

**Dodonaea viscosa Jacq.**

SAPINDACEAE

Synonym: *Dodonaea angustifolia* .

Common names: Giant bush hop, sand olive

Dhivehi name: Kudhi-ruuvaali

Status: Common in some of the islands in the southern group; rare in the northern islands.

Description: A fast-growing small tree or shrub that grows to 1 to 3 m in height but is capable of reaching 8 m. Bark is dark grey coloured, fissured and peeling. Branchlets are rusty red in colour, sometimes narrowly winged or ridged. Branches exudate resin. Leaves are simple, papery with very short petiole or subsessile. Leaf shape varies from lanceolate to linear spooniform and secretes gummy exudate on both the surfaces and thus always appearing shiny. Leaf margin is entire or inconspicuously wavy and the leaf tip is pointed or round. Inflorescence is terminal or axillary and densely flowered. Flowers are very small, borne on long and slender flower stalks. Sepals are four in number, greenish-yellow in colour; petals are absent. Fruit is a capsule and two to three winged. In mature fruits, wings are coral red in colour. Seeds are small, black and lens like in shape. Each chamber of the fruit contains one to two seeds.

Uses: *D. viscosa* is very effective in sand dune fixation and controlling coastal erosion since its roots are excellent soil binders. It is also used to reclaim marshes. It is grown as an ornamental plant for its shiny foliage and pink-red winged fruit. Poles are useful in fencing. Timber is hard and durable. In the Maldives, tree nails are prepared from the timber, which are used for boat building. Roots are used in the preparation of medicinal oil, which is used to treat rheumatism. Leaves are also used in the treatment of rheumatism and bone fracture.

Ecology, propagation and management: It is a hardy shrub that can grow well on poor soils and rocky sites. Seedlings, wildlings and direct sowing are the methods followed to propagate giant bush hop. It is a fast growing shrub that requires no management once it is established. It regenerates rapidly after burning. Seeds are viable for about one year, if they are properly stored and germination rates varying from 30 to 70%. Pretreatment of seeds is not required before sowing. Seeds are also dispersed by wind.



*Erythrina orientalis* - Berebedhi

**Erythrina orientalis (L.) DC.**

FABACEAE

Synonym: *Erythrina variegata* var. *orientalis*

Common name: Coral tree

Dhivehi name: Berebedhi

Status: Found growing mostly in Male as a shade tree.

Description: A fast-growing deciduous tree that grows to 15 m in height. Canopy is dense, spreading and symmetrical with a smooth outline. Trunk is short with stout upright branches and branchlets, which are armed with short, few to many, sharp thorns. Thorns are black in colour. Bark is greyish green in young trees, brown in very old individuals, thin and easily damaged from mechanical impact. Leaves are trifoliate and arranged alternately along the branches. Leaflets are broadly ovate in shape and middle leaflet is always larger than lateral ones. Leaf stalk is 20 to 30 cm long. *E. orientalis* can be easily identified by the conspicuous yellow variegation on green leaves. Inflorescence is a terminal raceme, 15 to 20 cm long, with numerous large, bright red flowers. Occasionally flowers are white in colour. Fruit is a pod, 10 to 25 cm long and 1.5 to 2 cm wide, constricted between the seeds. Seeds are kidney shaped, dark purple to red in colour and 1 to 1.5 cm in length.

Uses: Large size, large scarlet flowers which appear in bloom, followed by beautiful foliage make *E. orientalis* a candidate species for ornamental plantation. It is also grown as a shade tree because of its wide-spreading canopy, which casts dense shade. It is a nitrogen fixer. Wood can be used for fishing floats, insulation board and other lightweight materials. In Male, it is planted in large numbers along the pavement as well as in other public places as a shade tree.

Ecology, propagation and management: It grows well in well-drained soil and requires full sun for better performance. It is highly drought tolerant and moderately salt tolerant. Propagation is by seed and stem cutting. Seeds are viable for many years and requires pretreatment to improve germination. Seeds may be mechanically scarified or boiled for one minute and left to cool overnight. Further soaking in concentrated sulphuric acid for about 15 minutes enhances germination. Large-sized stem cuttings, 2 to 3 m in height and 5 to 10 cm in diameter, are planted for quick establishment. Plenty of room needs to be given for this tree to develop fully since the canopy is large. When planted for shade, lower branches should be removed immediately after establishment. Since the trunk often flares or buttresses at the base and surface roots can lift sidewalks, this tree should be planted at least 3 to 4 m away from the sidewalk.



*Erythrina variegata* - Faiy kurehi, berebedhi

**Erythrina variegata L.**

FABACEAE

Synonym: *Erythrina indica*

Common name: Indian coral tree

Dhivehi names: Faiy kurehi, berebedhi

Status: Occasional; found in forested areas and near to residential areas.

**Description:** A deciduous tree that is capable of growing to more than 25 m tall. Canopy is dense and spreading. However, a commonly grown cultivar has a narrow, columnar crown. Branches are thick and sappy, armed with large, scattered thorns. Bark is grey-green and furrowed. Young shoots and stems are covered with fine hairs at first, later become glabrous. Leaves are trifoliate and alternate in arrangement. Leaf stalk is 2 to 28 cm long and rachis is 10 to 12 cm in length. Leaflets are green in colour, ovate to broadly rhomboid in shape, usually wider than long; terminal leaflet is the largest. Inflorescence is a dense raceme, axillary in position; 10 to 40 cm long with 7 to 25 cm long peduncle and covered with rust coloured hairs. Flowers are large, orange-red in colour, scattered in groups of three along the rachis. Flowers in the drooping inflorescences are upturned. Fruit is a pod, sausage shaped or cylindrical, 10 to 45 cm long and 2 to 3 cm wide and slightly constricted between the seeds. Seeds are ellipsoid or kidney shaped, 0.6 to 2 cm long, glossy, smooth, black or purplish or purplish red-brown in colour.

**Uses:** It is popularly known as a shade, hedge and live-fence tree. It is also grown as an ornamental tree. It is a nitrogen fixer and useful for enriching the soil. Foliage, which is rich in protein, makes an excellent fodder for most livestock. Wood is soft, light and not durable and not suitable as timber. However, it can be used as a fish float and for packing boxes. In the Maldives, leaves are used as an ingredient in the preparation of a traditional medicine for treating pain in the knee joints. It is considered as one the important agroforestry trees of the tropics.

**Ecology, propagation and management:** It grows well in sandy loams and tolerate acidic to alkaline condition. It also tolerates moderate soil salinity and aerosol salt spray. It is drought tolerant and grows well in nutrient-poor soil. It is commonly propagated by branch cuttings. Branches of 2 to 3 m height and 5 to 10 cm diameter are commonly used for planting. Larger cuttings establish quickly and survive better than smaller cuttings. It can also be propagated by seeds. Seeds can easily be collected from dried pods. Seeds can be scarified and soaked overnight. Seeds can also be immersed in hot water for ten minutes and then in tepid water overnight. Seedlings of about three to four months old are suitable for outplanting.





*Euphorbia tirucalli* - Eggamu muraka, hudu kiruthona

**Euphorbia tirucalli L.****EUPHORBIACEAE**

**Common names:** Milk bush, aveloz, pencil cactus

**Dhivehi names:** Eggamu muraka, hudu kiruthona

**Status:** Occasional; grown as ornamental and as medicinal plant.

**Description:** A succulent, cactus-like shrub or small tree, about 2 to 5 m tall. It grows along the ground with ascending stems or is sub-erect in habit. Main trunk and older branches are woody with brown-coloured bark. Young stems are green, succulent, and cylindrical with many fine longitudinal ribs. Leaves are green, fleshy, very minute, 0.7 to 1.5 cm in length and 0.1 to 0.4 cm in width, linear spatula like in shape and attached to the tips of the young branches without leaf stalk. Both old and young branches look leafless since leaves shed so early that they are normally not noticed. Functions of the leaves are taken over by the green young stems. Flowers are small and many and enclosed within a four to five lobed involucre (a whorl or rosette of bracts), which are crowded at the ends of branches or in axils. Number of male flowers is high and variable but always surrounds the female flower, which is solitary. Fruit is very small, 0.8 cm in diameter and pale brown in colour and seeds are about 0.5 cm long and smooth. All parts of the plant exude latex.

**Uses:** Milk bush is reported to be widely used in folk medicine as a cure for a variety of diseases, ranging from cough to cancer. Stems are used along with other ingredients to serve as poultices for healing bone fracture. It is also considered as an important future source of energy, capable of producing 10 to 50 barrel of oil per acre. Fibrous residue of the wood after the extraction of latex can be used for paper pulp. It is also a well-known insect repellent and fish poison.

**Ecology, propagation and management:** It grows on a variety of light-textured, neutral to acidic soils but requires good drainage and high water table for better performance. It is highly tolerant to drought and aerosol salt. It is also moderately tolerant to soil salinity. It is considered as a suitable species for cultivation in marginal and drought prone areas. It can be easily propagated by stem cuttings. It is reported that 5 cm cuttings, taken from fresh branches of a healthy bush might grow to 50 cm in height within a growing season. Planting of stem cuttings in shallow trenches of about 20 cm where water can collect, is normally practiced in large-scale cultivation of milk bush. In order to grow as hedge, it should be trimmed and the top should be pruned.



*Ficus benghalensis* - Nika, kiri gas



**Ficus benghalensis L.**

MORACEAE

Synonym: *Ficus indica*

Common names: Banyan tree, Indian banyan tree

Dhivehi names: Nika, kiri gas

Status: Abundant; found in forested areas and nearby residential places in all islands.

Description: A huge, wide-spreading tree that grows up to 25 m in height. It is characterized by the presence of copious aerial roots, which hang from the branches. As the tree becomes older these aerial roots reach the ground, take root and act like stems. Leaves are simple, rough, and alternate in arrangement, ovate in shape with blunt tip and heart-shaped base. Leaf size ranges from 10 to 30 cm in length and 7 to 20 cm in width. Leaf has five to seven pairs of lateral veins; base pair that reaches one-third of the leaf plate length is very conspicuous. Leaf stalk varies in length from 1.5 to 7 cm. Stipules are thick. The flower stand is round and hollow and all the flowers attached onto the inside walls, and thus can not be seen from outside, which is a characteristic feature of all *Ficus* species. Male flowers possess a minute stalk whereas female flowers are sessile. A small opening at the top of the flower stand allows the pollinating insect to enter. Fruit, a fig, is sessile, round and depressed, about 1.5 to 2 cm in diameter, green in colour when young and orange to red when ripened.

Uses: In the Maldives, straight aerial roots (locally called as “*alohoa*”) are used for sailing masts (*farumanu*) in boats. Wood is also used for making inner parts of boats. It is widely grown for shade near the beach and residential areas. Below the banyan tree, a resting platform locally called “*holuashi*”, is constructed with large stems of *Pandanus odoratissimus* (*maa kashikeyo*), where adult and elderly people spend their time during hot sun and in the evening. Fruits are eaten with sugar and sometimes with “*rihaakuru*” (tuna fish paste).

Ecology, propagation and management: Propagation is by seed and stem cuttings. Seeds are dispersed by birds, and seeds germinate and grow on other trees (host), eventually overgrowing and strangling and shading the host trees to death. Banyan tree needs a specific pollinator wasp namely, *Eupristina masoni* without which it can not reproduce and spread by seeds. In Maldives, stem and branch cuttings are the common method followed for propagation. Cuttings of any size are used and establishment is improved by providing shade and watering. Wildlings are also used for propagation.



*Ficus benjamina* - Faiy kudhi nika

**Ficus benjamina L.**

MORACEAE

Synonym: *Ficus nitida*

Common name: Weeping fig

Dhivehi name: Faiy kudhi nika

Status: Occasional; grown as ornamental and as shade tree.

**Description:** A small, evergreen tree that grows to 6 to 8 m in height but is capable of reaching even 20m in height. Bark is grey and smooth. Branchlets are brown and shining. Canopy is umbrella like with pendant branches that go down to the ground (hence, the name weeping fig). As the tree matures, spread of the tree becomes broader than the height of the tree. Leaves are simple, leathery, shiny on both surfaces and alternate in arrangement and 4 to 11 cm long and 1.5 to 6 cm wide. Shape of the leaf blade varies from oblong, elliptic, oval to lanceolate. Leaf tip is pointed, base is rounded, and the leaf margin is entire and undulated. Fruit is a fig, solitary or paired, sessile or attached to the branch by a small stalk. The fig shape is nearly round or somewhat oval, 0.8 to 1.2 cm long and 0.7 to 1 cm wide, orange, yellow or dark red in colour.

**Uses:** Dense, round and symmetrical canopy and gracefully drooping branches made this tree quite popular as an ornamental tree. It is also cultivated as a bonsai. In the Maldives, it is grown along the pavements, sidewalks and also in home gardens and other buildings as shade and ornamental tree.

**Ecology, propagation and management:** It grows on clay, loam, sandy, acidic and alkaline soil. It grows occasionally in wet soils but best performance is achieved only in well-drained soils. It grows in full sun and partial shade. Propagation is by seeds and stem cuttings. The reproductive system of the genus *Ficus* is unique. Each species of *Ficus*, including all the species described in this book, has an associated species of wasp. A *Ficus* species can be pollinated only by its associated wasp and in turn, the associated wasp can only lay eggs within its associated *Ficus* fruit. Hence, for successful natural regeneration a *Ficus* species associated wasps must be present. However, *Ficus benjamina* is propagated by both stem and branch cuttings. Plants should be carefully watered when young and later during droughts for better results. Some of the disadvantages of this tree are that its rapidly growing roots can severely damage concrete surfaces of the sidewalks and the size of the tree is much too large for residential planting.



*Ficus elastica* - Rabaru gas



**Ficus elastica Rox. Hornem**

MORACEAE

Synonym: *Ficus rubra*

Common names: Indian rubber tree, Indian rubber fig

Dhivehi name: Rabaru gas

Status: Ornamental tree; observed only in a few northern group of islands.

Description: A fast growing, evergreen tree, which normally grows 6 to 10 m tall but is reported as growing to more than 30 m in height in its native habitat in the jungles of tropical America. It also grows as an epiphyte, sending down many adventitious roots from the trunk and larger branches. In trees, which are not growing as epiphytes, crown shape is oval and spreading but irregular in outline. Leaves are single, leathery, shiny and smooth and alternately arranged along the branches. Leaves are elliptic-oblong in shape and 15 to 25 cm long with tapering point. Stipules are deciduous, thin and usually red in colour, often as long as the leaves, which is a characteristic feature of the Indian rubber fig. Fruit is a fig, oblong-obovoid in shape, about 1 cm long, axillary in position, stalkless, smooth and greenish yellow in colour.

