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# Tree planting guide for houses and apartments in Bengaluru

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# Tree planting guide for houses and apartments in Bengaluru

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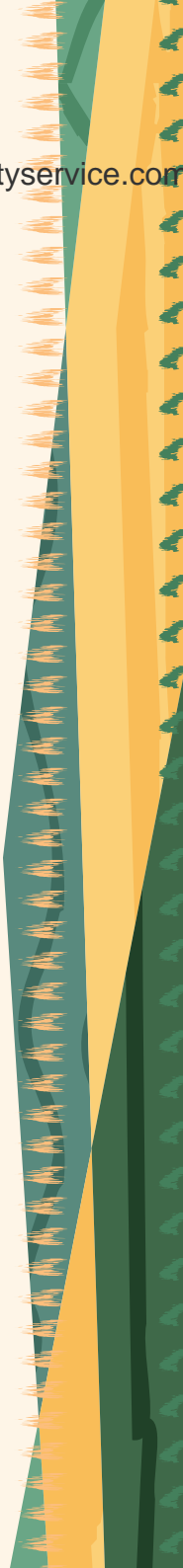
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## Why this guide?

*“We stay in an apartment, and there is very little space around.  
What trees can we plant?”*

*“I live in an independent house, and we would like to have trees.  
But we are worried the roots will damage our walls and underground sump.”*

These are questions that we have often heard from residents in Bengaluru. What it tells us is that there is an interest to plant and care for trees, but along with it are concerns about what kind of trees are most suited owing to constraints of space and potential damage to infrastructure.

This guide is aimed at addressing some of these concerns. We have included 26 species of trees that can be grown in independent houses or apartments complexes in Bengaluru. We have not tried to be comprehensive in terms of species or in their description. Our objective is to provide information needed by a lay person interested in greening their homes or apartments. In this guide we have included some basic information in terms of species names along with a description of the tree. We have also provided information on conditions of soil, space and sunlight that will enable the tree to grow well. In addition, we have mentioned the different ecological, medicinal and cultural uses of the tree. We have also included a nugget or a fun fact, about each of the species. We have also included information on nurturing trees and caring for wounded, infected, and diseased trees. While we mention organic treatments wherever possible, some of the treatments mentioned involve application of chemicals for more virulent forms of disease or pest attack. One of the main reasons that dissuade people from planting trees is the fear of damage to infrastructure such as boundary walls or underground sumps. This book has information on how you can work around this issue by using a root barrier.



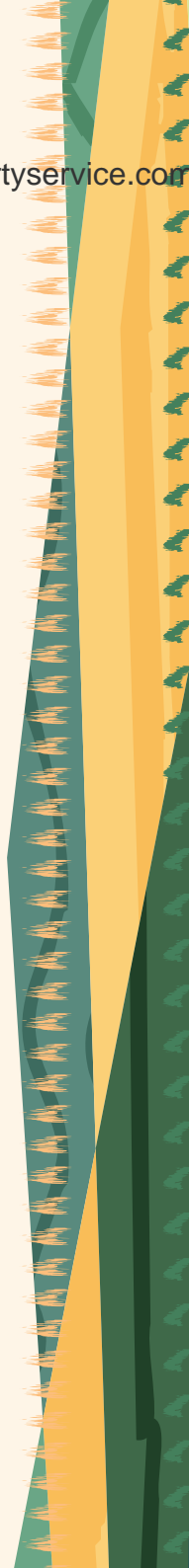
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## Trees to plant in Bengaluru homes and apartments



**Scientific name:***Persea americana***Other common names in English:**

Alligator pear, Butter fruit

**Kannada name:**

Benne hannu (ಬೆಣ್ಣೆ ಹಣ್ಣು)

**Hindi:**

Makkhan phal (मकखन फल)

**Description**

This is a medium to large tree that can grow to a height of 15 to 18 metres with a dense canopy. The bark of the tree is light grey in colour, furrowed or smooth. The leaves are long, with the new leaves being red and turning dark green as they mature. Mature leaves have a smooth and leathery texture. The flowers are small and grow in bunches at the end of branches. They are yellowish-green in colour. The fruit of the tree is spherical and consists of a single large light brown coloured seed that is surrounded by a buttery yellow pulp that gives it the common name “butterfruit”. The skin colour can vary from dark green, brown, purple or deep red depending on the ripeness of the fruit. The skin has a smooth and leathery texture. The tree has a tap root system.

**Where and how to grow**

Trees can be grown using a seed and take five to 13 years for the tree to mature enough to bear fruit. It can also be grown by

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rooting avocado cuttings, through grafting and layering. These are better methods of ensuring that the mature tree bears fruit, which can still take anywhere between six to seven years. This is an evergreen tree that grows well in tropical climates as it requires full sunlight. The trees need well-drained soil and water logging is harmful to the tree.



### Different kinds of uses

- Though known for its fruit, the tree is also planted for the good shade it provides. The tree attracts bees and insects for pollination.
- The oil extracted from the seeds has astringent properties and an ointment from the seeds can be used to treat skin infections and wounds. In many cultures, the pulp of the fruit is rubbed directly on the scalp as a hair restorer and tonic.
- The oil extracted from the seed is also used in cosmetics, soaps and moisturisers.
- Avocado is extremely nutritious and forms a crucial component of many cuisines.
- The sturdy quality of the wood allows it to be used for house building, and in making furniture, farming implements, musical instruments and more.

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## Fun Fact

*We know of avocado as a topping for toast or in salads. But in Java the avocado flesh is mixed with strong black coffee and sugar—and eaten as a dessert. Might be an acquired taste but do try it!*

**Scientific name:***Manilkara zapota***Other common names in English:**

Sapote, Sapodilla

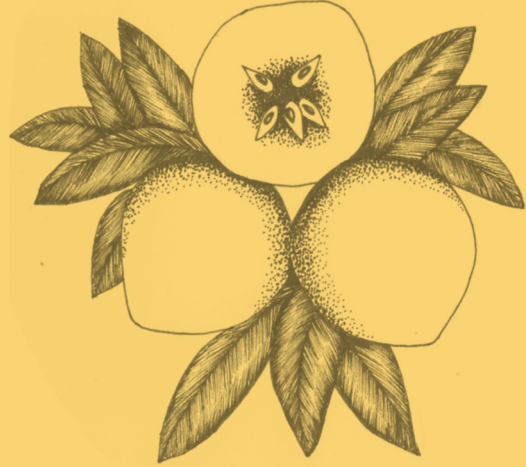
**Kannada names:**

Chikku (ಚಿಕ್ಕು)

Sapota (ಸಪೋಟ)

**Hindi:**

Chikoo (चीकू)

**Description**

This tree grows to a height of 9 to 15 metres with a trunk diameter around 20 inches in cities. The bark is dark greyish-brown in colour. The leaves are rounded at the base and taper towards the top. The leaves are dark green, with a glossy texture and are smooth to touch. Leaves grow as a whorl at the end of branches. The flowers are pale yellow in colour and grow in clusters at the end of the branches. The fruits are round or oval-shaped, with a rough brown outer skin and pulpy light brown inside. The inner fruit is sweet to taste and has a pleasant fragrance. Each fruit has around four oval-shaped seeds that have a glossy black coat. This tree has a tap root system.

**Where and how to grow**

The trees can be grown by sowing seeds or by grafting and layering methods. The tree is evergreen with the flowers blooming in August to October and the fruits ripening from January onwards.

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Trees are slow growers and take five to eight years to become of fruit-bearing age. The tree grows well in a variety of weather conditions but prefers hot, humid climates near the tropics or near the coast. The tree grows well under full sunlight and prefers well-drained loose soils.

### Different kind of uses

- The fruits are a favourite of the squirrels, bats and monkeys. The canopy is dense and hence casts a dense shade, making it difficult for other plants to grow under it.
- Different parts of the tree have medicinal qualities. A leaf decoction is used to treat fever, ulcers and headaches. A powder made from dried flowers is used to relieve pain after childbirth. The bark is used to cure diarrhoea. The fruits are good for the stomach. The roots are used to treat body rashes on children.
- The different parts of the tree are used in folk medicine and in Siddha. It is also rich in antioxidants and has generated much interest in allopathic medical research.
- The fruit can be eaten raw or used in making sherbets, custard, ice cream, pies, jams and jellies. The very young leaves and shoots can be eaten raw or cooked. The resin in the stems has been long used as a base for chewing gum due to its naturally elastic property.



