aquariums will be unique and exclusive part of National Biodiversity Museum and centre of visitor attraction. The aquariums will house underwater life dedicated to inspiring ocean and freshwater conservation. The aquariums will effectively complement the displays of the thematic galleries.

The freshwater aquarium will display different fishes, plants and other aquatic lives found in Indian rivers and lakes. The dimensions of each aquarium will be 40 feet in length, 30 feet in width and proper aqua scaping techniques will be employed to create an exotic under water landscape. The aquarium



arrangements inside the aquarium section will display ecosystems as complex communities of organisms interacting in their environment for a unique learning experience.

Conclusion

We are now stepping in a new world where our natural resources will not be plentiful; rather there is a steep crisis. A new picture of Earth is now emerging where the consortium of all species is going to play a key role in our sustainability. Loss of biodiversity is not only the problem of evolutionary biology, but, it's a central problem of Science. Nature had its own dynamics before the advent of human being. But, as the character named human appeared very late in the geologic time scale, it started not only tampering the natural dynamics, but also made the whole course of evolution unpredictable. There has been considerable irreversible change even before man marked the harbingers of changes. But now that we acknowledge our role as the great anarchist, we must understand the natural dynamics, our role and the way we may minimise our impact in negative terms and initiate course corrections. Here lies the purpose of this museum. This museum will not be a house of merely compilation of list of specimens, but, an effort to showcase the ecological stories, bio-geographical ranges, anthropogenic stress, biological properties, and possible vulnerability to environmental changes. This Museum will be a sincere approach towards conservation and restoration of planet's diversity by means of interactive story-telling, imagination and creativity.



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