Uses: Grown mainly as an ornamental tree. Currently three different cultivars are available, which are varying in leaf colour. One cultivar has broad, reddish-green leaves with ivory coloured veins running down the centre of the leaf, another variety has yellow-variegated leaves and the third cultivar has light green leaves with white or yellow margins.

Ecology, propagation and management: It is adapted to all kinds of soil but prefers well-drained soil for better growth. It is highly drought tolerant and moderately tolerant to aerosol salt spray. It grows well in partly shaded environment. Propagation is mainly by air-layering and stem cuttings. It easily breaks apart in strong winds. To develop strong structure as well as to increase longevity, multiple branches need to be removed during the early phase of the growth and lateral branches should be pruned.



*Ficus amplissima* - Laami, Laamia

**Ficus amplissima Smith**

MORACEAE

Synonyms: *Ficus tsiela*, *Ficus indica*

Common names: Bat tree, tsiela

Dhivehi names: Laami, laamiaa

Status: Common in the northern islands.

Description: A fast growing, evergreen tree, which grows 6 to 12 m in height. Crown is round in shape with widely spreading branches. Aerial roots are rarely developed from the branches. Bark is smooth and greenish-grey in colour. Leaves are simple, leathery, and smooth and spiral in arrangement, ovate-elliptic to lanceolate-elliptic in shape with acute tip and rounded base. Leaf size ranges from 5 to 12 cm in length and 2 to 6 cm in width. Leaf stalk is long, varies from 2.5 to 8 cm in length. Leaves become grey-green to brownish in colour when dry and dried leaves have the upper surface covered with minute raised dots. Fruit, a fig, is subglobose to obovoid in shape, sessile and axillary in position and located in the twigs below the leaves. Fig is about 1 to 1.2 cm in diameter, green when young and pink to purple when ripened.

Uses: In Maldives, it is widely grown as ornamental and shade tree. Bark and leaves of *Ficus amplissima* is used in traditional medicine.

Ecology, propagation and management: It grows well in sandy loams and tolerate acidic to alkaline condition. It also tolerates moderate soil salinity and aerosol salt spray. It is drought tolerant and grows well in nutrient-poor soil. It is commonly propagated by stem and branch cuttings. Stem cuttings of 45 to 60 cm without any leaves are planted in beds in slanting position. Leaves appear within a month and after a period of about two months these cuttings are transferred to polythene containers. After a month in the container they are used for outplanting. In Maldives, larger branches are also used for outplanting.



*Gliricidia sepium*



**Gliricidia sepium (Jacq.) Kunth ex Walp.**

FABACEAE

Synonym: *Gliricidia maculata*

Common names: Gliricidia, tree of iron

Status: Occasional; found growing as shade and ornamental tree.

**Description:** A semi deciduous, medium sized tree of variable height, ranging from 3 to 15 m. Trees may have single or multiple stems with diffuse and irregular crown. Bark colour is grey to brown, smooth or slightly fissured. Leaves are pinnately compound, 15 to 30 cm long and arranged alternately along the branches. Each leaf has 7 to 17 leaf pairs and a terminal leaflet. Leaflets are elliptical or lanceolate in shape, 3 to 6 cm long with pointed tip and wedge-shaped base. Inflorescence is a raceme or panicle, numerous, erect or upward curving, 10 to 12 cm long and borne at the base of leaves. Flowers are large, about 2 cm long, have light green calyx tinged with red and a corolla of five whitish-pink or light purple coloured petals. Fruit is a flattened pod, 10 to 15 cm long, about 2 cm wide, which contains three to eight seeds. Pods are yellow-green initially, turning to yellow and finally brown or blackish when fully matured. Seeds are round and flat, shiny and light brown in colour. Size and shape of the tree is greatly modified by repeated lopping in agriculture environments.

**Uses:** It is a nitrogen-fixing tree grown for its environmental services and products. It is used to provide shade to shade-loving crops, living fence posts for pastures and as a fallow tree to improve degraded land. It also provides green manure, fodder and firewood. Wood is very hard, heavy, durable and termite resistant and used for posts, house construction, furniture and tool handles. Roots and seeds are used as rat poison. It is an ideal species for agroforestry.

**Ecology, propagation and management:** It is adapted to grow in wide range of soils, from light to heavy soils and thrives well in deep, medium-textured, well-drained soil. It also grows in calcareous soils that are rich in available calcium and tolerates aerosol salt spray and thus suitable for growing in a large scale in atoll environment. Propagation is by seeds and cuttings. Pretreatment of seeds is not necessary when fresh seeds are used for sowing. However, seeds stored for a long time need soaking overnight in hot water and sowing should proceed immediately after this treatment. Nursery-raised seedlings are ready for planting within three months. Initial growth rate is rapid, may reach 3 m height in the first year. Large cuttings, 2 to 2.5m long and 6 to 15 cm in diameter are used for quick establishment. Rooting will be fast, if small incisions are made on the lower part of the cuttings.



*Guettarda speciosa* - Uni

**Guettarda speciosa L.****RUBIACEAE**

Common name: Nit pitcha

Dhivehi name: Uni

Status: Abundant in forested areas; present in all islands.

Description: An evergreen, small- to medium- sized tree that grows normally about 5 to 10 m in height but is capable of reaching more than 20 m. Crown is round and spreading. Leaves are large, 15 to 25 cm long, 7.5 to 20 cm wide, dark green in colour and ovate in shape. Tip of the leaves is blunt or sometimes acute and the base is rounded or heart-shaped; midrib of the leaf and seven to ten pairs of lateral nerves are prominent. Flowers are fragrant, tubular and white in colour. Corolla tube is light yellow in colour and 2.5 to 5 cm long and corolla is about 3 cm across. Flowers are sensitive to sun and hence, open in the evening and fall before dawn. During cloudy days or in shaded places, opened flowers can be occasionally seen during daytime. Fruits are round and slightly flattened, faintly ribbed, 2.5 to 3 cm in diameter and without stalk; green in colour when unripe, turns to brown at maturity. Each fruit has four to six cells and each cell has one very small white seed. Matured fruits are cork like and dispersed by ocean currents.

Uses: Wood is white in colour, dense, heavy, hard and durable. Wood is mainly used as poles for house construction and boat building. According to some Maldivian elders, wood is heated before using to increase its strength. It is said that nails once fixed in heated wood cannot be easily removed. Wood is also buried in the sand near the sea to keep its freshness for future use. Branches are excellent firewood. It is also grown as ornamental tree and small poles are used for growing passion fruits. In the Maldives, the latex is used to treat cut wounds and the flowers are mixed with an ayurvedic medicine namely, *huvandhu* byes, to treat polio and paralysis. It can be a candidate species for developing multispecies coastal bioshield and can be planted along with lettuce tree (*Scaevola taccada*) and beach heliotrope (*Tournefortia argentea*)

Ecology, propagation and management: It grows in light to heavy soils but prefers well-drained medium-textured soil for better growth. It also grows well in poor soil. Its tolerance to drought, aerosol salt spray and soil salinity is high. Propagation is mainly by seeds. In the Maldives, it is not cultivated. But according to the elders, wildlings can be used to raise this plant in desired locations. Cuttings are also used for propagation. Both seedlings and cuttings require proper shading and watering in the initial stage to establish and grow.



*Hernandia nymphaeifolia* - Kandhu, mas kandhu



**Hernandia nymphaeifolia (C.presl) Kubitzki)**

HERNANDIACEAE

Synonyms: *Hernandia ovigera*, *Hernandia peltata*, *Hernandia sonora*

Common names: Hernandia, Jack in the box

Dhivehi names: Kandhu, mas kandhu

Status: Abundant in the forested areas; present in all islands.

Description: A medium to large sized tree, 10 to 12 m tall but is capable of reaching 30m in height in favourable condition. Crown is round and irregular. Trunk is cylindrical and straight, sometimes with slightly developed buttresses. Bark is white, grey or pale brown in colour, scaly or flaky and slightly fissured. Leaves are simple, peltate, leathery, smooth, shiny and alternate in arrangement. Leaves are also large sized, 15 to 18 cm long and 8 to 10 cm wide with 15 to 25 cm long leaf stalks are oval shaped with pointed tip and rounded base and are dark green on the upper surface and dull green underneath. Inflorescence is terminal or axillary and 10 to 20 cm long. Flowers are on a branched axis, white, slightly hairy and about 1 cm across. Fruit is ellipsoid or somewhat rounded in shape and 1.5 to 3 cm long, black in colour and enclosed in an inflated green sphere. Fruit is single seeded. Seeds are dispersed by ocean currents.

Uses: Wood is not very hard and easily decays in seawater. In the Maldives, wood is sometimes used for making small implements that are used in boat operation. Wood is also used for making toys and souvenirs such as boats and ships and for small furniture. It is also used to make coffins. In the past, wood was used for large tables and big toolboxes used by carpenters. Trunks or large stems are used for rolling dhonis into the sea from the boatyard. Poles are used as a support for beetle veins. Fruits are used to prepare “*madhang*”, a paste, which is used for caulking boats. Leaves, roots, bark and seeds are used in the preparation of a traditional medicine called ‘*ruhglu beys*’, which is used to treat bone fractures. Flowers are used in alleviating headache.

Ecology, propagation and management: It grows in sandy and well-drained soil but prefers slightly wet soil and moist environment for better growth. It is saline tolerant but tolerance to aerosol salt spray is moderate. Propagation is by seeds and stem cuttings. In the Maldives, it is not normally grown but in some islands hardened wood cuttings, 35 to 45 cm in height and 5 to 10 cm in diameter are used for propagation. It establishes and grows fast if proper shade is provided.



*Hibiscus tiliaceus* - Dhiggaa

**Hibiscus tiliaceus L.**

MALVACEAE

Common names: Sea hibiscus, beach hibiscus

Dhivehi name: Dhiggaa

Status: Abundant; present in forested areas and near to residential places in almost all the islands.

Description: A small- to medium- sized evergreen tree 3 to 10 m in height but is capable of growing to 20 m tall. Canopy is usually much wider than the height of the tree. Trunk is often short, with numerous crooked, sprawling branches. In the shrub like forms, prostrate branches intertwine and form an impenetrable thicket. Bark is grey to light brown, fissured and thick in old trees. Leaves are simple, 8 to 15 cm long, green, smooth and glossy on the upper surface greyish and hairy on the lower surface. Tip of the leaf is pointed, base is heart-shaped and the margins are minutely serrated. Flowers are cup shaped, showy with corolla consisting of five radiating, obovate, lemon-yellow coloured petals with dark maroon base. Flowers are fragile and short-lived, mostly falling the same day that they open. Flower fades to pink colour prior to falling. Fruit is a capsule, hairy, ovoid in shape, light brown in colour and about 2 cm long. It splits into five segments upon drying. Seeds are kidney shaped, brown or brown-black in colour and hairy.

Uses: Timber is soft, less durable but hard. In the Maldives, it is widely used for boat building. Trunk and stems are stripped off bark and soaked in seawater to discourage insect attack and rot. Timber is also used for tool handles and fish floats. It is also used for firewood. Smooth, fibrous, cream-coloured inner bark is used for making ropes, which are stronger when wet. This rope is used for fishing nets, mats, bowstrings, net bag etc. Leaves are good for composting. Tree is very useful to stabilize coastal sands and sand dunes. It is an ideal species for agroforestry in atoll environment and a candidate species for multispecies coastal bioshield.

Ecology, propagation and management: It tolerates wide variety of soils, ranging from coralline, skeletal soils to waterlogged swampy soils of medium to heavy texture. It also tolerates aerosol salt spray, brackish water and shallow flooding very well. Well-established tree can also withstand drought. Propagation is by seed and stem cuttings. For seed propagation, capsules should be collected before becoming brown and then air dried to allow the capsule to split, which when shaken will release seeds. Seeds can be scarified by lightly nicking the seed coat. Seedlings, five to six month old and about 25 cm in height are suitable for outplanting. Stem cuttings about 2 to 3 m long from straight branches are commonly used for propagation.



*Lawsonia inermis* - Heenaa



**Lawsonia inermis L.****LYTHRACEAE**

Common names: Henna tree, mignonette

Dhivehi name: Heenaa

Status: Common; grown in home gardens.

Description: A much-branched shrub or small tree 2 to 6 m in height. Bark is greyish-brown, unarmed when young but branches of older trees are spine tipped. Young branches are green in colour and quadrangular which turn red with age. Leaves are small, about 1.5 to 5 cm long, 0.5 to 2 cm wide, elliptic to broadly lanceolate in shape and opposite in arrangement along the branches. Inflorescence is a large pyramid shaped cyme. Flowers are small, about 1 cm across, numerous, fragrant, white in colour with four crumpled petals. Calyx is with a 0.2 cm tube and 0.3 cm spread lobes. Fruit is a small brown coloured round capsule. Fruit opens irregularly and splits into four sections at maturity and is many seeded. Seeds are about 0.3 cm across, angular with thick seed coat.

Uses: Flowers are very fragrant and in the Maldives, they are used to extract a perfume, which is used as base for local scents. Henna leaf has an orange-red dye and leaf paste or powder is widely used for decorating hands, nails and feet with patterns. It is also used as a hair dye. Leaves, flower and roots are used in traditional medicine to treat a variety of ailments. It is used for alleviating jaundice, venereal diseases and smallpox. Root is considered as a potent medicine for gonorrhoea and herpes infection. Leaves have cooling properties and a paste made of the leaves is used to apply on the soles to reduce body temperature. It is considered as one of the “plants of the paradise” and once it was forbidden to damage, cut down a tree or use wood as fuel.

Ecology, propagation and management: It is adapted to grow in all types of soil, from clayey to poor, stony soils but prefers sandy soil for better performance. It grows both in acidic as well as slightly alkaline soils. It requires high temperature for germination, growth and development. Propagation is by seed and cuttings. Seeds are steeped in water for three to seven days wherein the water is changed everyday and then placed in small heaps, which are kept moist for a few days. Well-swollen seeds are then selected for sowing. Seedlings should be kept in the nursery for about four to five months, during which time it would grow to about 35 to 40 cm. It is then cut back to 15 cm height and outplanted. It is easy to propagate from cuttings. Heartwood cuttings about 15 to 20 cm can be used for planting. It is a hardy plant and can survive without watering but to increase growth rate watering is essential.



*Leucaena leucocephala* - Ipil-ipil

**Leucaena leucocephala (Lam.) de Wit.**

MIMOSACEAE

Synonyms: *Leucaena glauca*, *Leucaena latisiliqua*

Common name: Leucaena

Dhivehi name: Ipil-ipil

Status: Occasional; observed only in a few islands.