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## Fun Fact

*The tree being native to Central America finds mention in ancient Mayan folklore. One such story is about two lovers, the beautiful maiden Sujuy Ja and her beloved, the warrior Kaatsin Ek, who were transformed into a water lily and a sapota tree to stand together for all eternity. Even today in the El Remate region in Central America, the lily and sapota tree still grow near one another and are symbols of eternal love.*

**Scientific name:**

*Nyctanthes arbor-tristis*

**Other common name in English:**

Night-flowering jasmine

**Kannada name:**

Parijatha (ಪಾರಿಜಾತ)

**Hindi name:**

Harsingar (हरसिंगार)

**Description**

The coral jasmine is a large shrub and can grow up to 10 to 12 metres. The bark of the shrub is flaky and grey. The leaves are light green with a rounded base and pointed tip. The flower petals are white with a flaming orangish-red centre. They have a sweet fragrance. The fruit is a flat capsule that is bright green in colour. This shrub has a tap root system.

**Where and how to grow**

This is a deciduous tree that flowers during September and October—the fallen flowers forming a fragrant carpet. Coral jasmine can be propagated from semi-hardwood cuttings. The plant grows well in loamy soils and requires partial or full sunlight. The plant thrives with regular watering.

**Different kinds of uses**

- The shrub is pollution-tolerant and is commonly planted as an ornamental along hedges.

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The fragrant flowers attract pollinators like butterflies, hummingbirds and insects that are active at night.

- The juice of the leaves is used as a digestive. The seeds are used to treat skin infections. The extracts of the seeds and the flowers have anti-fungal, anti-inflammatory and anti-viral properties. The plant is widely used in Ayurveda to treat fever, cough and gastritis.
- The tree is associated with several legends in Hindu mythology. It is also planted by Indian Muslims next to the tombs of saints—so that the tombs are covered with flowers every morning.
- A saffron-yellow dye obtained from the flowers is used for colouring food and in Mithila paintings. Buddhist monks use the flower to dye their robes.
- The bark may be used as tanning material and the leaves are sometimes used for polishing wood and ivory. The wood of the shrub is used as biofuel.
- The fragrant flowers produce an essential oil that is often used as perfume.

### Fun Fact

*The tree blooms at night and **Nyctanthes arbor-tristis** means night-flowering sad tree. A mythical story says that a king's daughter Parijataka fell in love with the sun. But the sun deserted her and grief stricken she burnt herself. From the ashes the parijata tree grew, but it could not bear the sight of the sun and hence bloomed only at night.*

**Scientific name:***Tabernaemontana divaricata***Other common names in English:**

Carnation of India, Pinwheel flower

**Kannada name:**

Nandi battalu (ನಂದಿ ಬಟ್ಟಲು)

Nandyaavarta (ನಂದ್ಯಾವರ್ತ)

**Hindi name:**

Chandini (चांदनी)

**Description**

This is a small shrub that can grow up to a height of about 2 metres and with a spreading canopy. The trunk is thin and crooked. A cut on the trunk or branches gives out a milky latex. The leaves are a glossy dark green. What catches the eye are its flowers—a striking white against the dark green of the leaves. This shrub flowers profusely and flowers appear as clusters at the tip of stems. The flowers have a mild fragrance and bloom throughout the year. Seeds and fruits are difficult to spot but are brown in colour. This shrub has a tap root system.

**Where and how to grow**

Crape jasmine plants can easily grow through stem cuttings. Once planted, the cuttings start growing within 20-25 days. The crape jasmine is an evergreen shrub that grows well as an outdoor shrub planted in full sunlight or partial shade and requires moist soil.

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Once established, this is a hardy shrub. It is a good choice for planting along a boundary wall.

### Different kinds of uses

- The leaves are eaten by the caterpillar of Oleander hawk-moth (*Daphnis nerii*).
- Flowers are used for worship in north and south India, and the shrub is believed to be sacred to Lord Shiva. It is considered sacred by the Jains as well.
- The wood is used to make charcoal and incense. The pulp of the fruit is used to make red dye.
- Different parts of the plant are used widely in Ayurvedic and Chinese medicine. The leaves can help treat cough. The roots are used to cure toothaches and get rid of intestinal worms. The flowers are used to treat eye sores and skin diseases.



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## Fun Fact

*The petals of the flower can be used to make kajal (eyeliner) believed to be good for the eyes. The flowers are smashed into a paste and smeared on a clay tile. The tile is then heated using an oil lamp from below.*

**Scientific name:***Bergera koenigii***Other common name in English:**

Sweet neem leaf

**Kannada name:**

Karibevine ele (ಕರಿಬೇವಿನ ಎಲೆ)

**Hindi name:**

Kari patta (करी पत्ता)

**Description**

This is a small to medium sized tree that can grow up to 6 metres with a medium canopy. The trunk is slender and has strong woody stems and branches covered with a dark greyish-brown bark. The leaves are pinnate with 11-12 leaflets. Each leaflet is only about 2-4 centimetres long. The leaves are highly aromatic and used widely for flavouring Indian cuisine, especially in south India. The flowers are small, white and fragrant. They grow in clusters at the top of the branches. The fruits of the plant are small, black, shiny and berry-like. The fruit has a single large seed and turns a deep purplish-black when ripe. This plant has a tap root system.

**Where and how to grow**

This is an evergreen tree that can be grown from seeds and stem cuttings. The seeds can be sown along with the fruit in the soil directly to yield healthy plants. Alternatively, curry leaf plants can grow by cutting a 3-inch portion of the stem with some leaves and

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rooting it in a soilless growth medium. In about 3 weeks, the cut stem will begin rooting and can then be repotted or grown directly in the ground. This is the easiest method of propagating curry leaf plants. The plant likes full sun, well-drained soil that is dry and benefits from occasional fertiliser application, especially in the summer months.

### Different kinds of uses

- It can be grown along hedges.
- Bees and butterflies have been identified as pollinators. The leaves are also food for caterpillars.
- The tree is widely used for medicinal purposes. The leaves, roots and bark are said to improve digestion, appetite and are used to cure stomach infections. The leaves can be used to treat wounds and burns, while the fruit juice mixed with lime juice helps soothe insect bites and stings. A paste made from the bark is applied on bites of poisonous insects and of other animals.
- Curry leaves are widely used in south Indian cuisine in making curries, chutneys, stews, etc.,. The fruits of the plant are edible and are rich in Vitamin C. Since they are bitter and have a medicinal taste, they are not frequently consumed.
- Oils extracted from the seeds and leaves are used in the cosmetics industry to make soaps. The leaves when infused with oil are used as a hair tonic in India as it is said to have anti-greying properties.



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## Fun Fact

*A quick and easy hair oil for lustrous hair: warm coconut oil and add washed, cleaned and dried curry leaves to it. Also add some powdered fenugreek seeds.*

**Scientific name:***Annona squamosa***Other common names in English:**

Sugar apple, Bullock's heart

**Kannada name:**

Sitaphala (ಸೀತಾಫಲ)

**Hindi names:**

Sharifa (शरीफ़ा)

Sitaphal (सीताफल)

**Description**

This tree grows to a height of 3-6 metres with a medium canopy. The tree has irregularly spreading branches and a light brown bark. The leaves grow singly and are a light green on the upper surface and paler on the lower surface. The edge of the leaves is slightly uneven. The texture of the leaf is inconspicuously hairy especially when the plant is young. The flowers are greenish-yellow, fragrant and grow on slender hairy stalks. They are produced singly or in small clusters. The fruit is round to heart-shaped. The outer skin is light green when ripe with a white powdery bloom. The inside of the fruit is white, fleshy and fragrant. The seeds are oblong, smooth and shiny with a black or dark brown coat. The tree has a shallow root system.

**Where and how to grow**

This tree is commonly grown from seeds, but seedling trees generally do not produce satisfactory fruit. Trees that are grown

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through grafting often take up in three years to produce fruit. The tree is deciduous in India and the leaves fall in January-February and grow back in the summer months of April-May when the flowers appear. The fruiting occurs in July and August. The tree requires well-drained, loose, sandy soil but can grow well in rocky soil as well.



### Different kinds of uses

- The flowers provide nectar, the seeds are food and the leaves are used for egg-laying and as a habitat for insects and birds. Squirrels, barbets and bulbuls feed on the fruits. The tree is also the host plant for the tailed jay (*Graphium agamemnon*), a tropical butterfly.
- The bark and the leaves are used widely in Ayurveda, folk medicine, Unani and Siddha. Crushed leaves made into a paste are used to treat skin infections like boils and ulcers. The root bark is helpful for relieving toothache. The fruit is also used traditionally for curing coughs, nausea and burns.
- The fruit has many references in myths, Indian paintings and carvings indicating that the fruit has been around for a long time. The fruit is an important offering during Ganesh Chaturthi.
- The detoxified oil extracted from the seeds is used for seasoning foods like salads. Oil from seeds also has medicinal properties— as a purgative, remedy for cold, digestive issues, to treat head lice. The seeds when powdered are used as fish poison and insecticides.
- The leaves of the tree are used limitedly in perfumes to give a woody spicy scent.

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## Fun Fact

*The leaves of the custard apple are rubbed on the floor or placed in chicken coops to keep away vermin.*

**Scientific name:***Moringa oleifera***Other common names in English:**

Moringa, Horseradish tree

**Kannada names:**

Nugge (ನುಗ್ಗೆ)

Guggala (ಗುಗ್ಗಲ)

Mochaka (ಮೋಚಕ)

**Hindi names:**

Senjana (सेंजन)

Sehajan (सहजन)

**Description**

This tree can grow to a height of 9 metres. The open crown droops, and branches with a feathery foliage of leaves are fragile. The bark of the tree is whitish-grey in colour. The flowers are small, yellowish-white in colour with bright yellow stamen at the centre. The flowers grow on slender, hairy stalks in spreading or drooping clusters. The fruits are hanging, three-sided greenish-brown capsules which hold small white globular seeds that are embedded in the flesh of the fruit. The seeds have three whitish papery wings and are dispersed by wind and water. The tree has a tap root system.

**Where and how to grow**

They are deciduous trees and flower and fruit throughout the year. Trees are fast-growing and produce fruit very quickly. The trees can be grown by sowing seeds or can be propagated using branch cuttings. They can be planted even in the smallest space. They

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It grows well in drained, sandy or loamy soil. It is a heat-loving plant and thrives under full sun. It is particularly suitable for dry regions, as it can be grown using rainwater without expensive irrigation.

### Different kinds of uses

- The flowers attract carpenter bees. Since it does not provide too much shade it is ideal to grow in small vegetable patches. The tree also attracts *kamblipoochis*, the blanket worms (caterpillars of the *Eupterote mollifera* moth), that can cause severe itching if they come in contact with human skin.
- All extract from root, leaves, flowers and fruits has medicinal uses and are used in ailments relating to stomach, heart and liver. In addition to being used for protecting and nourishing skin and hair, the fruits are an integral ingredient in south Indian cuisines. The leaves and flowers too are eaten. These are packed with nutrients that are good for overall health, and owing to anti-fungal and anti-oxidant properties, they contribute to healthy skin and hair. The root can be used as a substitute for the condiment horseradish.
- Application of drumstick leaves on the face is said to clear acne. Drumstick leaf powder is effective as soap for washing hands.



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## Fun Fact

*Drumstick was a favourite of Fidel Castro, the late Cuban revolutionary leader, who grew it in his garden in Havana and had the tree planted in large numbers in Cuba to address issues of food security and nutrition.*

**Scientific name:***Plumeria obtusa***Other common names in English:**

Temple tree, Plumeria

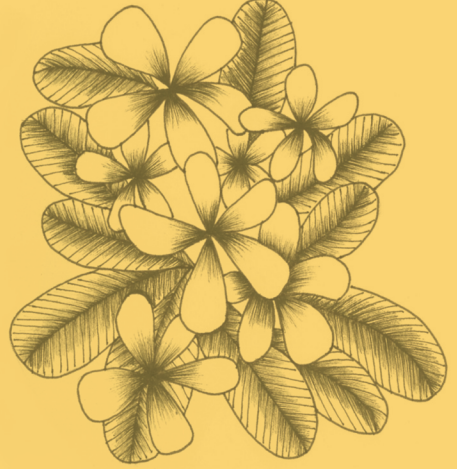
**Kannada names:**

Deva kanagile (ದೇವಕಣಗಿಲೆ),

Kaadu sampige (ಕಾಡುಸಂಪಿಗೆ)

**Hindi names:**

Champa (चम्पा), Gulchin (गुलचीन)

**Description**

This tree grows to a height of 5-6 metres and has a broad, round-headed canopy. The branches of the tree are swollen and gnarled with a grey-green scaly bark. The bark, when cut, produces a sticky, milky latex that is poisonous. The leaves and flowers of the plant cluster at the branch tips. Leaves are dark green on the top and lighter underneath and depending on the species, the tip of the leaf is rounded or tapering. Flowers have a pleasant fragrance, which is the strongest at night. The flowers have a yellowish centre; other species of plumeria have a reddish centre. The fruits of the plant are dark brown with a hard cover and the seeds are winged. The plant has a shallow (fibrous) root system.

**Where and how to grow**

The tree is deciduous or semi-evergreen with the flowers blooming all year round. It can be propagated via cuttings. A portion of the stem is cut and placed in a shady place for a few weeks. After it is



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dried cuttings can be rooted and watered sparingly until it grows roots. These plants can also be propagated using layering and grafting methods or by just sowing seeds. These trees do not grow fast and require patience. To grow well, the tree requires full sun and drained soil. The plant has moderate resistance to wind and can cope well in dry regions. The trees reach full maturity in five years and the flowers bloom only after three years. The tree can grow well in smaller spaces, especially in large-sized tubs.



### Different kinds of uses

- The tree is grown as hedges and for its aesthetic value. Since it grows well in drier regions, it can be grown for landscaping and beautification purposes without compromising on the groundwater.
- The root bark is used as a lotion to treat herpes and syphilis ulcers. The latex from the stem is caustic and is used to treat ulcers and other skin diseases. The flowers when used as a syrup help in treating chest coughs.
- In Hindu tradition, the flowers are offered to Lord Shiva. In Indian culture, the frangipani tree is considered by many to be a symbol of immortality because of its ability to reproduce from cuttings.
- The essential oil from the frangipani blossoms is used to make perfumes, lotions and candles. The flowers are also an ingredient in incense fragrances that are widely used at home and in Hindu temples.

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## Fun Fact

*The tree is a bit of a trickster! While the flowers of the tree are fragrant, more so in the night, they yield no nectar. The fragrance is to simply trick and lure some species of moths for pollination. The moths inadvertently pollinate, transferring pollen from flower to flower in their fruitless search for nectar.*

**Scientific name:***Psidium guajava***Kannada name:**

Peralau (ಪೇರಲ)

**Hindi:**

Amrood (अमरूद)

**Description**

This is a small tree that grows to a height of around 10 metres with an open canopy. The bark of the tree is smooth, flaky and copper coloured. The trunk grows only up to a diameter of 10 inches. The leaves are light green and oblong-shaped. The tree has faintly fragrant white flowers that are borne singly or grow in small clusters. The fruits are what this tree is most popularly known for. The fruits are round, oval or pear-shaped. The outer skin is a pale green and the inner pulp of the fruit is either white or pink. The pale yellow seeds are edible and are embedded into the creamy pulp of the fruit. The roots grow extensively underground.

**Where and how to grow**

The tree is an excellent backyard tree. It can be propagated from stem and root cuttings. For stem propagation, a firm and healthy stem with a few nodes of leaves can be cut and immediately planted into nutrient rich moist soil. For root propagation, 2-3



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On close of the root that is close to the surface and is prone to putting up new shoots can be cut and replanted in a different spot. The trees that are grown using root or stem propagation methods are likely to produce fruit within three to four years. Trees can also be grown from seeds. Once planted, the seeds will take two to eight weeks to germinate. The seedlings are fast-growing and can be placed in their permanent spot in soil after one to two years. For trees grown using seeds, the fruit bearing age is around eight years. The tree is evergreen and the fruiting season is during May and June. The tree grows well in full sun and is intolerant to shade. Regular and deep-water supply is required by the tree. The tree grows well in heavy clay to very light sandy soils, and clayey loam soils as well.