Description: A bushy shrub to small or medium sized fast growing tree, the height of the plant depends on cultivars and types. Some cultivars may reach 20 m height at maturity. Bark is smooth, grey to brown in colour with tan spots. Leaves are compound, bipinnate, 10 to 20 cm long with four to nine pairs of pinnae. Each pinna is 4 to 10 cm in length with 11 to 17 pairs of small, oblong-lanceolate shaped leaflets, which fold up in the night. Pinnae are without terminal leaf and leaf arrangement is alternate. Flowers are very small, white in colour, arranged in a round inflorescence, which is 2 to 2.5 cm in diameter. Inflorescence is single, axillary in position and with 5 cm long peduncle. Fruit pod is thin and flat, up to 20 cm long and 2 cm wide and pointed at both ends. Seeds are elliptical in shape, compressed and brown in colour.

Uses: It can be effectively utilized to improve soil condition since its nitrogen-fixing capacity is very high. It fixes about 275 kg of nitrogen per year per hectare and thus superior to *Gliricidia*, *Casuarina* and *Erythrina*. It is also a good source of fuel wood. Wood is also used for light construction, flooring, pulp, poles and posts. Pods are used as fodder and green manure. Tree is also widely used to control soil erosion because of its deep root system. It is a good species for agroforestry.

Ecology, propagation and management: It is adapted to different soil conditions but grows well in deep red soils. It also grows on calcareous and coral soil and tolerates acidic to alkaline conditions. It is sensitive to flooding and requires good drainage. It is moderately tolerant of salinity, aerosol spray and drought. Propagation is by seeds. Seeds can be collected by thrashing mature pods. Seeds require pretreatment to break dormancy. Seeds may be soaked in boiling water for two to three minutes and left in water at room temperature for two to three days. Seeds can also be immersed in sulphuric acid for 10 to 15 minutes and washed and dried before planting. Seeds can also be scarified mechanically. It can also be established by stem cuttings; cuttings about 4 m long and 10 cm in diameter can be rooted in a nursery and outplanted after trimming the roots to a length of 20 cm.



*Mangifera indica* - An'bu, aavi an'bu, koi an'bu



**Mangifera indica L.****ANACARDIACEAE**

Common name: Mango

Dhivehi names: An'bu, aavi an'bu, koi an'bu

Status: Common both in the northern and southern group of islands.

Description: A well-known evergreen tree 10 to 25 m tall with spreading, round shaped, dense crown. Trunk is short and multi-branched. Bark is grey-brown in colour and longitudinally fissured. Leaves are simple, 8 to 40 cm long but narrow, lanceolate or oblong in shape and arranged alternately. Leaves are somewhat leathery, with tapering base and pointed tip with undulating margin and 12 to 30 pairs of nerves. Young leaves are reddish, becoming dark green and shiny with age. Inflorescence is terminal, widely branched panicles, which is up to 60 cm long with a numerous, small, yellow-green male and bisexual flowers. Flowers are with five lobed calyx and five petals. Fruit is a fleshy drupe, variable in size and shape, usually obovoid-oblong, unequal sided and up to 10 cm long and 30 cm wide. Young fruit is green in colour, turning to red, orange, yellowish or purple-brown as fruit matures. Flesh is yellow to orange coloured, juicy, may be fibrous, sweet to turpentine flavored. The fruit is single seeded.

Uses: Both unripe and ripe fruits are eaten fresh. It is used for stewed fruit, juices, jam and jellies. It is processed into pickles, chutney, curry and dried slices. Sherbet is also made out of fruits. In the Maldives, a local variety called "aavi an'bu", which smells and tastes like mint, is widely eaten. Slices of green fruit with *rihakuru* (tuna fish paste) is one of the delicious items of the culinary of the Maldives. Wood is strong, heavy and durable and can be used for boat building, carpentry, house building etc.; but in the Maldives it is not used for any of these purposes since mango tree is not normally felled for timber.

Ecology, propagation and management: Mango grows in clay, loamy, sandy and acidic or alkaline, poor but well-drained soils. It performs well in sand, gravel and even limestone soil. Its tolerance to drought and aerosol salt spray is moderate. It is sensitive to soil salinity. Mango is readily propagated by seed. Germination rate and vigour of seedlings are highest when fresh seeds are used. No pretreatment of seed is required. Propagation from seed is unable to perpetuate characters of the parent tree and also plants take more time to bear fruit. Hence, many vegetative propagation methods have been developed with varying degrees of success. Inarching and approach-grafting are the common methods followed in vegetative propagation. Propagation by stem cutting and air layering is less successful. Both cuttings and air-layers do not develop good root system and are not practical for establishing large-scale plantations.



*Manilkara zapota* - Sabhudheli

**Manilkara zapota (L.) van Royen.****SAPOTACEAE**Synonyms: *Achras zapota*, *Manilkara achras*

Common names: Sapdilla, naseberry, chicle tree

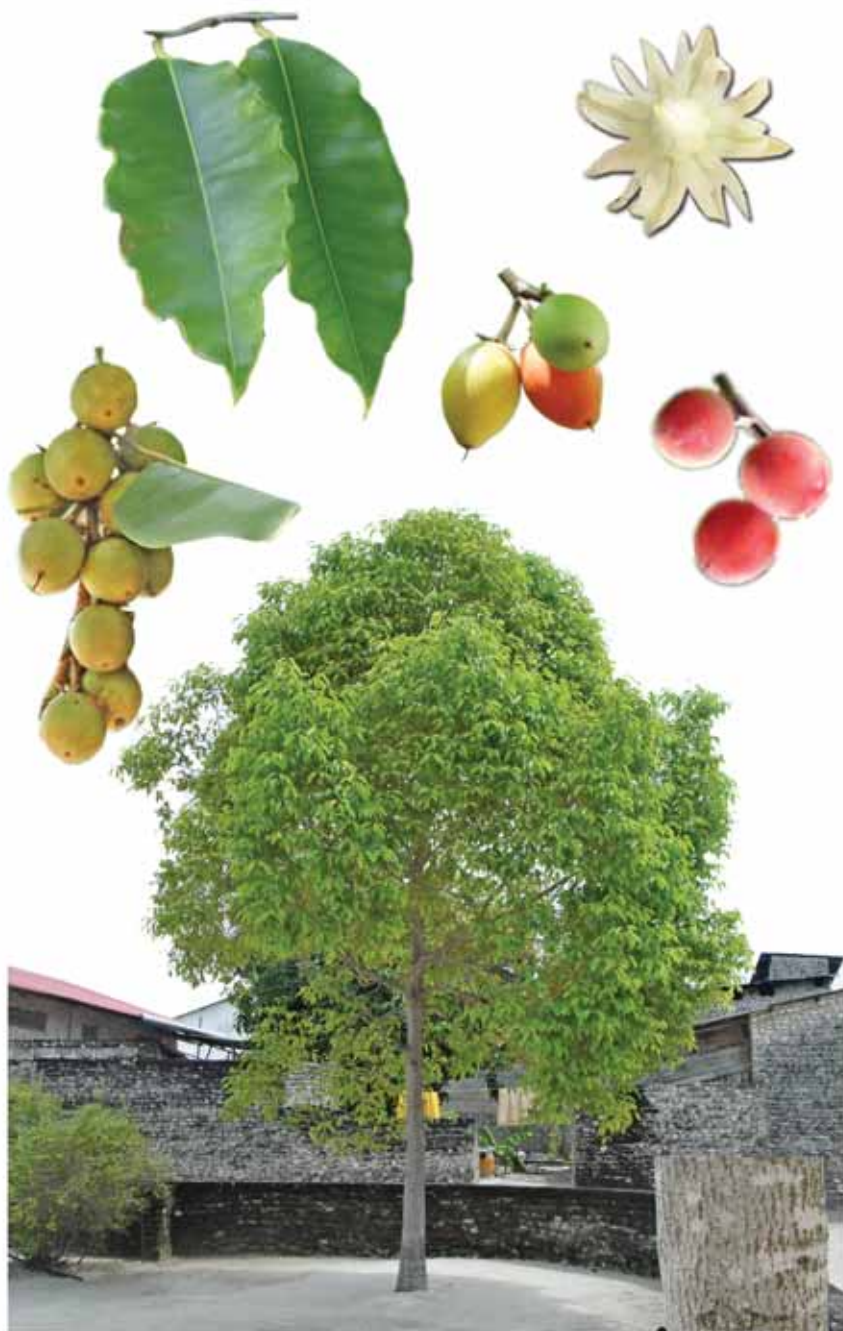
Dhivehi name: Sabhudheli

Status: Common; grown in home gardens.

Description: A slow-growing, evergreen, upright, long-lived forest tree (in Central America) with a normal height ranging from 12 to 15 m but it is capable of growing to 30m height. However, grafted cultivars, which are normally grown in the home gardens, are much shorter. It has a distinctly pyramid-shaped crown when young, which becomes round and dense with age and irregular in shape. Trunk is cylindrical and long in forest-grown trees but become shortened in cultivars. Leaves are simple, alternate, spirally arranged and clustered at the shoot tips. Leaves are elliptic or oblong in shape, stiff, shiny and medium to dark green in colour. Flowers are single, small, greenish-white with a hairy flower stalk and bell-like in shape with six green sepals and six white corolla lobes. Fruit is an oval, round or ellipsoid berry with a rough brown skin. Immature fruits are hard, gummy and very astringent. Ripe fruits contain juicy, sweet, yellowish to light or dark brown or reddish brown coloured flesh with a sweet and pleasant flavour resembling that of a pear. Fruits contain 3 to 12, shiny, hard flattened, brown or black seeds with one white margin. Fruits can also be seedless. All parts of the plants are rich in white latex.

Uses: Though it is a multiple use tree, it is mainly cultivated for its fruit, which is eaten raw or made into juice, sherbets, jam and syrup. Wood is very hard, strong, tough, dense, insect resistant and durable and deep red in colour. It is suitable for heavy construction and excellent for furniture. Latex of the bark, commonly called as chicle, was previously the base for chewing gum. It is a strong tree and can withstand hurricane very well. It is also a very good ornamental and shade tree.

Ecology, propagation and management: It is well adapted to many types of soil but flourishes on rich, well-drained sandy loam. It is highly drought tolerant, can withstand aerosol salt spray and very saline soil (approaches the date palm in its tolerance of soil salinity). Propagation is by seed and vegetative methods. The best seeds are large ones from large fruits. Seeds germinate readily but growth is slow and takes 5 to 8 years to bear the fruit. Cultivars are normally propagated by air-layering, inarching, marcoting and grafting. For air-layering two years old branches are used. Grafting is successful on several rootstocks but grafts using *Manilkara kauki* and *Manilkara hexandra* as rootstock grow vigorously and fruit heavily.



*Mimusops elengi* - Moonimaa



**Mimusops elengi L.****SAPOTACEAE**

Common names: Tanjong tree, Pagoda gum tree

Dhivehi name: Moonimaa

Status: Common; grown in public places and home gardens. No individual tree is found in the wild.

Description: A handsome evergreen tree about 8 to 15 m tall with a dense, round and spreading crown. Trunk is straight. Bark is grey in colour and fissured deeply in old trees. Leaves are single, shiny, leathery, oblong and lanceolate in shape and opposite in arrangement. They are small in size, 4 to 12 cm long and 3 to 6 cm wide with slightly curled margin and pointed tip. Flowers are solitary or in pairs, star-shaped, 1.5 cm across and axillary in position and very fragrant. Sepals are green, tough and 12 in number, which are arranged in two series of eight and four. Petals are creamy white in colour, 24 in number and arranged in two series, the outer series with 16 and inner series with 8 petals. Fruit is a berry, ovoid to egg-shaped, green when unripe, orange-red when ripe and fleshy. Each fruit contains a single, hard and dark brown seed.

Uses: In Maldives, it is widely grown as a shade and as an ornamental tree because of its dense, dark green canopy and fragrant flowers, which fill the night air with deep, rich very pleasant aroma. Flowers retain their odour for many days after they fall and they are used to stuff pillows. A pleasant perfume is also obtained from the flowers. Fruit with sweet, aromatic and yellow-coloured flesh is edible but rather astringent. Unripe fruit is used by silk dyers to fix colours. It is also an excellent timber tree. Its heartwood, which is deep red in colour, is very hard, strong, durable and fine grained, easy to work with and polishes well. Various parts of the tree are used in traditional medicine. Bark decoction is widely used to maintain oral hygiene. Ripe fruit, pounded and mixed with water, is given to promote delivery in childbirth. It can be grown as a wind breaker and can be a part of multispecies coastal bioshield.

Ecology, propagation and management: It tolerates a variety of soils but grows well in coastal sandy soil. It requires good moisture for better performance. Trees growing in dry soil may have pale yellow foliage. It is propagated by seed. Seeds are collected from ripened fallen fruit. Outer skin and flesh of the fruit can be easily removed and seeds can be used directly for plantation. No pretreatment is necessary. Since growth rate is very slow, seedlings grown in the nursery for about two years are used for outplanting. It can be grown as an avenue tree in rows with 4 m interval. It requires regular watering in the early stage for establishment.



*Morinda citrifolia* - Ahi

**Morinda citrifolia L.**

RUBIACEAE

Synonyms: *Morinda bracteata*, *Morinda litoralis*

Common names: Indian mulberry, cheesefruit, noni

Dhivehi name: Ahi

Status: Common; found mostly in the forested areas.

**Description:** An erect, evergreen, smooth shrub or small tree 3 to 10 m tall. Bark is greyish or yellow-brown, shallowly fissured and somewhat shiny. Young branches are light green in colour and four-angled. Leaves are simple, opposite in arrangement along the branches, elliptic to elliptic-ovate in shape, 20 to 45 cm long and 7 to 25 cm wide. Leaves are dark green in colour, shiny and deeply veined. Flowers are small, white, numerous and about 70 to 90 flowers can be seen in a ovoid to round flower head, which has 1 to 4 cm long peduncle. Inflorescence is axillary and normally opposite to leaves in position. Flowers are bisexual and fragrant; corolla is five lobed on a short greenish yellow coloured tube. Fruit is yellowish-white in colour, fleshy, roughly cone like in shape, 3 to 10 cm long and 2 to 3 cm wide. It is soft, somewhat gelatinous when ripe, and strong smelling. Each fruit has many seeds and each seed is enclosed in a distinct air chamber.

**Uses:** Indian mulberry was previously cultivated for a reddish-purple and brown dye from the bark and roots to colour cloths. Now it is widely cultivated for medicinal purpose. Fruit juice is used in alternative medicine for a host of illness such as diabetes, high blood pressure, arthritis, and muscle aches, menstrual difficulties etc. Fruit juice is considered as an excellent adaptogen (can keep body systems in homeostasis). In the Maldives, fruit is normally given to old people to alleviate illnesses resulting from senility. Leaf juice, obtained by crushing leaves or cooked leaves are applied on the swollen body parts to reduce swelling and pain.