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### Different kinds of uses

- The nectar from the flowers attracts honeybees. Bats also feed on the fruits and are the main dispersers of the seeds.
- The fruits have anti-bacterial, anti-inflammatory and anti-fungal properties. The leaves and bark can be used externally as a lotion to treat skin infections. Guava is also known to be good for headaches, sore throats, diarrhoea and digestive ailments.
- Guava fruits are offered as holy offerings in Hindu festivals.
- The wood of the tree is used as firewood and charcoal due to its abundance and natural growth. The wood is also used to make tool handles and in carpentry. The leaves and the tree bark are used for dyeing and tanning.

## Fun Fact

*We know there are different varieties of mangoes, but did you know there are different varieties of guavas too, such as Lucknow 49, Allahabad Safeda, Harijha, Allahabad Surkha, Apple Colour (because of the colour of the skin), Baruipur Guava, Hafshi and Chittidar.*

**Scientific name:***Lawsonia inermis***Other common names in English:**

Mignonette, Egyptian privet

**Kannada names:**

Goranti (ಗೋರಂಟಿ)

Madarangi (ಮದರಂಗ)

**Hindi names:**

Mehendi (मेहेंदी)

**Description**

This is a shrub that grows to a height of about 5 metres. The bark of the tree is greyish-brown. The leaves are elliptical in shape and are musty greenish-brown in colour. The flowers of the plant are small, white in colour and cluster at the tips of the branches. They are scented and bloom in the mornings. The fruits grow in clusters at the tips of the branches. They are round, berry-like, with a dark green, brown and sometimes deep maroon outer skin. The shrub has many seeds that are small and flat. The tree has a tap root system.

**Where and how to grow**

This is a fast-growing deciduous shrub with fruiting and flowering happening year round. It can be grown from seeds or propagated using stem cuttings. The seeds of the plant can be sown in soil under direct sunlight. Stem cuttings are commonly used. A few inches of stem is cut and placed in the soil.



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- The flowers attract butterflies, bees and birds.
- The plant is particularly useful as a hedge, as it grows densely. Its strong branches also make it useful as a windbreaker.
- The leaves and the bark have anti-bacterial properties and are used for treating various ailments in Ayurveda. The leaves are used as a mouthwash when mixed with salt and tobacco. The branches are used to cure toothaches. The leaves are also used for the treatment of many skin diseases such as wounds, ulcers and herpes.



- The most popular cultural use is, when the leaves are crushed and used as a dye in decorating the hands and feet, during festivals and marriage celebrations. The dye is also used in hair colouring and conditioning, and to colour cloth.
- An essential oil obtained from the flowers is used to make perfumes. The fibres of the branches and the stem bark are used to make baskets and the small twigs are used as toothbrushes. The wood from the shrub is also used commonly as fuel.

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## Fun Fact

*It is said that Parvati, the powerful Hindu goddess used henna successfully to charm Shiva. Thus, henna became associated with marital fortune as it is said to have contributed to their union.*

**Scientific name:***Hibiscus rosa-sinensis***Other common name in English:**

China rose

**Kannada name:**

Dasavala (ದಾಸವಾಳ)

**Hindi name:**

Gurhal (गुड़हल)

**Description**

The plant grows up to 2-4 metres in height. The trunk of the plant stands upright and has a dark greyish-brown bark. The flowers are bell or trumpet-shaped and come in a variety of colours, common ones being red, yellow, orange and pink. The leaves have ridges on the edges and may have spots of yellow-green. Fruits and seeds are rarely visible on the hibiscus plant, especially on the plants that have been cultivated indoors. Hibiscus plants can be trained to form full canopies by pinching the tips of new branches as they develop. They have a tap root system and spread outwards from the plant as they grow.

**Where and how to grow**

They grow well under most conditions including frost, drought and pollution. They will grow in any soil that is well-drained. The plants grow well in containers and the flowers require sunlight to bloom. At the blooming stage, a large amount of water is required.



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The plants are propagated easily by layering or cutting, which are the most common methods, or from seeds. They are easy and fast growers and are often a preference to those who are new to gardening.

### Different kinds of uses

- The colourful and the nectar-filled flowers attract birds and bees. They are a favourite ornamental plant for the colourful flowers contrasted with the glossy green of leaves.
- Hibiscus tea, made from the leaves and flowers, was traditionally used to lower body temperature, treat heart and nerve diseases, high blood pressure, constipation, cancer, liver diseases and cold symptoms. Pulp of leaves can be used to heal wounds.
- The flowers and leaves make interesting additions in salads. The root is also edible but very fibrous.
- Hibiscus leaves and flowers are commonly used in India as an addition in hair oil preparations, due to their properties that are said to make hair healthy. A shampoo can also be made from the leaves.



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## Fun Fact

*In the Middle East and Africa, during Ramadan, hibiscus is served to guests. The many medicinal properties of the hibiscus plant make it a nourishing item for the fasting body. The most traditional way in which it is prepared is through a cold infusion wherein the flower is soaked in cold water overnight and the next day, the concoction is consumed with some honey for sweetness.*

**Scientific name:***Sesbania grandiflora***Other common name in English:**

Agati

**Kannada name:**

Agase (ಆಗಸೆ)

**Hindi names:**

Agasthi (अगस्ति)

Gaach munga (गाछ मूंगा)

**Description**

This is a medium sized tree that can grow to a height of 8-10 metres. The bark of the tree is small, soft and wooded. The leaves grow as leaflets with 10-20 pairs on a stem. The leaflets are small, rounded and light green in colour. The bud is sickle-shaped and the flowers of the tree are large and oblong. The flowers are often white, red or pink in colour. The fruits of the tree are slender pods with a thick suture and resemble flat, long and thin beans. Each pod contains around 30 seeds. The tree is sparsely branched and thus does not form a dense canopy. The roots of the tree are shallow.

**Where and how to grow**

This is a fast-growing tree that can be grown from seeds or propagated through stem cuttings. The tree grows well in a variety of rainfall and soil conditions. It is a hardy tree and adapts itself to flooding, waterlogging and drought conditions.



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- The tree attracts birds for pollination. It can be planted as shade trees and windbreakers. The fallen fruits, leaves and flowers make excellent mulch as well. Its nitrogen fixing properties are useful for maintaining soil fertility.
- The leaves, flowers, tender fruits, roots and bark of the tree are used in medicines. They are used to treat rheumatism, fever, arthritis, scabies and night blindness. The juice of the leaves is used to cure cough, cold and headaches. The bark of the tree is used as an astringent.
- Both the leaves and the flower are used in cooking—very widely in South and Southeast Asian cuisines. The fresh young pods too are cooked and eaten in curries and salads, and can be fermented to produce syrup.
- The flowers are sacred to Lord Shiva.
- The gum obtained from the tree trunk is used in adhesives. The wood is used in the making of floating fishing nets and is a source of pulp for the paper industry. It is also used as fuel and to make charcoal.



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### Fun Fact

*The plant is said to be named after the revered Sage Agastya who specialised in ancient medicine.*

**Scientific name:***Pongamia pinnata***Other common name in English:**

Pongam tree

**Kannada names:**

Honge mara (ಹೊಂಗೆ ಮರ)

Karanja (ಕರಂಜ)

Huligili mara (ಹುಲಿಗಿಲಿ ಮರ)

**Hindi names:**

Karanj (करंज)

**Description**

This is a tree that can grow to a height of 15 metres and has a canopy that spreads wide. The trunk of the tree is sometimes crooked with a grey-brown bark that is smooth or fissured. The leaves of the tree are a soft, shiny brownish-red when young and mature to a glossy, deep green. The leaves are rounded at the base and pointed at the tip. The flowers bloom when the tree is three to four years old. The bell-shaped white, pink and purple flowers bloom in small clusters and blossom throughout the year. The flowers are extremely fragrant. The fruits of the tree are brown seed pods which appear immediately after flowering. The pods are thick-walled, smooth, somewhat flattened and elliptical, but slightly curved with a short, curved point. The pods contain within them one or two bean-like brownish-red seeds. The pods do not split open naturally hence, the pods need to decompose before the seeds can germinate. This tree has a tap root system.