**Ecology, propagation and management:** It grows on a wide range of soils and harsh environmental conditions, such as brackish tide pools, limestone soils or outcroppings on coral atolls. It also tolerates seasonal water logging but prefers free, well-drained soils for better performance. It grows well both in acidic and alkaline soils. Its tolerance to drought, aerosol salt spray and water and soil salinity is very high. Its growth and fruit production is somewhat reduced in windy areas. Indian mulberry can be easily propagated by seeds and stem cuttings. Seeds float in water due to presence of air bubbles inside and such floating seeds from mature fruits can be collected and scarified to improve germination rate and time. Seeds may be directly sown or seedlings of about 2 to 12 months can be outplanted. Stem cuttings 20 to 40 cm long can be grown in containers and used for outplanting after six to nine weeks.



*Moringa oleifera* - Muran'ga gas



**Moringa oleifera Lam.****MORINGACEAE**

Synonym: *Moringa pterygosperma*

Common names: Drumstick tree, horseradish tree, ben nut

Dhivehi name: Muran'ga gas

Status: Common in the northern islands; occasional in the southern islands.

Description: A small, fast growing, deciduous to evergreen tree that can grow up to 10 m in height. Crown is umbrella shaped and open. Branches are slender and drooping. Bark is corky and grey in colour. Leaves are compound, leathery and up to 50 cm long with many small leaflets, which are about 1 to 2 cm long. Terminal leaflet, which is obovate in shape, is usually larger than the lateral leaflets. Lateral leaflets are elliptical in shape. Flowers are white or creamy white in colour, fragrant and 1.5 to 2 cm long, borne in axillary inflorescence. Fruit is a pod, pendulous, triangular in cross section, normally 30 to 50 cm in length but some may be as long as 120 cm. Young fruits are green in colour, turning to brown and splitting into three parts when dry. Each pod contains about 20 dark brown, three-winged seeds, which are embedded in pith.

Uses: It is a multipurpose tree and almost every part of the drumstick tree is of value for food. Leaves are used as greens, in soups and salads and in vegetable curries. Pods, which looks like giant beans and taste like asparagus are widely used in curries. Seeds can also be eaten fresh as peas. Flowers are also used as a vegetable. Thickened root of the drumstick tree is used as a substitute for horseradish. Seeds yield sweet high-quality oil called ben oil, which is used in art, salads, and hairdressing and as a lubricant for fine machinery such as that of watches. Leaves, flowers and pods are high in proteins (5 to 10% on average) and rich in vitamins and iron and calcium. Because of the high nutritive value drumstick tree is considered as one of the important trees with reference to nutritional security of rural communities. It is an ideal species for agroforestry in the coastal areas.

Ecology, propagation and management: It is adapted to a wide range of soils but grows well in dry sandy soil. It is highly tolerant to drought but foliage production reduces considerably under continuous water stress. It can be easily propagated by stem cutting and seed. Seeds collected from dry pods can be sown directly. Seedlings, which grow very fast, can be raised in a container for outplanting. Stem cuttings of about 1 m long is normally used for planting. It requires protection against high winds.



*Muntingia calabura* - Jeymu

**Muntingia calabura L.**

TILIACEAE

Common names: Japanese cherry, Jamaica cherry tree

Dhivehi name: Jeymu

Status: Common in forested areas and around residential areas.

Description: A fast growing, slender, evergreen tree that grows up to 10 m tall. Branches are nearly horizontal like a fan, spreading, hairy and drooping at the tip. Mainline branches become erect after leaf fall and contribute to the development of the trunk. Leaves are simple, alternate in arrangement, ovate to lanceolate in shape, covered with tiny sticky hairs on the upper surface and grey or brown hairy on the underside. Leaf margin is irregularly toothed and leaf blade is strongly asymmetrical. Flowers are solitary or up to three in number with five green sepals and five white petals and are borne in leaf axils. Flowers open just before dawn and last for only a day. Fruit is a berry, round, 1 to 1.2 cm wide, red or sometimes yellow in colour, smooth, thin with tender skin. Fruit pulp is juicy, soft, and light-brown in colour with sweet, musky flavour. Seeds are minute, elliptical and greyish yellow in colour and numerous.

Uses: Fruits are edible and somewhat strawberry tasting. They are eaten raw and can be preserved as jam if they are available in plenty. Fruits are also used in tarts. Bark can be made into ropes. Wood, which becomes light weight when dry, is a source of fuel wood and not used for any other purpose. It can be grown as a shade tree for nursery. In the Maldives, tree is grown for shade and ornamental purposes. Shoot, fruit and root are used in traditional medicine.

Ecology, propagation and management: It grows in dry soil but flourishes in slightly moist and acidic soil. It is tolerant to shade but tolerance to salinity and aerosol salt spray is very poor. It spreads spontaneously and seeds are dispersed by birds and fruit eating bats. It is reported that fresh seed germination is enhanced by passage through the digestive tract of bats. Seed germinates in high temperature and light. *M. calabara* is normally not cultivated except in some places in Brazil, where fresh seeds are sown directly. To collect seeds, water is added repeatedly to the squeezed juice, resulting in sinking of viable seeds to the bottom of the container. Collected seeds are washed and dried for future use. In the Maldives, wildlings are used for growing in home garden as a shade tree.



*Maldivian variety*

*Murraya koenigii* - Hikan' dhi gas, hikan' dhi faiy

**Murraya koenigii (L.) Spreng.**

RUTACEAE

Common name: Curry leaf

Dhivehi names: Hikan'dhi gas, hikan'dhi faiy

Status: Common; grown in home garden.

Description: An evergreen, fast growing and spreading small shrub that grows up to 2.5 m in height. Bark is dark green to brownish and can be peeled off longitudinally, exposing the white wood underneath. Leaves are bipinnately compound and 20 to 35 cm long. Each leaf bears about 24 leaflets, which are 5 cm in length and 1.8 cm in width and lanceolate in shape. Inflorescence is a cyme, terminal in position and bearing about 60 to 90 flowers. Flowers are white in colour, funnel shaped, fragrant and about 1.2 cm across. Calyx is green in colour, five lobed and persistent. Corolla is white with five lanceolate shaped petals. Fruit is round to oblong in shape, 1.4 to 1.6 cm long and 1 to 1.2 cm in diameter and pulpy, green when young but ripe fruits are black in colour with shinning surface. About 30 to 80 fruits can be seen in a cluster. Each fruit contains a small greenish seed. In the Maldives, a variety of curry leaf is grown, which is shorter in height and does not flower and fruit.

Uses: Fresh leaves have a very pleasant aroma and it is widely used fresh to add flavour to curries. Leaves are commonly fried in oil or butter or even oven dried or toasted before use. Because of their soft texture curry leaves are not removed from curries. In Maldives, curry leaf is widely used in special fish curries as well as in delicious chicken and beef curries. Fruits are considered as very nutritious and can be eaten raw. Fruits too have many medicinal properties.

Ecology, propagation and management: It grows on a variety of soil but performs well only in deep, well-drained red soil. In clayey soil its performance in the initial stage is good but soon it will wither. Their performances in saline and alkaline soil is very poor and because of this reason many of the plants grown in the Maldives exhibit chlorotic symptoms (leaves becoming abnormally pale green or yellow due to partial or complete loss of chlorophyll). It is propagated by growing the small suckers from the base of the tree, by root cuttings or by seed. Seeds lose their viability quickly and should not be dried before planting. Germination rate is high, if fresh seeds are used in nursery beds after carefully removing fruit skin and flesh. Sometimes fruit is soaked in water for two days before removing the seeds. Seedlings about 30 to 40 cm in height are suitable for outplanting.





*Ochrosia oppositifolia* - Dhun'buri

**Ochrosia oppositifolia** (Lam.) K. Schum      APOCYNACEAE

Synonym: *Ochrosia borbonica*

Common name: Cork wood tree

Dhivehi name: Dhun' buri

Status: Common in wild and also grown in home gardens.

Description: A small- to medium- sized evergreen, upright tree that grows up to 12 m. Trunk is straight and short. Young branches are somewhat shiny and green in colour with the leaves often crowned at the end. Leaves are leathery and shiny, 14 to 20 cm long and four to ten cm wide, widest in or frequently above the middle, tapering at the base. Leaf apex is round or faintly acuminate and obtuse with prominent midrib and lateral veins underneath. Inflorescence is an umbel with peduncle of two to 12 cm and terminal or lateral in position. Flowers are white in colour with 0.5 to 1 cm long cylindrical tube and fragrant. Corolla is deeply divided into five lobes, which are longer than the tube and oblong or obtuse in shape. Fruit is a drupe, comes in pair, smooth, distinct, elliptical in shape, 5 to 8 cm long and bluntly pointed. Matured fruit is bright yellow in colour. Each fruit contains an ovate-shaped strongly flattened seeds.

Uses: Wood is soft and has distinct odour. Sapwood is yellow or shades of yellow and heartwood is dark coloured. Wood can be used only for lighter construction and firewood. In the Maldives, wood was used in the past for carpentry, particularly for cot and tables and two types of benches called *boduashi* and *kudaashi*. According to elders, the wood was normally heated before use to make it stronger and long lasting. Leaves were also once used as a green and were popularly used to cover cooked foods. Children sometimes eat ripe fruits. Now it is frequently grown as a support tree for betel leaves. Flowers are used to make medicines for skin diseases.

Ecology, propagation and management: It grows in clayey and loamy soil but prefers well-drained sandy soil for better performance. Its tolerance to drought and aerosol salt is high and tolerance to soil salinity is moderate. It grows well close to the sea in full sun or partial shade. It can be propagated by seeds and cuttings.



*Peltophorum pterocarpum* - Reendho varey

## **Peltophorum pterocarpum D.C. Baker ex Heyne** CAESALPINIACEAE

Synonyms: *Peltophorum ferrugineum*, *Poinciana roxburghii*

Common names: Copper pod, golden flame, yellow Poinciana

Dhivehi name: Reendho varey

Status: Occasionally grown as an ornamental and shade tree.

Description: A fast growing, upright, semi-evergreen tree that normally grows up to 8 to 20 m tall. However it is capable of reaching 50 m in height in optimal climatic and soil conditions. Crown is dense, round shaped and spreading. Bark is smooth and grey in colour. Leaves are large, delicate, feathery, dark green in colour and arranged alternately along the branches. Leaves are bipinnately compound, have 4 to 15 pairs of pinnae, each pinna with eight to 20 pairs of oblong leaflets. Inflorescence is in panicles of spikes at the end of branches with orange-yellow coloured flowers and rust-coloured buds. Flowers are showy, fragrant, about 2.5 cm in diameter with frilly margins. Fruit is an elongated pod, 5 to 10 cm long, flat, thin and winged; copper red in colour when young, dark red when ripe and then turn black. Each pod contains 1 to 3 seeds.

Uses: It is widely grown as a shade and as an ornamental tree. Its dark green and feathery leaves create welcoming cool shade. During the summer, entire canopy is smothered with beautiful, showy and grape-like fragrant flowers. Heartwood of the tree is light reddish-brown or black in colour, moderately hard, moderately heavy and somewhat lustrous, used for light construction, cabinet making, woodcarving etc. Bark contains about 20% of tannins and it is an important component in the black or dark dye used for batik work in Indonesia. It is also used for tanning leather and preserving and dyeing fishing nets.

Ecology, propagation and management: It grows on clay, loam and sand, acidic and alkaline soils but prefers light to medium textured free-draining alkaline soils for better performance. It requires full sun for better growth. It is highly drought tolerant but tolerance to aerosol salt and soil salinity is poor. It can be propagated by seed, stem and branch cuttings. Seed germination can be improved by scarifying one end of the seeds or immersing them in sulphuric acid for about 25 minutes followed by washing or immersing them in boiling water for about two minutes and then soaking in cold water overnight. One year old nursery raised seedlings are used for outplanting for better results. Wildings can also be used for planting.



*Phyllanthus acidus* - Goan'bili



**Phyllanthus acidus (L.) Skeels**

EUPHORBIACEAE

Synonyms: *Cicca acidus*, *Phyllanthus distichus*

Common names: Country gooseberry, star gooseberry

Dhivehi name: Goan'bili

Status: Occasional

**Description:** A shrub or small erect tree about 2 to 9 m tall. It resembles bilimbi in general appearance. Crown is dense, bushy and spreading. Bark is grey, rough and with prominent lenticels. Branches are ascending and leaves are clustered at the tips on greenish or pinkish branchlets. Each branchlet is 20 to 50 cm long with 25 to 40 leaves, which are arranged alternately. Leaves are thin, ovate or ovate-lanceolate in shape with pointed apex; green on the upper surface and blue-green on the underside. Flowers are small, light pink in colour, which are found in dense cushion-shaped flower head at nodes of the leafless branches, old wood and also on proximal branchlets of current year's growth. Flowers are male, female or bisexual with four petals and sepals. Fruit is a drupe, somewhat round in the beginning, becoming shallowly six or eight lobed, greenish yellow when young, whitish when ripe. Flesh is firm, sour in taste with a hard, bony grooved stone, which contains six to eight smooth seeds.

**Uses:** Fresh fruits, which are acidic in taste, are sometimes eaten raw or mixed with salt or sugar. Mixing of salts neutralizes the acidity. Fruits are also used to make syrups and sour and sweet drink, which is considered thirst quenching. Fruits are used to flavour various food items and processed into pickles. Wood is fairly hard, strong and tough and durable, if seasoned. Fruit is used as a laxative and also taken as a liver tonic.

**Ecology, propagation and management:** Star gooseberry grows well in hot and humid climate and grows on a variety of soils including coastal sandy soils. It prefers moist soils for better performance. It is normally grown from seed. Seeds are collected from matured, white coloured fruit from the ground. No pretreatment is required before sowing. It can also be propagated vegetatively by budding, greenwood cuttings and air-layering but success rate is less when compared to seed propagation.



*Phyllanthus emblica* - Beys goan'bili

**Phyllanthus emblica L.****EUPHORBIACEAE**

Synonym: *Emblica officinalis*

Common names: Indian gooseberry, emblic myrabalan

Dhivehi name: Beys goan'bili

Status: Rare; grown in home gardens.