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This is a deciduous, fast-growing tree. It can be grown from seeds and cuttings as well. The tree prefers humid climates but can grow in different kinds of soil. The tree grows well under full sun or even shade. Mature trees are drought resistant and can withstand strong winds.

### Different kinds of uses

- The tree is a host for several butterfly species that feed on the nectar. It is a popular avenue tree because of its shade bearing canopy, and also acts as a windbreaker. Its network of roots also helps prevent soil erosion.
- Oil from the seed is applied on the body to cure psoriasis and rheumatism. Young stems of the tree are used to brush teeth.
- The leaves are extensively used to decorate festival pandals.
- The wood of the tree is used as firewood. The seeds are used to produce oil and as biodiesel. The leaves are good green manure that improve soil fertility.



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## Fun Fact

*The Indian beech is said to be the abode of Anala—the mother of all trees and goddess of vegetation. The goddess grants boons to those who want to have children. She is said to have a placid countenance and is kind to all creatures.*

**Scientific name:***Polyalthia longifolia***Other common names in English:**

False Ashoka, Cemetery tree

**Kannada names:**

Ubbina (ಉಬ್ಬಿನ)

Kambada mara (ಕಂಬದ ಮರ)

**Hindi name:**

Ashok (अशोक)

**Description**

This is a tall tree that grows up to 8 metres in height and forms a narrow but dense canopy in cities. The bark is smooth and greyish-brown in colour. The leaves are narrow, long and can grow up to 25 cm in length. The leaves turn a glossy dark green as the tree matures. They are soft and delicate to touch with wavy edges. The leaves provide a stark contrast to the grey bark. They have a faint fragrance and grow in abundance. The delicate flowers of the tree are star-shaped and are a pale green in colour. They last only for a short span of two to three weeks on the tree and are often hidden by the similarly coloured leaves. The fruits of the tree are berry-like and grow in clusters of 10 to 20. They are initially green but turn a reddish-black or purple when they ripen. The seeds are ovoid and vary from a rusty pale brown to dark brown in colour. The tree has a tap root system.



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Where and how to grow  
Most trees can be easily propagated using seeds which can be obtained from the pods in monsoon. Saplings can also be planted. The tree is evergreen and flowers during the summer months of March-May. The tree grows well in full and partial exposure to sunlight on rich, free-draining, clayey, loamy or sandy soils. Young plants need some protection from strong winds. These trees have a good tolerance to droughts.



### Different kinds of uses

- The tree is popularly grown as an ornamental plant. It is planted along hedges of houses and buildings acting as a screen to reduce noise pollution.
- The leaves are food for butterflies. The fruits of this tree are eaten by birds and bats and the tree provides a good nesting and roosting place for them.
- The leaves and bark of the tree are known to have anti-bacterial, anti-fungal and anti-inflammatory properties.
- The leaves are used popularly in Hindu festivals and as decorations in Indian households.
- The wood of the tree is used to make light objects such as matchsticks and pencils. It is also used to make drums in some cultures where the tree is native.

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## Fun Fact

*We mostly think of these trees as having a narrow but dense canopy. But in their habitat, they branch out and have a dense, wide canopy providing lots of shade.*

**Scientific name:***Bixa orellana***Other common names in English:**

Achiote, Annatto

**Kannada names:**

Rangumaale (ರಂಗುಮಾಲೆ)

Sindhuri (ಸಿಂಧೂರಿ)

**Hindi names:**

Sinduri (सिंदूरी )

Latkan (लटकन)

**Description**

This tree grows to a height of around 6 metres and being short it does not form much of a canopy. The bark of the tree is dark brown. The leaves are light green in colour and have a rounded base with a pointed tip. The texture of the leaves is glossy. The flowers are pinkish-white in colour and each flower has five petals. The fruit of the tree is in the form of a pod. The outer shell of the pod is reddish-brown in colour and is made up of two valves. The outer shell is spiny and the pod has many red seeds inside them. The seeds are cone-shaped and covered in a pulpy blood-red coat. When fully mature, the capsule containing the seeds dry up, hardens and splits open, exposing the seeds. Fruiting of this tree occurs throughout the year.



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**Where and how to grow**

The tree can be propagated with stem cuttings. A stem of four inches can be cut from the tree and replanted in a moist growing

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medium for its root. It must be ensured that there are no buds or flowers on the cutting. This is a fast-growing tree and can often bear fruits within one to two years of planting. The tree is evergreen. It grows well in drained soil but can also be grown in large tubs or containers.

### Different kinds of uses

- This is grown as an ornamental tree. It attracts insects and honey bees for pollination.
- It is used widely in Ayurveda and folk medicine. An infusion made from the leaves is used in curing fevers.
- The dye, known as annato, extracted from the orange/yellow pulp around the seeds is used in food colouring—on many foods such as rice, margarine and cheese.
- The red dye is also applied as *kumkuma*, an auspicious symbol for married women. The bark is used to make ropes.



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## Fun Fact

*The indigenous communities of South and Central America use the dye as body, face and hair paint either for decorative purposes, to protect oneself from the sun's harsh rays, as an insect repellent or as omens to ward off evil spirits and illnesses. The dye is also used by them as a fabric colourant, and in colouring lips (giving it the name lipstick tree), and hair.*

**Scientific name:***Mangifera indica***Kannada name:**

Maavu (ಮಾವು)

**Hindi name:**

Aam (आम)

**Description**

This is a tall tree that can grow up to the height of 25 metres and forms an umbrella-shaped dense canopy. The bark of the tree is dark grey, rough and produces a yellowish gummy resin when cut. The leaves of the tree are long and dark green in colour. The new leaves are light green while some have hues of deep red, maroon and orange. The surface of the leaves has a glossy texture. The flowers are yellowish-green in colour, small with five petals and grow in clusters at the end of branches. The flowers have a mild fragrance. Despite their dense growth on the tree branches, only 1 percent of the flowers fruit. The fruit is what this tree is famous for and needs no description. The fruits are oblong-shaped and the colours vary depending on the variety of the mangoes. Some mangoes are bright yellow, some are a deep orange colour with hues of red while others remain green even after ripening. The inside of the ripe mango is yellow, sweet and pulpy. Each fruit contains one large seed in its centre. The seed is oval-shaped, white in colour with a hairy texture. This tree has a tap root system.



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**Where and how to grow**

The tree is native to India and Burma, but has been introduced across the world, especially in warmer tropical regions. Trees can

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One grown from seeds or propagated through stem grafting. Grafting is the most reliable method to get healthy fruit producing plants. The tree is evergreen and the fruiting and flowering takes place in the months of March to June. The trees grow fast and can produce fruit in three years. The tree grows well in tropical regions with abundant rain although some trees can even withstand drought-like conditions. The trees do not fuss over the soil quality and can grow in any soil that is well-drained and allows deep penetration of the root.



### Different kinds of uses

- The tree attracts pollinators including bats and insects such as flies, bees, ants, wasps, butterflies, moths, beetles and thrips. The fruits are consumed and dispersed by monkeys, squirrels, fruit-eating birds and humans.
- The fruit has anti-asthmatic, antiseptic and anti-viral qualities.
- The leaves of mango trees are used in religious rituals and as decorations outside houses during Hindu festivals. It is also sacred to Buddhists as Lumbini Gardens, where Buddha was born, is said to have been surrounded by mango trees. According to Goan folklore, the mango tree was brought to India by Hanuman. In Jainism, it is said that Neminatha, a Jaina Tirthankara, attained enlightenment under this tree.
- The mango is used widely in cuisines. From pickles to curries to salads—the mango, both in its ripe and raw form, is consumed.

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## Fun Fact

*We often hear of the mango as the king of all fruits. But do you know which is the queen of all mangoes? It is the Noorjahan mango named after the famous Mughal queen. It is one of the largest mango varieties, growing up to a foot and also expensive, with a single mango selling for INR. 1,000/-. It is also very rare.*

**Scientific name:***Azadirachta indica***Other common names in English:**

Margosa, Indian lilac

**Kannada name:**

Bevu (ಬೇವು)

**Hindi name:**

Neem (नीम)

**Description**

This tree can grow to a great height of nearly 21 metres. The tree has a dense canopy, with greyish-brown bark with vertical striations. When cut, the bark exudes a red sticky sap. The leaves of the tree are 14-15 cm long. The leaflets are small and grow symmetrically opposite each other. The leaves vary from dark to light green. The surface of the leaves is smooth with serrated edges. The leaves have a strong fragrance. The flowers of the tree are small and white in colour with five petals. The fruit is small, oblong-shaped and yellow-green in colour. It has a smooth outer skin, and the inner pulp is sweet and surrounds a single round seed. The tree has a tap root system.