**Description:** A small or medium sized deciduous tree 8 to 10 m tall but is capable of growing to a height of 20 m in optimal climatic and soil conditions. Main stem is often crooked with spreading branches. Bark is smooth, thin and grey in colour with numerous bosses and peels off in thin flakes. Leaves are simple, very small, about 1.2 to 2 cm long and 0.3 cm wide, overlapping and spreading. Leaves are oblong in shape and arranged alternately in two opposite rows (distichous) along very slender branchlets, giving a misleading impression of finely pinnate leaves. Though it is a deciduous tree it is seldom entirely bare and is therefore often cited as an evergreen tree. Flowers are small, unisexual, greenish-yellow in colour and axillary in position. Male flowers are very small, numerous and usually occur at the lower end of growing branchlets. Female flowers are only a few and sessile. Fruit is round, indented at the base, smooth with six to eight pale lines that run base to the apex, giving it the appearance of being divided into segments. Fruit skin is thin, translucent and adherent to the very crisp, juicy flesh. Fruit is light green when young, turns to whitish or dull, greenish-yellow in colour as it matures.

**Uses:** It is grown mainly for its fruits, which is highly valued as a component in the preparation of a variety of traditional medicine. Juice of the fruit along with other ingredients is used to treat hemorrhage, anemia, jaundice, fits, insanity, cough, hiccough, indigestion etc. Ripe fruits are often cooked with sugar and eaten daily to restore health and vitality. Young fruits are considered as cooling, laxative and diuretic and also thirst quenching. It is also eaten after fasting. Wood is close-grained and hard but it warps and splits when exposed to sun. However, it is durable under water.

**Ecology, propagation and management:** It tolerates a variety of soil and has been raised successfully in arid, semi arid, coastal climatic conditions. It is noted for being able to thrive in regions that are too dry and contain very poor soil. Its tolerance to soil salinity is moderate. It is normally propagated by seeds. Seeds are collected from overripe fruits, which are sun dried to facilitate removal of stone. Extracted seeds are given the float test and those seeds that sink are collected for germination. About four-months-old seedlings can be used for budding and grafting.



*Pisonia grandis* - Lhos

**Pisonia grandis R. Br.****NYCTAGINACEAE**

Synonym: *Pisonia alba*

Common names: Lettuce tree, grand devil's claw

Dhivehi name: Lhos

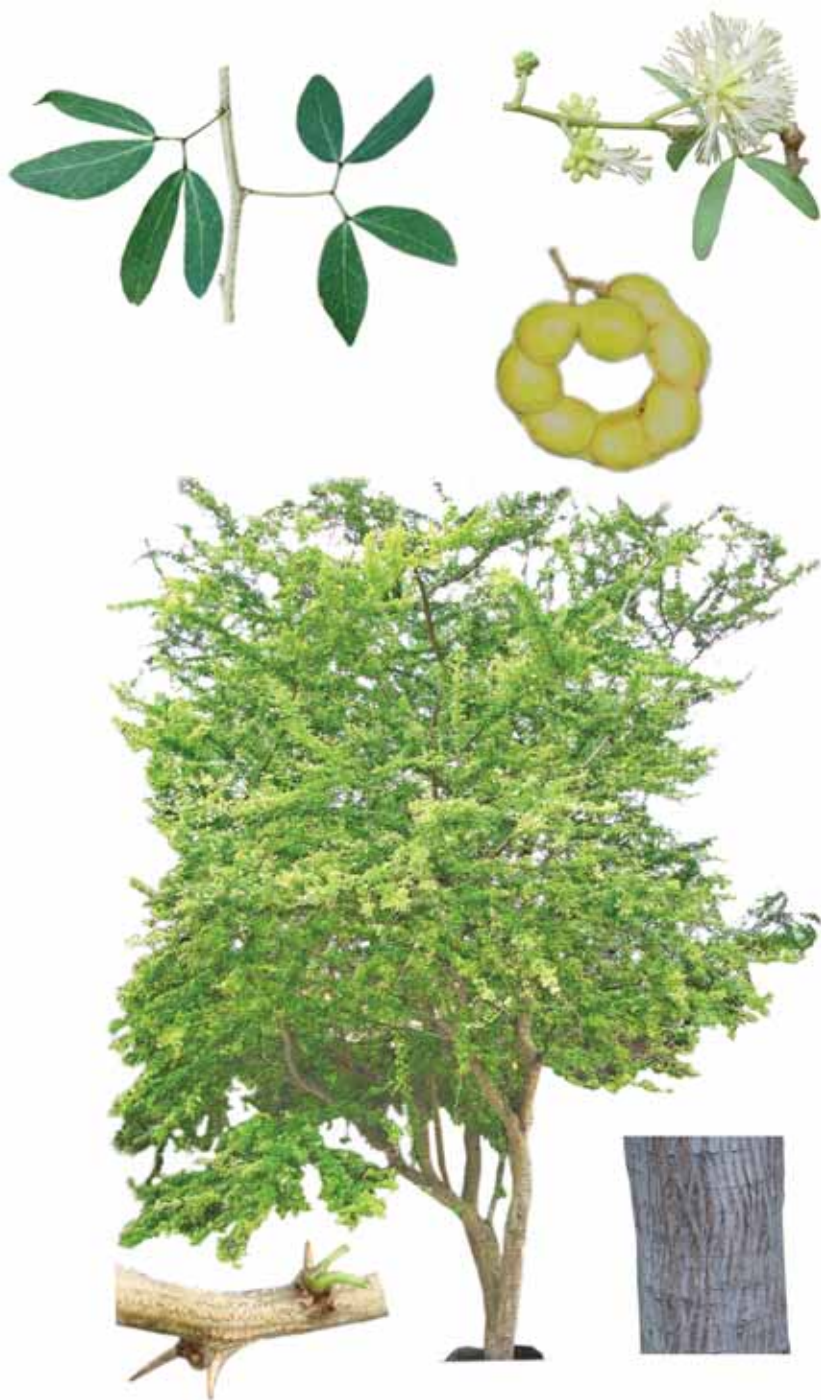
Status: Occasional in the southern islands and common in the northern islands.

Description: A small sized tree 6 to 20 m tall with smooth, thick, greyish cream or dull pale brown coloured bark with prominent pores. Leaves are usually thin but fleshy if exposed to salt spray. Leaves are broadly elliptic to oblong in shape, 9 to 30 cm long and 6 to 18 cm wide with distinct lateral veins. Leaf apex is acute or bluntly acuminate. Leaves are variously arranged, opposite to sub-opposite, sometimes alternate on the same tree. Leaves of wild trees are dark green. Inflorescence is a dense, terminal or sub-terminal cyme, alternately or irregularly branched with light brown hairs. Flowers are unisexual on the same tree or on different trees. Male flowers are 4 to 6 mm long, broadly deltoid in shape with short lobes and covered with minute hairs. Female flowers are less in number and smaller than male flowers. It has a unique fruit type called anthocarp, a structure in which the outer sterile part of the flower is united with the fruit. Fruit is about 1.5 cm long, leathery, five ribbed and each rib is with one row of large, black, sticky glands.

Uses: Wood is soft, weak and brittle and, hence, not used. Foliage makes an excellent fodder for livestock. It is also grown as an ornamental tree, especially "female" trees with beautiful light green-coloured foliage is commonly grown in dooryards. In the Maldives, it is widely grown in the home gardens as a support tree for beetle vein. Leaves are used to make salad and curries. In the traditional system of medicine leaves are used to alleviate stomach disorders. They are also used as an analgesic, anti-inflammatory and diuretic.

Ecology, propagation and management: It is an important component of the beach forest of atoll environment and it is often the dominant forest tree of coral islands that have large seabird colonies. It provides favored nesting grounds for a variety of seabirds. In fact, it has evolved to grow on seabird-dominated islands and it is one of the few trees that thrive in the acidic guano deposits produced by large numbers of nesting seabirds. Attached to the feathers of seabirds, the sticky seeds spread over long distances. It can be easily propagated by stem cuttings. Cuttings of various sizes are used for planting and they establish easily if watered regularly in the initial stages. It can also be propagated by seeds. Entire fruits can be sown directly or seeds may be removed in water and used afresh for sowing.





*Pithecellobium dulce* - Kashi helebeli

**Pithecellobium dulce (Roxb.) Benth.**

MIMOSACEAE

*Synonym: Inga dulcis, also spelled as Pithecollobium or Pithecolobium*

Common names: Manila tamarind, sweet inga

Dhivehi name: Kashi helebeli

Status: Common; grown in home gardens and public places.

**Description:** A small- to medium- sized semi-evergreen tree that grows up to 20 m height. Crown is spreading but irregular. Trunk is short, about 1 m high, with crooked branches and somewhat shiny branchlets. Bark is grey and smooth in young trees, turning to slightly rough and furrowed in old trees. Bark exudes reddish-brown gum when injured. Leaves are bipinnately compound with a pair of pinnae, each with two leaflets that are kidney shaped and dark green in colour. Spines are present in pairs at the base of the leaf. New leaf growth and shedding of old leaves occur almost simultaneously, giving the tree an evergreen appearance. Inflorescence is about 10 cm long and 1 cm across, located at the end of the branches with 15 to 20 white flowers in round heads. Each flower is 0.3 to 0.5 cm long with hairy corolla and calyx. Fruit is a pod, 10 to 15 cm long, 1 to 1.5 cm wide, curled up tightly and reddish-brown in colour. Each pod has five to ten shiny black coloured seeds, which are surrounded by thick, spongy, dry pulp.

**Uses:** Fruit pulp, which is sweet and acid in taste and white or sometimes red in colour, is eaten fresh with seeds. Pulp and seeds together are used to make a sweet drink. Seeds are also used in curries. Pods and leaves are excellent fodder. Wood is strong, moderately hard, durable but soft and flexible. It is also easy to work with and finishes to a smooth surface. Short spines and irregular crooked branches make the wood of this tree less attractive. Tannin can be extracted from the bark, leaves and seeds, which can be used to soften leather. Bark extract can be used to dye fishnets. Oil is extracted from the seed, which is edible. It can be a candidate species for agroforestry in atoll environment.

**Ecology, propagation and management:** It grows well both in wet and dry areas. It is found growing well in clay, limestone, sandy and other poor soils. It is rated as highly tolerant to soil salinity and grow even with its roots in brackish water. It can be easily propagated by seed. Seeds can be extracted from mature fruits remain viable for about six months, and can be used for direct sowing. No pretreatment is required. Seedlings may also be grown in the nursery. Seedlings raised in nursery bed are transplanted to containers after six months, and used for outplanting when they are about one year old. It can also be easily propagated by stem cuttings.



*Plumeria obtusa* - Bodu gulchampa



*Plumeria rubra* - Raiy gulchampa

**Plumeria obtusa L.****APOCYNACEAE**

Synonym: *Plumeria krugii*

Common names: Frangipanni, temple tree, pagoda tree

Dhivehi name: Bodu gulchampa

Status: Common; grown as an ornamental plant.

Description: An evergreen shrub or small tree 4 to 5 m tall with coarse textured, vase shaped, open canopy. Branches are rough, blunt, sausage-like, thick and grey-green in colour. Branches are upright, soft but sturdy, rather crowded on the trunk, giving a vase-like appearance to the entire plant. Leaves are simple, leathery, and alternate in arrangement, oval or obovate in shape, 30 to 45 cm long and 15 to 30 cm wide, dark green and shining above, light green with prominent venation beneath. Apex of the leaf is rounded. Flowers are large, 4 to 5 cm across, showy, pleasantly fragrant, creamy white in colour with a yellow centre. Corolla is funnel shaped with five spreading petals, which are fused at the base and the corolla tube is cylindrical, 2 to 3 cm long. Inflorescence is a cyme, which is borne on a long peduncle. Fruit is a double follicle with winged seeds. Fruits are rarely produced. A milky sap is exuded from the branches when they are bruised or punctured.

**Plumeria rubra L.****APOCYNACEAE**

Synonyms: *Plumeria acuminate*, *Plumeria acutifolia*

Common names: Red frangipanni, red jasmine

Dhivehi name: Raiy gulchampa

Description: It is similar to *Plumeria obtusa* in all characters except the following: leaves are deciduous and have acuminate apex, which is tapering to a point; flower is red or pink coloured (*Plumeria alba* has white flower).

Uses: Both *P. obtusa* and *P. rubra* are grown as an ornamental plant.

Ecology, propagation and management: Both *Plumeria obtusa* and *Plumeria rubra* grow in clay, loam and sandy, acidic and alkaline soil but prefer moist, neutral and well-drained soil for better survival and growth. Their tolerance to drought and salt spray is high. They are moderately tolerant to soil salinity. They can be easily propagated by herbaceous, woody, softwood, semi-hardwood cuttings. Normally, large hardwood cuttings are recommended for propagation and these cuttings should be allowed to heal by drying for several days before planting. Water requirement is moderate. It can be grown with a single trunk or branched low into a multi-trunked specimen.



*Premna serratifolia* - Dhakan' dhaa



**Premna serratifolia L.****VERBENACEAE**

Synonyms: *Premna integrifolia*, *Premna obtusifolia*

Dhivehi name: Dhakan'dhaa

Status: Common in the forested areas.

Description: A small deciduous shrub or tree 4 to 8 m tall with dense, round crown. Sometimes it may be prostrate and form impenetrable thickets. Bark is brown and rough. Branches and branchlets are slender, brown or light brownish in colour with prominent corky leaf scars. Leaf shape is highly variable, elliptic or oblong-elliptic or oblong or even sub-ovate, 3 to 12 cm long, 2 to 8 cm wide and opposite in arrangement. Tip of the leaves is also variable, obtuse to short acuminate or ending abruptly in a short sharp point. Leaf margin is smooth, sometimes shallowly notched or coarsely serrated. Inflorescence is terminal, much branched and many flowered. Flowers are small with distinctly toothed calyx, greenish, or pale greenish-white or pale yellowish-white in colour and unpleasantly aromatic. Fruit is a small round drupe, fleshy, surrounded at the base by enlarged calyx and dark blue or black in colour when mature. Stone is hard, normally four chambered and four seeded.

Uses: In the Maldives, it is considered as ideal firewood and it is a tradition to use branches and twigs of this tree to make 'first fire' in new kitchens. It is also grown as shade tree in houses, schools and other public places. Wood is used for handicrafts and to make handles of small tools. Straight long poles, which are light weight and durable, are commonly used as handle of scoops or buckets that are used to draw water from shallow wells. Poles are used to provide support to beetle vein. Leaves are eaten to increase mother's milk. Leaves are also used in traditional medicine to alleviate rheumatism and neuralgia and weakness of the limbs. It is a strong wind breaker and, hence, can be an important component in multiple coastal bioshield.

Ecology, propagation and management: It is well adapted to shallow, dry, alkaline coastal soil but better performance is seen in deep soil with high moisture content. It is also capable of growing in rocky areas near the shore. Its tolerance to drought and aerosol salt spray is high and tolerance to soil salinity is moderate. It is not cultivated in the Maldives though it can be propagated by seed and stem cuttings. Seeds can be removed from the fruit by crushing them in water and can be used for direct sowing. Seedling growth is moderate and requires regular watering but intolerant to excess watering. Stem cuttings 1 to 1.5 m height and 6 to 10 cm in diameter can be used for easy establishment.



*Psidium guajava* - Feyru

**Psidium guajava L.**

MYRTACEAE

Synonym: *Psidium aromaticum*

Common names: Guava, common guava

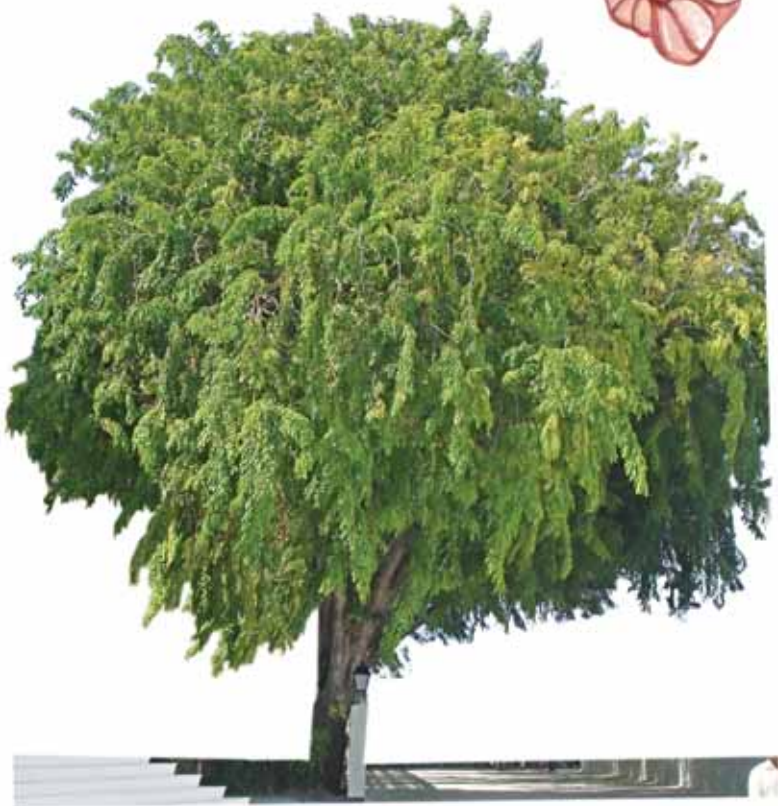
Dhivehi name: Feyru

Status: Common; cultivated in home gardens.

Description: A shrub or small evergreen tree that grows to a height of 10 m. However, most of the trees found in the Maldives are only around 4 to 5 m tall. It is many branched, which are crooked and spreading. Young branches are four sided and downy. Bark is smooth, mostly copper coloured or mottled green and peel off in thin flakes continuously. Leaves are simple, opposite in arrangement with short leaf stalk and are oval or oblong in shape. They are stiff, dull green to yellow green on the upper surface and leathery with conspicuous veins; aromatic when crushed. Flowers are small, about 2 cm across and borne singly or in a cluster of two to three in the axils of the leaf. Flowers are white in colour with four to five petals, which drop immediately, leaving a tuft of white stamens. Fruit is round, oval or pear-shaped berry with floral remnants at the apex and has a sweet musky odour. Fruit skin is thin, yellow in colour and frequently blushed with pink. Next to skin a thin, juicy flesh is present, which is white, yellowish, light or dark pink or near red in colour. The central pulp is darker in colour, juicy and filled with small seeds. Immature fruit is green, hard and astringent in taste.

Uses: Fruit is eaten raw and varieties differ widely in taste, flavour and seediness. Guava is used to make jam, jelly, juice and nectar and also preserved in varieties of forms. Guava is made into a paste by evaporating the pulp with sugar and eaten as sweetmeat. Wood is brown or reddish, hard, moderately strong, and durable but because of the short and crooked nature of the stem it is not widely used. Leaves and bark pieces are used to make a decoction that is used externally to treat skin diseases.

Ecology, propagation and management: It is a hardy tree that grows in a wide variety of climatic and soil conditions. It grows well on poor soils with good drainage but growth and fruit production is better in rich clayey loams. It is drought resistant but less tolerant to soil salinity. In high aerosol salt condition the leaves become chlorotic. It has a very shallow root system with no taproots and thus tolerance to high wind is limited. It can be propagated from seeds, which are pretreated by boiling for five minutes or soaked for two weeks. Seedlings about 25 cm height are used for outplanting. It is also propagated by air-layering, shield or patch budding on seedling rootstock, grafting and stem cuttings. Root cuttings are also used for propagation.



*Pterocarpus indicus* - Ofi elay gas

**Pterocarpus indicus Willd.**

FABACEAE

*Synonyms: Pterocarpus pallidus, Pterocarpus blancoi***Common names:** Burmese rosewood, narra**Dhivehi name:** Ofi elay gas**Status:** Common in Male and being introduced into other islands.

**Description:** A large tree, that grows up to 33 m tall and 2 m in diameter. It is evergreen in non-seasonal humid climates like Maldives but in regions with seasonal rainfall it is deciduous. Trunks are usually fluted and with pronounced buttress. Crowns are large and bear many long arching branches, which may droop at the ends. Bark is smooth, light yellow-brown in colour and exuding red sap when wounded. Leaves are pinnately compound with 7 to 11 leaflets, which are arranged alternately. Leaflets are ovate or oblong ovate in shape, shiny and pointed at the tip. Flowers are large, 1 to 5 cm long, fragrant, showy, yellow in colour, arranged at axillary panicles. Fruit is a pod, circular in shape, flat, 4 to 5.5 cm in diameter including 1 to 1.5 cm wide surrounding wing. Seedpods are soft haired when young becoming almost smooth when mature.

**Uses:** It is an important timber tree and its wood is highly valued. Timber is moderately hard, moderately heavy and smells like camphor or cedar. Timber develops a range of colours from yellow to red and has conspicuous growth rings that impart a fine figure to the wood. The more the red the heavier is the wood. It is easy to work with and takes polish well. Timber is in great demand and used for high-class furniture, carving and specialty items. In the Maldives, it is grown as an ornamental and shade tree.

**Ecology, propagation and management:** It grows in a wide variety of environmental conditions, ranging from deep inland forests to coast. It also grows near the sea and along tidal creeks, indicating its tolerance to salinity. Regarding soil, it grows well in sandy or clayey loam with neutral or slightly acidic soil. Propagation is by seeds and stem cuttings. Seeds are very difficult to extract from the fruit and hence, whole fruit is used for propagation. There is a little difference in germination time and percentage between extracted seeds and whole fruits. It can be propagated easily by rooted cuttings. Stem cuttings 2 to 3 m in length and 10 cm in diameter are normally used for planting.





*Punica granatum* - Annaaru

***Punica granatum* L.****PUNICACEAE**

**Common name:** Pomegranate

**Dhivehi name:** Annaaru

**Status:** Common; grown in home gardens.

**Description:** A small, multi-stemmed deciduous shrub or tree that normally grows to 2 to 5 m tall but is capable of growing up to 10 m in optimal environmental condition. Canopy is open and crown base is low. Stem is woody and spiny. Bark is dark grey in colour and smooth. Slender branches start out upright then droop gracefully and unpruned shrubs have a drooping or fountain-shaped habit. Leaves are simple, 2 to 8 cm long, oblong or obovate in shape, shiny, opposite in arrangement or arranged in whorls of five or six. Flowers are large, showy, trumpet shaped and borne singly or as many as five in a cluster at the tips of the branches. Flowers are characterized by the presence of thick, tubular, red-coloured calyx with five to eight pointed sepals forming a vase from which emerge the three to seven wrinkled, orange-red or white or variegated petals. Fruit is a globose berry and shiny, tough, leathery with reddish- or yellowish-coloured rind when matured and crowned at the base by persistent calyx. Fruit is divided into compartments by membranous walls and spongy tissue, filled with numerous seeds. Each seed is encased in a juicy, somewhat acidic, red, pink or whitish pulp. Seeds are angular, soft or hard, white or red in colour.

**Uses:** Juicy seeds, which have sweet-sour and very pleasant taste, are eaten raw or made into juice, which is a very popular drink in the Maldives. It is also made into jellies and jams. In India, seeds are dried and used as a spice for vegetable dishes. It is also grown as an ornamental tree and there are several cultivars selected just for the showy and variegated flowers.

**Ecology, propagation and management:** It grows on a variety of well-drained soils, ranging from deep acidic loam to alkaline calcareous soils. It is highly tolerant to drought and seasonal water logging. Its tolerance to soil salinity and aerosol salt is moderate. It is easily propagated by seeds and cuttings. Seeds readily germinate, if sown directly and seedlings grow vigorously. However, it is normally propagated by hardwood cuttings to avoid seedling variation. Hardwood cuttings 20 to 30 cm in height are planted for rooting in containers and they are kept in the nursery for 12 to 18 months before being transplanted to the field. It is slow growing and lopping, pruning and coppicing are the recommended management practices. Normally, seedlings are trained with a single stem up to 30 to 45 cm or as a bush with three to four main stems. Thinning should be done occasionally for good aeration and to avoid interception of sunlight.



*Ricinus communis* - Amanaka

**Ricinus communis L.****EUPHORBIACEAE**

Common names: Castor bean, castor oil plant

Dhivehi name: Amanaka

Status: Occasional, found mostly in wasted lands

Description: A perennial shrub that normally grows to 3 m tall but in suitable condition it grows as an evergreen tree and may reach up to 12 m height. In shrub form, stem is succulent with sap and in tree form it is woody, soft and light with central pith. Bark is light brown, smooth and exhibits rings at nodes. Leaves are large, 10 to 60 cm across, alternate in arrangement, palm like in shape with five to nine finger like lobes and sharply toothed leaf margin. Leaf stalk is long, attached to the centre of the leaf blade. Flowers are small and without corolla. Male and female flowers are on the same plant, and are produced on a clustered spike inflorescence, which is located at the end of the branches. Male flowers have greenish calyx, which is deeply cut into three to five segments and enclose numerous, much branched, yellow stamens. Male flowers are found in the lower portion of the flower head. Calyx of the female flower is slightly reddish in colour and cut into three segments. Fruit is a round capsule with soft prickles and deeply grooved. Each fruit contains three shiny, ovoid and tick-like seeds of variable colour.

Uses: Seeds yield fast-drying, non-yellowing oil, used mainly in industry and medicine. It is used as additives in paints and varnishes, in the manufacture of high-grade lubricants mainly for aircrafts, printing inks, in textile dyeing, in leather preservation and in the production of a nylon-type fibre. Oil and its derivatives are used as skin moisturizer and smoothing agents. Hydrogenated oil is utilized in the manufacture of waxes, polishes, carbon paper, candles and crayons. Seeds are highly toxic and the principal toxin is ricin.

Ecology, propagation and management: It tolerates a wide variety of soil but performance is good in fertile, well-drained and neutral soil. Its tolerance to aerosol salt and salinity is low. It requires full sun and high temperature for better yield. It colonizes disturbed and wasted lands, where it grows rapidly, shading out native species and producing monospecific stands. It is cultivated as an oil crop and it is propagated entirely by seeds, which retain their viability for two to three years. Pretreated seeds to resist diseases are sown directly. Seedlings grown in nursery are also used to raise plantation. It exhausts soil nutrients easily and hence, application of fertilizers is necessary.



*Scaevola taccada* - Magoo



**Scaevola taccada (Gaertn.) Roxb**

GOODENIACEAE

Synonyms: *Scaevola frutescens*, *Scaevola sericea*

Common names: Sea lettuce tree, scaevola, half flower

Dhivehi name: Magoo

Status: Abundant along the shoreline.

**Description:** A low branching, spreading bushy shrub that grows up to 3 m tall with soft-wooded and crooked main stem. Slender branches are green in colour, somewhat succulent with soft spongy tissue inside (pith) and with clear leaf scar on the outside. Leaves are simple, slightly alternate in arrangement, normally crowded at the tip of the branches; slightly fleshy, obovate in shape, 15 to 30 cm long and 8 to 10 cm wide with rounded apex and prominent midrib. A tuft of white long hairs is present in leaf axils. Inflorescence is a cyme, axillary in position, branched and slender. Sea lettuce is often called as half flower because corolla tube, which is about 1.5 cm long, appears to be split down one side with five spreading petals. Flowers are white or pinkish-white in colour and fragrant. Fruit is a drupe, white or purplish in colour, ovoid or sub-globose in shape, about 1.5 cm in diameter, soft, fleshy and tasteless. Stone is ellipsoid in shape, ribbed with corky outer layer.

**Uses:** In the Maldives, earlier it was used for building traditional houses. Harvested stems were kept in the seawater for a few days and after that bark was removed to get beautiful white sticks, which were used as roofing strips and rafters. According to some elders, leaves of sea lettuce were eaten though bitter during the Second World War when no food was available. Presently, it is mainly used for firewood. Pith of large stem is used for handicrafts. It is also used in traditional medicine. Leaf juice is used to alleviate painful swellings and a few drops of juice extracted from the seeds are added to the eyes to reduce reddening. It can be one of the important components of the front row vegetation of coastal bioshield and can be multiplied for coastal stabilization.

**Ecology, propagation and management:** It is one of the early colonizers (one of the first to grow in open places) of the beaches of the Maldives. It grows well in sandy, calcareous, alkaline soil. It is highly tolerant to drought, aerosol salt spray and salinity. It grows well in full sun. It is not cultivated in the Maldives. However, it can be easily propagated by seeds. Fruits float and the seeds remain viable for more than a year in seawater. However, they will germinate only with freshwater. It can also be propagated by stem cuttings. Stem cuttings need shade and regular watering for better survival and growth rate.



*Sesbania grandiflora* - Feerumuran'ga

**Sesbania grandiflora (L.) Poiret**

FABACEAE

Synonyms: *Agati grandiflora*, *Sesbania formosa*

Common names: Agathi, sesban

Dhivehi name: Feerumuran'ga

Status: Occasional in some of the southern islands.

**Description:** A fast growing, small tree 8 to 15 m in height with a cylindrical trunk, which is up to 25 cm in diameter. Bark is grey in colour, rough and furrowed. Leaves are pinnately compound, alternate in arrangement, 15 to 20 cm long with 12 to 20 pairs of oblong, rounded leaflets. Leaflets are 3 to 4 cm long and 1 cm wide, light green in colour when young, dark green when mature, turn to bright yellow before falling. Leaves are borne only on terminal ends of branches. Flowers are large, 5 to 10 cm long, about 3 cm wide, curved before opening and cream or white coloured. Fruit is a pod, 20 to 50 cm long but only about 0.8 cm wide, slightly curved with swollen margins. Each pod contains 15 to 40 seeds, which are bean like and pale coloured.