**Where and how to grow**

This is an evergreen tree. It can be grown from root and shoot cuttings and from seeds. Neem seeds germinate rapidly and therefore, growing neem trees by planting seeds is one of the



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most reliable methods of propagation. However, neem trees are slow growers in the first year of planting. They bear fruit within three to five years and become fully mature in 10 years. The blooming of flowers and fruiting occurs during the summer months of March and April. The tree thrives in humid conditions with moderate rainfall. It grows well in different types of soil but prefers drained and sandy soils. Neem can sustain high temperatures and is one of the few shade giving trees that grow in drought prone regions. Neem trees are not at all delicate about water quality and quantity and can grow even with the slightest trickle of water.



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### Different kinds of uses

- The tree provides shade, acts as a windbreak, and as a fence. It is highly valued as an air purifier as it is said to release more oxygen.
- The fruits are eaten by birds and mammals, and flowers are a source of nectar for pollinators.
- The tree is known as the “*sarva roga nivarini*” or “curer of all illnesses”, as every part of the tree has some medicinal value. The leaves are used to soothe the itch from chickenpox and several other skin ailments. The fruit is used in deworming and flowers consumed treat ailments of the stomach and heart. The twigs are used as a toothbrush. Neem oil has antiseptic properties and used in treating skin and hair related ailments.
- The tree is of cultural and religious significance. The wood from the tree is what is often used to light the funeral pyre. It is said that planting a neem tree in the house ensures a passage to heaven. The leaves are strung at the entrance of the houses to keep evil spirits, pests and diseases away. It is most associated with Ugadi, celebrated as the new year in the south Indian states of Andhra Pradesh, Telangana, Karnataka and Tamil Nadu.
- Leaves are used in biomass preparation, as a pesticide and as



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source for chemicals. In most families neem leaves are kept under beds to prevent ticks. Oil extracted from the seeds is used as insect repellent and is a component of several cosmetic products. Wood of the tree is used to make furniture, agricultural implements, idols and toys, while the bark is a source of tannin for the dyeing industry.

### Fun Fact

*The largest neem plantation of more than 50,000 trees and over 10 square kilometres is planted in the Plain of Arafat in Saudi Arabia.*

*This plantation provides shade to the Haj pilgrims who camp under its shade.*

**Scientific name:***Caesalpinia pulcherrima***Other common names in English:**

Dwarf poinciana, Barbados pride

**Kannada names:**

Kenjige (ಕೆಂಜಿಗಿ)

Ratnagandhi (ರತ್ನ ಗಂಧಿ)

**Hindi name:**

Guletura (गुलेतूरा)

**Description**

This is a small shrub that grows up to 4-5 metres in height. The bark of the tree is dark brown in colour. The leaves have small oblong leaflets, about 2 cm in length, that are light green in colour. The flowers are eye-catching in bright yellow, orange and red and can be mistaken for the gulmohar. They have ruffled petals and red stamens protruding from the centre of the flower. The fruits are pod-like. They are winged and have a glossy texture. The seeds are smooth and dark brown in colour.

**Where and how to grow**

The shrub is fast-growing and can grow well from seeds. It is also easily propagated from cuttings. The shrub responds well to pruning. It is deciduous and fruits and flowers from April-December. The shrub flourishes in hot climates and does not grow well in shade which would cause it to become flowerless. The shrub grows best in well-drained soils and grows fast with infrequent watering.



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### Different kinds of uses

- The flowers are a source of nectar and leaves are habitat for butterflies, insects, and birds.
- The shrub is planted as an ornamental, especially along hedges.
- The shrub has a few medicinal uses. A decoction made from the leaves is used as a mouthwash for teeth and gums, as well as a remedy for colds and to cure fevers. The leaves also help treat diarrhoea, gallbladder problems, kidney stones and urinary infections.
- The wood makes excellent charcoal.



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## Fun Fact

*The species name in Latin, pulcherrima, translates to mean “very pretty” or “the most beautiful”—and rightly so because of the showy flowers.*

**Scientific name:**

*Handroanthus impetiginosus*

**Hindi name:**

Basant rani (बसंत रानी)

**Description**

This is a large tree that can grow up to 10 metres and has a round sparse canopy. The trunk of the tree is brownish-grey with a bark that is hardy and tough to peel. The leaves are dark green with a light greenish-yellow stalk. But it is the flowers that are the charm of this tree. They are an eye-catching bright pink or magenta in colour during the summer months. What adds to the beauty is that while in bloom the tree sheds its leaves. The fruits are narrow and split when they mature during the fruiting season. The seeds are winged and can be found in plenty inside the fruit. This tree has a tap root system.

**Where and how to grow**

The tree can be grown through seeds, cutting or layering. The tree grows around 12-24 inches per year and flowers at a young age—but is slow-growing. The tree is deciduous and sheds its leaves during winter—so expect leaf litter. It requires sandy, loamy or



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grow in areas with less water too. It grows well in sunlit areas.

### Different kinds of uses

- The tree, especially the flowers, attract insects, butterflies, bees and birds that are important pollinators. These pollinators can spend an entire day on just one tree feasting on the nectar. This deciduous tree is clever as it loses its leaves during flowering making the flowers all the more visible.
- The inner bark of the tree is brewed to make tea to cure flu and cough. The bark is also used to treat inflammatory diseases, cancers, tumours, cysts, skin infections and acts as an antibiotic. The bark is also used to boost the immune system.
- The tree is planted in gardens and boulevards as an ornamental tree and to add aesthetic value to a place.
- The wood is very dense and durable and is used to make flooring, cabinets and sports items such as wooden balls, musical instruments.



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## Fun Fact

*Lapacho, is a tea made by the indigenous communities in South America, by using the bark of the tree and is used to treat ailments. In modern medicine,  $\beta$ -lapacho, an organic compound derived from the bark of this tree, is known for its potential in anti-cancer treatment.*

**Scientific name:***Punica granatum***Kannada name:**

Daalimbe (ದಾಳಿಂಬೆ)

**Hindi name:**

Anaar (अनार)

**Description**

This shrub or small tree grows up to 6-9 metres in height and has an open canopy. The tree has multiple branches with woody bark that is dark greyish-brown in colour. The leaves of the tree grow in whorls with five or more on the branches. The dark green leaves are oblong in shape and have a glossy sheen to them. The flowers are elongated and are red or orange in colour. The deep red and pink fruits are what this tree is the most popular for and need no introduction. The fruits have a hard, almost leathery rind that protects the pulp and the seeds inside. The inside of the fruit is separated into sections by a white spongy tissue with each section containing the pulp and seeds. The seeds are often pinkish-white and are edible. The fruits are reminiscent of summertime in India as the tree fruits from mid-April to May. The pomegranate tree has a shallow root system.



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Pomegranate trees are preferably grown using hardwood cuttings.

A 10-inch cutting from a year old wooded plant is ideal. This cutting can be grown in a pot and replanted outside once it roots or planted directly in the permanent spot. Trees can also be grown from seeds by just sowing the seed, without its outer fruity flesh, in soil under direct sunlight. The tree is deciduous and sheds its leaves in December. The trees require a sheltered sunny position to grow and prefer drained, heavy, light or medium soil. Soggy and damp soil can lead to lower fruit and flower quality.

New pomegranate trees take three to five years to mature and produce fruits.



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### Different kinds of uses

- What we know the pomegranate best for, is its fruit. The fruit has a fresh, sweet-sour, very pleasant taste. Grenadine, a reduced juice from fresh pomegranate seeds, is common in Northern India for desserts, marinating and tenderising meat. Dried pomegranate seeds, “*anardana*”, has culinary importance as a spice for vegetable and legume dishes in northern India, adding a tart flavour to dishes.
- The leaves decompose slowly and are good for mulching other garden plants. The tree is the host for the aptly named Pomegranate butterfly (*Virachola isocrates*), that is considered as a pest as the caterpillars eat into and destroy young fruits.
- The branches of the pomegranate tree are used as firewood. The wood which is hard and durable is used in making farm implements. The root bark yields a black ink that is useful in dyeing and tanning leather. Oil extracted from the seeds is popularly used in cosmetics for reviving dull skin.
- In terms of medicinal uses, the fruit is said to enrich the blood and help cure sore throat, sore eyes and chest troubles. It is also helpful in managing obesity, diabetes, high cholesterol

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- The tree is of significance in many cultures and religions across the world. There are multiple references to this tree in the Bible as a resilient tree. The withering of the tree is mentioned as the judgement of God upon evil on the earth. In Zoroastrianism, Parsis use the twigs of the pomegranate tree to make their sacred broom and during their sacred thread ceremony. In Islam, the Prophet Mohammad is said to have urged his followers to eat pomegranates as a way to purge the spirit of envy.

### Fun Fact

*Pomegranate means “apple with many seeds”. It is derived from Latin where “pome” means apple and granatum comes from “granum” which means “seed” or “grain”.*

**Scientific name:***Solanum grandiflorum***Other common name in English:**

Giant star potato tree

**Description**

This is a small tree that grows up to 6 metres in height. The stems of the tree are thorny and the leaves are prickly too. The leaves are purplish-green in colour and can grow up to 30 cm in length. When the flowers bloom, which they do all year round, they are white in colour and darken into a beautiful purple before they fall. The fruits are similar to berries and are yellowish-brown in colour. The seeds are pod-like and can be collected when the flowers dry. This tree has a tap root system.

**Where and how to grow**

This tree can be grown in small and large garden areas, even in lawns. This tree can grow from seeds or can be propagated using stem cuttings or air layering methods. It is an evergreen, fast-growing plant and can grow up to 3 metres in a single growing season; hence can be planted for quick green cover. Watering will help it to grow quickly, but the tree can also do without much



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owate. Unfortunately, it is a short-lived tree and can only live up to eight to 10 years. It requires sunlight or partial shade. The tree can grow in all types of soil but grows best in warm regions. It is adapted to grow in regions with less amount of water too.

### Different kinds of uses

- The flower attracts bees, butterflies and birds that help in pollination.
- The tree is used widely in folk medicine for its relaxing and sedative properties. Leaf extract contains anti-oxidant and has anti-bacterial and anti-inflammatory properties.
- This tree is often planted as an ornamental tree.

## Fun Fact

*The genus **Solanum** comprises around two thousand different species including three food crops we are all familiar with—potato, tomato and brinjal.*

**Scientific name:***Muntingia calabura***Other common names in English:**Jamaican cherry, Panama berry,  
Strawberry tree**Kannada name:**Gasagase hannina mara  
(ಗಸಗಸೆ ಹಣ್ಣಿನ ಮರ)**Description**

This tree can grow up to 12 metres tall and has spreading branches. The bark of the tree is smooth and light brown in colour. The leaves of the tree grow alternatively, are oblong-shaped and have serrated edges. The leaves are light green in colour and are covered in short hairs. The flowers of the tree are small with white petals and yellow stamen in the centre. The fruit of the tree is an edible berry that is a deep red in colour and is smooth skinned. The seeds are small, round, cream yellow in colour and are aplenty in the fruit throughout the year. The tree has a tap root system and forms a wide canopy.

**Where and how to grow**

This is a fast-growing tree that can be grown from seeds or propagated using stem cuttings. It grows well in poor soil and can even survive in drought conditions. It is an evergreen tree.



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### Different kinds of uses

- The tree attracts bees, butterflies, squirrels and a wide variety of birds, especially nectar loving birds. Birds that eat the fruit and bats, help to disperse the seeds.
- It provides good shade and is planted as an ornamental.
- The different parts of the tree are used in a variety of traditional medicines: leaves (for headaches, prostate problems, to reduce gastric ulcers), bark (as an antiseptic), flowers (as an antiseptic, to reduce swelling, as an anti-spasmodic), and fruits (for respiratory problems; anti-diarrheic).
- The fruits are often eaten and also processed into jams. The leaves can be used for making tea.
- The wood is a good source of fuel for cooking as it burns with intense heat but gives out very little smoke.



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## Fun Fact

*In Brazil, these trees are planted along riverbanks. The fruits falling from the tree attract fish that are then caught by the locals.*

**Scientific name:***Phyllanthus acidus***Other common names in English:**Starberry, West Indian gooseberry,  
Indian gooseberry**Kannada name:**

Kiru nellikayi (ಕಿರು ನೆಲೆಕಾಯಿ)

**Hindi name:**

Harfarauri (हरफरौरी)

**Description**

This is a plant that is between a shrub and a tree. It can grow to a height of between 2 and 9 metres. The tree has a dense, bushy canopy and has clusters of long branches. The bark of the tree is greyish-brown in colour. The leaves of the tree are ovate in shape with pointed tips. The upper side of the leaves are smooth and are light green in colour while the underside is more blue-green. The flowers are small and pink in colour, growing in clusters at the leafless part of the branches in the upper part of the tree. The small star-shaped fruits are what this tree is popularly known for. These fruits grow in abundance on the tree in clusters. The fruits are pale yellow or white in colour. The flesh of the fruit is crispy, juicy and incredibly sour. The tree bears fruits once or twice in the year. Each fruit contains four to six seeds that are found at its centre. The tree has a tap root system.

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**Where and how to grow**  
This is a deciduous tree that prefers moist soils. The easiest way to grow is from its seed. It can also be propagated using a 20 cm woody cutting that is directly planted in the soil. The tree can also grow from the seeds of a ripe fruit under semi-shaded conditions. Regular watering is required for the tree to grow, especially at a young age. Once the tree is established in the soil, regular watering is not required. The tree should also not be over-watered. The tree grows especially well in hot, humid and tropical climates.



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### Different kinds of uses

- The star gooseberry fruit is used widely in Ayurvedic medicines. They are used to treat digestive issues, urinary issues, diarrhoea and piles. The leaves of the tree are used to treat jaundice, smallpox, itching and gum infections.
- The most popular way the fruit can be eaten is by dipping it in salt and chilly powder. The fruits can also be stored in salt water and eaten over a few days or candied in sugar. Gooseberry jam is made from the fruit. The leaves can be cooked and eaten. The berries are also used to make syrups and fruit juices. In some culinary cultures, the fruit is used to make vinegar.
- The bark is used as a tanning agent. The wood of the tree is used for making utensils and other smaller objects as it is of moderate weight, fairly hard, strong, tough and durable. The wood is also used for fuel.

## Fun Fact

*The leaves of the star gooseberry can be used similar to curry leaves in cooking.*

**Scientific name:***Melaleuca viminalis***Other common name in English:**

Drooping bottlebrush

**Kannada name:**

Muthuga (ಮುತ್ತುಗ)

**Hindi name:**

Cheel (चील)

**Description**

This tree has a woody trunk with cylindrical branches. The bark of the tree is hard, fibrous and has a paper-like texture. The leaves are thin, narrow and long. The surface of the leaves has a leathery and slightly fuzzy texture. The tree gets its name from the flowers that resemble a bottle brush. The flowers are bright crimson-yellow and red in colour. They are arranged in spikes on the end of branches. The fruits are woody, cup-shaped capsules that grow in cylindrical clusters along the stem. The fruits have a hard woody outer shell. These fruits remain closed until the plant or the part of the plant bearing them dies. This plant has a tap root system.

**Where and how to grow**

The tree is evergreen although the fruiting and flowering occurs in February to April. They can be propagated through stem cuttings and can also be grown from seeds. To use the cuttings for propagation, the leaves have to be removed from the stem and it



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It must be ensured that there are no flowers or flower buds. The cut stem can be dipped in a growing medium and within 10 weeks, roots are likely to grow. This is a slow-growing tree.

The shrub cannot grow under the shade and thrives under direct sunlight. It prefers moist soil but can tolerate drought-like situations.

### Different kind of uses

- The shrub is used as an ornamental plant owing to its beautiful flowers. These flowers attract bees, butterflies, and birds, especially sunbirds and flowerpeckers that feed on the nectar.
- The tree is planted as a weed control and as a bioindicator for environmental management. It is used as a wind breaker as well.
- The essential oils derived from the leaves have anti-fungal, anti-microbial and anti-inflammatory properties.
- The roots of the shrub produce a natural herbicide. Dye is extracted from the flowers and the leaves.