**Uses:** Leaves, flowers and pods are edible. Flowers are steamed or cooked in soups and stewed after the stamen and calyx have been removed. Steamed, cooked leaves are also eaten. Leaves and pods are valued as fodder; however, because of high protein content they are not fed to animals solely. Gum extracted from the bark is used as a substitute for gum arabic. Wood is used for pulp and fuel. It is generally considered as a poor fuel wood because it burns very easily and smokes excessively when burning. It can be effectively used to improve soil health. It is a good nitrogen fixer and leaves, flowers and pods can be used for mulching to improve soil fertility.

**Ecology, propagation and management:** It grows well even on poor and waterlogged soils and also tolerates saline and alkaline conditions. It also has the ability to grow in acidic soil and tolerates prolonged dry season, that is up to nine months. It tends to break in high winds. It is easily propagated by seeds. Seeds may be pretreated by scratching or nicking round end of the seed, or soaking in cold or tepid water for 24 hours. Seeds can be sown directly onto the field. Seedlings can also be raised in the nursery for outplanting.



*Suriana maritima* - Halaveli

**Suriana maritima L.****SURIANACEAE**

Common names: Tassel plant, bay cedar

Dhivehi name: Halaveli

Status: Abundant along the shoreline in all the islands.

Description: An evergreen shrub that normally grows to 1.5 to 2.5 m in height but is capable of reaching up to 6 m in favourable condition. It is a multi-stemmed, much branched shrub with prostrate or ovoid crown. Bark is dark brown in colour, rough and flaky. All young parts of the plants are covered with minute hairs. Leaves are simple, fleshy, spatula like in shape, alternate in arrangement, grey green in colour, and crowded at the tips of upturned twigs. Leaves are 1 to 4 cm long and 0.3 to 0.5 cm wide and produce a cedar-like fragrance when crushed. Leaves become yellow before falling. Leaf scars are prominent in young branches. Inflorescence is one to four flower cyme and axillary in position. Flowers are small, about 1.5 cm across with five yellow coloured petals and five green coloured sepals, which are pointedly lobed. Flowers develop into clusters of five dry, brown drupes, which are surrounded by persistent grey sepals. It looks somewhat like *Pemphis acidula* (Kuredhi) in appearance and is frequently mistaken for that plant.

Uses: Wood is very hard, heavy, strong, fine-textured and durable. Heartwood is dark red or reddish brown. Sapwood is somewhat lighter in colour. In the Maldives, wood is used mainly for wood peg but only if the wood of *Phempis acidula* is not available. Crooked nature of the stem does not allow extraction of wood of considerable size. It is also widely grown as an ornamental plant for hedges and borders. It is used for firewood. In traditional medicine it is used to treat bone fracture. In olden days, leaves were used to stuff pillows. It can be a part of the frontline vegetation of multispecies coastal bioshield.

Ecology, propagation and management: It is an important component of beach vegetation and grows in sand, loam, coral rubble, acidic and alkaline but well-drained soils. It requires full sun for normal growth. It is highly tolerant to drought and aerosol salt spray and its tolerance to soil salinity is good. Its fruits are buoyant and remain viable for long periods in seawater and thus, allow it to colonize beaches easily. It can be propagated from seeds, stem cuttings and also from root suckers. Wildlings are also used for plantation. Seeds can be collected by gently pressing the fruits and can be sown in containers in nursery. It requires watering in the initial stage and can grow without irrigation once established. It takes trimming well and can be trained into required size. If straight poles are required it should be pruned periodically.





*Syzygium aqueum* - Jan'buroalu

**Syzygium aqueum (Burm.f.) Alston**

MYRTACEAE

Synonyms: *Eugenia aquea*, *Eugenia javanica*

Common names: Water apple, wax apple

Dhivehi name: Jan'buroalu

Status: Common; mostly found in home gardens.

**Description:** An evergreen large shrub or small tree 3 to 10 m in height. Trunk is crooked, often branched near the base. Canopy is dense and irregular in outline. Bark is thick, light brown in colour and fissured in old trees. Leaves are simple, opposite in arrangement, elliptic-cordate to obovate-oblong in shape, large, about 7 to 25 cm long and 2.5 to 16 cm wide with short leaf stalk. Leaves are pale to dark green in colour, somewhat curled and slightly aromatic when crushed. Inflorescence is at the tip of the branches or from axils of the leaf with three to seven large flowers. Flowers are white in colour, 2.5 to 3.5 cm across with four petals, which spatula-like and up to 0.7mm long. Stamens are numerous, hairy and up to 2 cm long. Fruit is a berry, cone shaped, shiny, white to red in colour with translucent skin and crowned by calyx segments. Flesh is juicy and watery. Each fruit contains one to two or at the maximum six seeds, which are small and round in shape.

**Uses:** It is grown mainly for fruit, which is eaten fresh and nearly 80% or more of the fruit is edible. In some countries fruits are used in salad or sometimes pickled or stewed. Fruit is sweet, somewhat astringent and considered as thirst quenching. Shelf life is very short. Wood is hard and reddish in colour, normally not used because it is considered as weak and brittle. Various parts of the tree are used in traditional medicine. It is observed in the Maldives that the tree bark is used to grow orchids. It is also grown as a shade plant.

**Ecology, propagation and management:** It grows in sandy and light soil but flourishes in heavy soils with easy access to water. It grows in hot climate with fairly long season but not tolerant to draught. It is weakly tolerant to salt spray and salinity. Propagation by seed, stem cuttings and air-layering is common. Seeds lose their viability quickly and should be sown fresh from the fruit. Air-layering is commonly employed in many countries, and it is also widely practiced in the Maldives. In the old method, sand is mainly used as medium which is tightly packed with the help of jute sack and watered daily. Sometimes, 1 to 1.5 m cuttings are taken and kept in water for rooting and then outplanted.



*Syzygium cumini* - Dhan'bu gas

**Syzygium cumini (L.) Skeel**

MYRTACEAE

Synonyms: *Eugenia jambolana*, *Syzygium jambolanum*

Common names: Jambolan, Indian blackberry, black plum

Dhivehi name: Dhan'bu gas

Status: Common in southern islands and occasional in the northern islands.

Description: A fast growing, evergreen tree that normally grows to 12 to 15 m tall but is capable of growing up to 30m in height. It is low branching and multiple branches can be seen at about 2 to 3 m from the base. Crown is irregular or globular. Bark is thick, rough and flaky on the lower part of the trunk and smooth and light coloured in the upper part. Leaves are simple, opposite in arrangement, thick, leathery, hairless and broadly ovate, elliptic or elliptic-oblong in shape; pinkish when young, dark green when mature with transparent margin and conspicuous midrib. Leaves produce a faint turpentine smell when crushed. Leaf stalk is 1.5 to 2 cm long and yellow coloured. Inflorescence is a panicle, 5 to 12 cm long, usually on leafless branches. Flowers are small in size, lightly fragrant, white or pink coloured with four to five united white, round, concave petals, which shed quickly leaving only the numerous stamens. Fruit is round or oblong, turns from green to light pink, then dark-purple or nearly black as it ripens; present in clusters of 10 to 40 or even less fruits. Fruit skin is thin, smooth, shiny with purple or white, juicy pulp. Each fruit encloses a single, sometimes two to five green or brown seeds.

Uses: It is one of the important timber trees of the Maldives. Timber is reddish-grey or reddish-brown in colour, strong, durable in water, resistant to termites. It is used in boat building and carpentry. In dhoni, timber of jambolan is mainly used for making inner support (stems) called *vagandha*. According to some of the elders, trees in the Maldives are now affected by a disease, which cause decaying of heartwood of large trees and thus making them not suitable for any use. Fruits are collected and eaten raw or made into juice and sherbet.

Ecology, propagation and management: It is adapted to a variety of soil but prefers deep, rich and well-drained soil. It can tolerate drought and prolonged flooding. Its tolerance to salinity is also good. It is propagated by mainly seeds. Freshly collected seeds are normally used for direct sowing. Seedlings can also be raised in the nursery and for better performance, soil moisture is more important than shade. Growth of the seedling in the first year is slow and normally two-years old seedlings are used for outplanting. Inarching, grafting, budding and stem cuttings are the other methods of propagation.





*Syzygium jambos* - Janbu



**Syzygium jambos (L.) Alston**

MYRTACEAE

Synonyms: *Eugenia jambos*, *Jambosa jambos*

Common names: Rose apple, jambos

Dhivehi name: Janbu

Status: Rare; a tree is observed near the Presidential palace in Male.

**Description:** An evergreen, low branching shrub or small tree that grows to 6 m in height with dense and spreading crown. Stem is cylindrical and mostly twisted at the base; four sided when young. Bark is pale-brown in colour, smooth and somewhat shiny. Leaves are simple, opposite in arrangement, thin, narrowly lanceolate in shape and 10 to 23 cm long. They are slightly leathery, glossy, rose coloured when young and dark green when mature. Leaves are produced in a dense luxuriant mass that hides all the branches from view. Flowers are large, 5 to 10 cm wide, showy and white to pale cream in colour. Flowers consist of four petals and four sepals with 300 to 400 stamens, which are about 4 cm long. There are about four to five flowers together in terminal clusters. Fruit is nearly round or oval in shape, 2 to 5 cm in diameter and crowned by persistent four-lobed calyx. Fruit skin is smooth, thin, pale-yellow or whitish and sometimes pink blushed. Flesh is crisp, dry to juicy, yellow-pink in colour, sweet and fragrant like rose. Each fruit contains one to four seeds in the central hallow, which are brown, rough coated and round in shape.

**Uses:** Grown mainly for fruits, which are eaten out-of-hand by children. It is also made into jam and jelly with lemon juice added and can be candied by stewing them in heavy sugar syrup. Fruits can also be used to extract a high-quality rose water. Essential oil is extracted from the leaves for perfume production. Heartwood, which is heavy and hard, can be used for construction.

**Ecology, propagation and management:** It flourishes on deep loamy soils and also on sand and limestone with very little organic matter. It tolerates semi-arid condition but does not tolerate prolonged dry spell. It requires frequent watering during dry season. It can be grown in coastal location as it is tolerant to wind and salt spray. Propagation is mainly by seed but the seedlings are not uniform in character and growth. Many methods of vegetative propagation, such as hardwood cuttings, air-layering and budding are tried but protocols are yet to be standardized. However, in some countries air-layering is commonly practiced and rooted layers are planted during the rainy season.



*Tamarindus indica* - Helen'beli

**Tamarindus indica L.****CAESALPINIACEAE**

**Common name:** Tamarind

**Dhivehi name:** Helen'beli

**Status:** Occasional in the northern islands.

**Description:** A slow growing, long lived, evergreen tree that is capable of growing up to a 30 m tall. It is an open, low-branching tree with dense, round, spreading crown. Bark is grey brown in colour, rough and fissured. Leaves are pinnately compound, long, alternate in arrangement with 10 to 18 pairs of leaflets. Leaflets are narrowly oblong in shape, 1 to 3.5 cm long and 0.5 to 1 cm wide, apex rounded to square and slightly notched. Leaflets close up at night. Flowers are about 2.5 cm across with five petals and four sepals and pale yellow or cream coloured with orange or red streaks. Flower buds are distinctively pink in colour due to the outer colour of the sepals, which are shed when flower opens. Flowers are arranged in small racemes. Fruit is a pod, 10 to 18 cm long, straight or curved with round base and brittle rusty-brown shell. It is slightly constricted between seeds. Fruit pulp is sticky, thick, and blackish-brown in colour. Seeds are hard, shiny, smooth and embedded in the pulp.

**Uses:** Fruit pulp is widely used in the preparation of curries and chutneys and also in various food preparations. Young leaves, flowers and pods are sometimes used for curry or eaten raw. Oil and gum can be extracted from the seeds for industrial use. Timber is very hard, strong and durable and heartwood is dark purplish in colour. It is used in the Maldives in carpentry. It is also used for boat planks and panels.

**Ecology, propagation and management:** It is adapted to a wide range climatic and soil conditions but prefers well-drained alluvial soil for better performance. It is drought and wind tolerant. It is also tolerant to aerosol salt spray. It requires long, well-marked dry weather for fruiting. It is commonly propagated by seeds and also vegetatively by marcoting, grafting and budding and stem and air layering. Seeds need to be soaked in cold water for about 12 hours or nicked mechanically. Seedlings 80 cm in height are normally used for outplanting. Grafting and budding are normally followed to propagate desirable selections. Trees generally require minimum care but young trees are pruned to allow for the development of well-spaced branches. It is generally considered not very compatible with other plants because of its dense shade and allelopathic effects.



*Tectona grandis* - Haivakaru

**Tectona grandis L.****VERBENACEAE**

Common names: Teak, Indian oak

Dhivehi name: Haivakaru

Status: Rare.

**Description:** A medium to large sized deciduous tree about 25 to 30 m tall but is capable of reaching 50 m height. Trunk is straight, often low buttressed and the first branch may appear at about 10 m above ground in tall trees. Bark is brown, fibrous with shallow fissures. Leaves are simple, large, up to 55 cm in length and 37 cm in width which shed for about three to four months during the dry season. Leaves are round, oval or oval-oblong shaped, shiny above, hairy below with conspicuous veins. Inflorescence is large, about 40 cm long and located at the tip of the topmost unshaded part of the crown. Flowers are small, white in colour with seven lobed corolla and five to seven lobed calyx which becomes inflated enclosing the fruit. Fruit is a drupe with four chambers, round, hard and woody, brown in colour at maturity. Each fruit contain up to four seeds.

**Uses:** Teak is well known for its high quality timber. Heartwood, which is often yellowish when freshly cut but turns to golden brown or dark greyish-brown after exposure, is resistant to rot, decay and termites. It is used for boat building, house building, bridge building, furniture, etc. In the Maldives, it is widely used in paneling walls of houses and decks of boats. It is widely admired in the Maldives and according to an elder from Vaadhoo Island, a mosque constructed with imported teak about 300 years ago is still intact.

**Ecology, propagation and management:** Teak grows well in deep, well drained, fertile neutral to slightly alkaline soil, which is rich in calcium and phosphorus. Teak does not tolerate water logging and its tolerance to salinity and aerosol salt spray is weak. It is propagated by seeds, seedling stumps and cuttings and by tissue culture. Seeds collected from floor are generally used for direct sowing. Pretreatment is necessary and several methods such as alternate soaking and drying, soaking the fruit for 48 hours in running water, removing exocarp are followed. In seedling stumps, seedling of about one year old is removed from nursery, stem cut off and stump is used for planting. Normally growth rate is fast in young trees and a ten-year-old tree can reach up to 25 m in height in optimal climatic and soil condition.





*Terminalia catappa* - Midhili gas, madhu gas, gobu gas

***Terminalia catappa* L.****COMBRETACEAE**

Synonym: *Terminalia procera*

Common name: Country almond

Dhivehi names: Midhili gas, madhu gas, gobu gas

Status: Abundant in the forested areas and also grown around residential places.

Description: A tall, semi-deciduous, erect, medium to large sized tree 10 to 25 m tall. Trunk is usually straight and more or less cylindrical but it may also be crooked and leaning. Bark is grey brown coloured, smooth in young trees, rough with age. In younger trees branches are almost horizontal and erect and arranged in tiers, giving the tree a pagoda like shape, which becomes less noticeable as the branches elongate and droop at the tips. Leaves are single, alternate, obovate in shape, large (15 to 36 cm long and 8 to 24 cm wide) and spirally clustered at the tips. Leaves are dark green above, pale below, leathery and shiny; before dropping leaf colour changes to yellow and red. Flowers are small, white or cream coloured, five lobed and arranged on long axillary spikes. There are no petals. Majority of the flowers are male and bisexual flower are located towards the base of spikes. Fruit is a sessile, laterally compressed, oval-shaped drupe. Fruit colour changes from green in young to dark purplish red at full maturity. Rind of the fruit is light, pithy or corky tissue and float in the sea and thus dispersed by ocean currents. Each fruit contain a cream-coloured seed, which encloses the kernel (nut).

Uses: Country almond is an important timber tree in the Maldives. Timber is strong, elastic, moderately hard, smooth and lustrous. It is brown or reddish-brown in colour and medium coarse in texture. Timber is widely used in boat building, mainly for keel (*fargun*). It is also used for flooring and furniture. Wood is not suitable for long-term ground contact. Outer flesh of the fruit is eaten raw. Nut is eaten fresh or used as a substitute for cashew nut. Nut is preserved by sun drying and also sold in market. It can be an important component of the coastal bioshield from economic point of view.

Ecology, propagation and management: It grows on silt, loam, clay soils but prefers neutral or slightly alkaline sand and sandy loams. It tolerates slightly saline soils and its tolerance to drought is moderate. It is adapted to salt-laden winds but tolerance to aerosol salt spray is limited. Country almond can be readily propagated by seeds. Seeds can be collected from fresh fruits and should be sown within four to six weeks. No pretreatment is needed. Seedlings grow rapidly in the initial stages. Seedlings of four month old or about 25 cm in height can be used for outplanting. Stem cuttings of 20 to 30 cm can be rooted in the nursery before planting.



*Thespesia populnea* - Hirun'dhu

**Thespesia populnea** (L.) Soland. ex Correa MALVACEAE

Synonyms: *Hibiscus populneoides*, *Thespesia macrophylla*

Common names: Thespesia, tulip tree, milo, portia tree

Dhivehi name: Hirun' dhu

Status: Abundant in the forested areas and also grown as avenue and shade tree.

Description: A small, evergreen tree 6 to 10 m in height with short and often crooked main stem. Crown is round, broad, dense and regular in outline. Bark is brownish or greyish and fissured. Leaves are simple, alternate with 5 to 10 cm long leafstalk. Leaf blade is broadly ovate in shape, 8 to 15 cm long with pointed tip and very broad, slightly heart shaped base. Leaves are somewhat fleshy, shiny and palmately veined and turn yellow before falling. Flowers are single, large, about 4 to 7 cm long, bell-shaped and borne on the axils. Petals are five in number, which are broad, round shaped, overlapping and yellow in colour with a maroon spot at the base of each petal. Flower open and close on the same day and flower colour changes to purplish as the day progress. Fruit is a capsule, round but flattened, grown on short stalks and clustered at the ends of the branches. Matured capsules are brown to grey in colour and exude a bright yellow resin when cut. Seeds are brown in colour and hairy. Fruits float in seawater and are dispersed by ocean currents.

Uses: Tulip tree is one of the important timber species of the Maldives. Timber is fine grained, heavy, strong, and durable especially under water and highly esteemed. Timber is mostly pale-pink in colour. Wood from mature trees is widely used in building many parts of the boat. It is a premier carving wood, because the wood can be cut to fine details. It is also used for furniture and household items. Wood from young stems and trees are less dense and more prone to rotting. Bark may be used for rope and caulking boats. It is a candidate species for multispecies coastal bioshield in atoll environment.

Ecology, propagation and management: It grows well on nutrient poor coastal sandy soils and also on soils derived from limestone. It prefers slightly alkaline soil condition. It is highly tolerant to both soil salinity and aerosol salt spray. It is also tolerant to drought. It is easily propagated by seed and stem cuttings. Seeds can be collected from dry capsules by crushing them by hand. Normally no pretreatment is required but germination may be improved by soaking the seeds in water overnight. It can be directly sown or seedlings can be raised in nursery. Seedlings 40 to 50 cm, which are hardened off with reduced watering and exposure to full sunlight, can be used for outplanting. Stems cuttings 2 m long are normally used for propagation but smaller cuttings produce healthier trees. Initial growth is slow.





*Tournefortia argentea* - Boshi



**Tournefortia argentea L.f.****BORAGINACEAE**

Synonym: *Messerschmidia argentea*

Common name: Beach heliotrope

Dhivehi name: Boshi

Status: Abundant along the beaches in all islands

Description: A small- to medium- sized tree that grows to 4 to 6 m all. Trunk is often slanted and branches are crooked. Bark is light grey to brown in colour and deeply corrugated. An important feature of the tree is its silky, hairy, fleshy light green leaves, which have a silvery grey lustre. They are simple, obovate to oblanceolate in structure, 10 to 20 cm long and 3 to 12 cm wide and arranged spirally at the branch tips. Inflorescence is large, hairy, consisting of numerous small, white sessile flowers. Flowers are about 0.6 cm in diameter and 0.2 cm in height with five lobed calyx and corolla. Fruit is round, small, 0.2 to 0.8 cm long, greenish white to brown in colour, which divides into two to four nutlets. Seeds, two to four in number, are enclosed in a corky tissue.

Uses: Sea heliotrope is important for its ecological benefits. It acts as a barrier against aerosol salt spray, as a windbreak on exposed coasts and as a stabilizer of coastal soils. In the Maldives, wood, which is lightweight and strong, is used as oars for small boats called *bohkura*. It is also used to make small implements used in boat. It is also used for firewood. According to some of the elders, young leaves were once widely used as salad. Leaves were cooked with rice and fish after removing the midrib and cut into small pieces to prepare a delicious food namely, *boshi baiy*. Liquid from flowers are used for making medicines to treat skin diseases. Bark and flowers are chewed with areca nut. It is a candidate species for multispecies coastal bioshield in atoll environment and can be planted in the front rows along with other salt spray tolerant plants.

Ecology, propagation and management: It is an important component of the strand plant (means restricted to coastal environment) community. It is commonly found on beach sands and rocky coral limestone slopes, indicating its adaptation to shallow, well-drained and infertile soil. It is highly tolerant to salt spray. It can grow very close to sea. It can be propagated easily by seeds and cuttings. Fresh seeds can be directly sown without any pretreatment or seedlings can be grown in nursery and outplanted. Since it is slow growing seedlings may take long time, up to one year, to reach a size (about 35 cm tall) suitable for outplanting. Hardened or green woodcuttings 15 to 30 cm length can be used for planting.



*Vitex negundo* - Dhunnika

**Vitex negundo L.****VERBENACEAE**

Synonym: *Vitex incisa*

Common name: Five-leaved chaste tree

Dhivehi name: Dhunnika

Status: Occasional; grown as an ornamental plant.

**Description:** A large, deciduous, much-branched shrub or small tree 3 to 5 m in height. Branchlets are four-sided and hairy. Crown is round, spreading, open and irregular in outline. Bark is thin, grey coloured and smooth. Leaves are palmately compound with three to five leaflets, which are lanceolate in shape, 4 to 10 cm in length, pointed at both ends, somewhat shiny on the upper side and hairy beneath; middle leaflet with distinct stalk is always larger than the others. Leaf when crushed produces a fragrant smell. Flowers are small, pleasantly fragrant, bluish-purple in colour and arranged in a pyramid shaped terminal inflorescence. Fruit is a succulent drupe, black when ripe and 0.4 to 0.5 cm in diameter.

**Uses:** *Vitex negundo* has a strong and deep root system, which produce large number of suckers and thus it can be used in sandy areas for soil retention and moisture conservation. It is also found suitable for coastal windbreaks and can be a component in the multiple coastal bioshield. Leaves have insecticidal properties and they are laid over stored grain to ward off insects. It is reported that houses that have *V. negundo* around are free of mosquitoes. Oil extracted from seed and leaves is an excellent medicine to treat sloughing, gangrene wounds and ulcers. Branches are used as firewood. In the Maldives, all parts of the plant, roots, flowers, leaves and bark are used for medicinal purposes relating to women. Leaves are lactagogue (increases secretion of mother's milk) and emmenagogue (promotes and regulates menstruation). A decoction of the leaves is given to women in puerperal state to alleviate abdominal pain. It is also used in aromatic baths.

**Ecology, propagation and management:** Five-leaved chaste tree grows in clay or sandy soils but prefers a loose, well-drained moist but not wet, alkaline soil for better growth performance. It often suffers from shoot dieback in organic rich, murky or other soil, which is too wet. Its tolerance to hot weather is good and to aerosol salt is moderate. It grows well in full sun and light shade. Propagation is generally by stem cuttings that are planted in nursery beds or polythene containers and transplanted after two months. Cuttings can also be planted directly. Its growth rate is moderate to fast. Though it is usually seen as a shrub with multiple branches it can be trained onto a tree with one or several trunks.



*Ximenia americana* - En'boo

**Ximenia americana L.**

OLACACEAE

Synonyms: *Ximenia laurina*, *Ximenia rogersii*

Common names: Hog plum, sour plum, wild plum

Dhivehi name: En'boo

Status: Common in the forested areas.

Description: A spiny, semi-scandent bush-forming shrub or small tree 2 to 6 m tall. Trunk diameter is seldom greater than 10 cm. Bark of the trunk is smooth to scaly, pale grey to reddish in colour; old trunks are superficially fissured and with large number of brown spots (lenticels). Main stems, which are laid back, have divergent branches forming a conical or rounded, thin canopy. Young branchlets are green in colour with prominent longitudinal ridges whereas mature branchlets are purple red with a waxy bloom. Branchlets are armed with long, slender, straight spines that are borne at the axils of the leaves. Leaves are simple, alternate, and oblong to elliptic in shape with obtuse or slightly notched tip. Leaf blade is 3 to 7 cm long, 1.5 to 4 cm wide, green, leathery and variable in thickness. When crushed, young leaves smell like bitter almonds. Flowers are yellowish white, fragrant and less than 1 cm in length. Fruit is a somewhat round or ellipsoidal drupe, about 3 cm long, greenish and shiny when young, becoming yellowish when ripe, containing a juicy pulp. Fruit is single seeded with a fatty kernel.

Uses: Fruit is eaten raw and can be used to make juice, jams and jelly. Kernel is considered as poisonous. In the Maldives, fruits, which have sweet and sour tastes, are eaten raw. Wood, which is very hard, strong and malleable, was popularly used in the past to make skewers and pegs. Leaves are used in traditional medicine to treat bone fractures and gonorrhoea. Fruits are used to prepare a medicine that is given to women during pregnancy and after childbirth. Spines and leaves are used in the preparation of medicinal oil called '*ruhgalu beys*', which is used to treat bone fractures.

Ecology, propagation and management: It grows on a variety of soil from clay, clayey loam, and sandy clayey-loam to fine sand. It is well adapted to poor and dry soil and also grows well in wet soils. It is drought resistant and tolerant to salinity. It is not cultivated. It regenerates naturally from the seed in the forested areas and coppice from stems and form impenetrable thickets. Seeds are normally dispersed by animal. It can also be propagated by seed and stem cuttings. Fresh seeds should be used for direct sowing. It is suited for cultivation as a hedge plant.





*Ziziphus mauritiana* - Kunnaaru

**Ziziphus mauritiana Lam.**

RHAMNACEAE

Synonym: *Ziziphus jujuba*

Common names: Indian jujube, jujube

Dhivehi name: Kunnaaru

Status: Common in home gardens and not observed in the wild.

**Description:** A spiny, fast growing evergreen tree which is capable of growing 15 m tall. In harsh environmental conditions, it grows as a shrub. Crown is round, spreading and irregular. Bark is grey or dull black, irregularly fissured. Branches are many, drooping with hairy zigzag branchlets. Spines are small, paired at leaf bases. Leaves are single, alternate, ovate to oblong-elliptic in shape, entire or finely toothed. On the upper side leaves are smooth, glossy and dark green but dense, silky, white or greyish hair is present on the underside. Leaf blade is also characterized by the presence of three conspicuous longitudinal parallel veins. Inflorescence is axillary with 7 to 20 flowers. Flowers are small, greenish-yellow in colour, with five-reflexed petals and a calyx with five-deltoid lobes, which are hairy outside. Fruit is round, oval or oblong in shape, with smooth or rough skin, which is light green to yellow in unripe fruits. Ripe fruits are reddish or red-brown or blackish in colour with spongy, musky flesh. Each fruit contains a single, hard, oval shaped, rough stone, which contains two brown seeds.

**Uses:** Fruits are eaten fresh or dried, used to make drinks, candy and syrup. Unripe yellow-green fruits are also edible but sour in taste. Wood is hard, strong and fairly lustrous, split slightly during seasoning and used for general construction, furniture and cabinetwork and packaging. In the Maldives, fruits are considered as an appetizer and fruit juice is used as an antihelminthic. Leaves are ground and applied to affected body parts to reduce swellings. Water with crushed leaves is used to wash corpse to delay onset of *rigor mortis* (muscular stiffening following death). Seeds are used for quick healing of broken bones.

**Ecology, propagation and management:** Grows on a variety of soils but best soil is sandy loam, which may be neutral or slightly alkaline. It is highly tolerant to heat and drought and moderately tolerant to soil salinity. Propagation is mainly by seeds. Either stone or seed extracted from the stone may be used for sowing. Uncracked stones require two to three weeks for germination whereas extracted seeds germinate within a week. Seedlings of about 15 month old are suitable for outplanting. Superior selections are grafted or budded onto seedlings. Stem cuttings of mature wood, at least two years old, can be used for propagation, which result in better yields.