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## Fun Fact

*The leaves of the tree are used as a substitute to tea leaves and have a refreshing taste. The flowers are also added as the nectar in the flower adds sweetness to the tea.*

**Scientific name:***Cascabela thevetia***Other common names in English:**Mexican oleander, Be-still-tree,  
Lucky nut**Kannada names:**Kadukaasi kanagalu  
(ಕಾಡುಕಾಸಿ ಕಣಗಲು)  
Gowri pushpa  
(ಗೌರಿ ಪುಷ್ಪ)**Hindi name:**

Peeli kaner (पीली कनेर)

**Description**

This is an upright shrub that grows normally to a height of 3 metres and does not form a canopy. The shrub has multiple branches with a smooth, light brown or green bark. The leaves of the tree are spirally arranged along the stem and are clustered at the tips of the stem. The leaves are long and narrow with prominent veins. The leaves are hairless and have a glossy green upper surface with a pale, dull underside. The leaf tips are pointed and the leaves are curved downwards. The flowers are bright yellow or pale orange and arranged in clusters near the tip of the branches. They are shaped like a tube with five petals that are twisted and overlap each other when they are buds. The fruit is large, slightly fleshy with a hard centre. The shape of the fruit is somewhat triangular when mature. The fruits are green and glossy when young but turn black and become slightly shrivelled as they ripen. Each fruit contains two to four large flattened seeds. This shrub has a tap root system.



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Where and how to grow  
These shrubs are medium to fast-growing under the best conditions.

They can be planted along the boundary walls of houses. They can be propagated from stem cuttings. A few inches of non-flowering stem can be cut and put in the rooting medium. Within a few weeks, the cut stem should begin rooting. After this, it can be transplanted into soil. The plant is evergreen in which the fruiting and bloom occurs throughout the year. The shrub grows well with sunlight all year round and in soil that has fast drainage.



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### Different kinds of uses

- The tree is used for ornamental purposes and is planted on dividers and along roads.
- The flowers are a source of nectar, seeds as food, leaves for egg laying and habitat for insects and birds. Some birds also feed on the fruits.
- All parts of the plant are poisonous for humans.
- The bright yellow flowers are used in the worship.
- The oil from the seeds is used to make a “paint” as it has anti-fungal, anti-bacterial and anti-termite properties.

## Fun Fact

*The yellow oleander is said to be a favourite of the Lord Krishna. But this plant is also considered lucky in South America with people carrying the dried fruits in their purses, pendants, and pockets.*

**Scientific name:***Tabebuia aurea***Other common names in English:**

Golden bell,  
Tree of gold,  
Yellow trumpet tree

**Description**

This is a large tree that grows up to 10 metres and has an irregular medium canopy. The tree has a single trunk, 30-40 cm in diameter and has a thick bark which covers the softwood. The leaflets are around 15 cm long and are dark green in colour. The bright golden-yellow flowers, that provide a stark contrast to the ashy brown bark of the tree, are shaped like a trumpet or a bell. This is how the tree gets its common names, golden bell and trumpet tree. The slender fruits are in the shape of a capsule and have winged seeds. This tree has a tap root system.

**Where and how to grow**

The tree can be grown through seeds or hardwood cuttings. To propagate through seeds, the seeds can be collected from the pods once they turn brown and start to crack open. To propagate through cuttings, a foot tall cutting can be taken from mature shoots and planted in a pot. After eight weeks, the cutting will



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take more and it can be replanted directly in the soil. The tree is slow growing and will take two to three years to boom. It is an evergreen tree and grows well in dry regions, requiring less water. It needs loamy, sandy, acidic or neutral soil. The tree grows well in full sunlight, but strong winds can damage the tree.

### Different kinds of uses

- The nectar from the flowers attracts pollinators such as bees and birds. The tree is also used by several birds for nesting.
- The bright yellow of the flowers makes it a tree preferred for ornamental planting.
- The leaves of the tree are used as a laxative and can also be used to treat hepatitis, flu and inflammations.
- Due to the resistance of the tree from fungus and insects, the wood is used to make a variety of items such as tool handles, curved objects, flexible rulers and furniture.



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## Fun Fact

*Well a not-so-fun-fact maybe. While its ornamental for us, the yellow trumpet tree was a critical tree for the parrot species, Spix's macaw (*Cyanopsitta spixii*) found in Brazil. This bird is today extinct in the wild and one of the reasons is the loss of yellow trumpet tree woodlands which was the macaw's habitat in the wild.*

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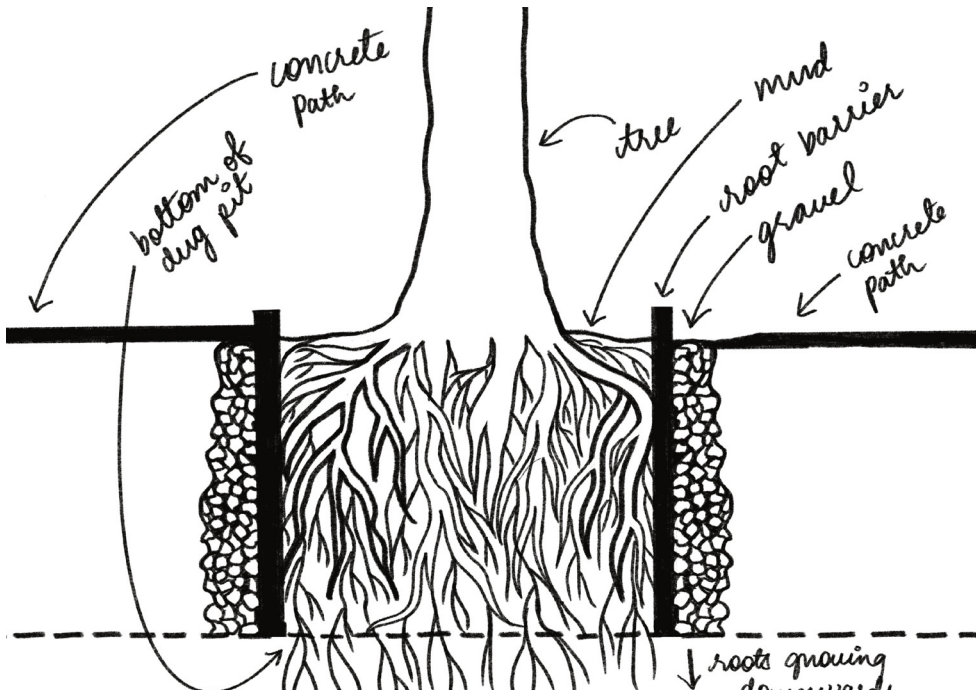
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# Root barriers to the rescue

While many of us may be keen to plant trees in our homes and apartments, we are also worried about the impact the root system will have on structures such as buildings, pipes, footpaths, boundary walls and sumps where water is stored. What is an effective way of working around this problem? One solution is root barriers—a one time investment that can prevent damage to infrastructure.

## So, what is a root barrier?

A root barrier creates a barrier around the roots of trees and prevents the roots from growing in a haphazard manner that could cause damage to nearby infrastructure and pose a safety hazard. Root barriers are often installed in urban landscapes where large trees exist beside concrete structures, piping, sewage lines, footpaths, roads and other infrastructure. Root barriers also help



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in ensuring that the trees in urban spaces grow in a safe manner wherein they can thrive in the long run and their root growth is not compromised and disrupted by neighbouring infrastructure.

## When should root barriers be installed?

The most ideal time to install a root barrier is when the tree sapling is planted. This will ensure that the roots grow naturally in the direction we set it. But barriers can also be installed once the tree becomes bigger and the roots begin to expand.

## What materials can we use for the root barrier?

*Solid barriers* are panels made of corrosion-resistant metal, fibreglass or plastic that create an impenetrable wall that roots cannot get through. These barriers are highly effective but can prevent water in the soil from draining properly and roots can grow around them if they are not large enough.

*Permeable barriers* use a mesh screen that is designed to allow water and small roots to pass through. This type of barrier is effective at preventing damage to structures from large roots.

## How can we install a root barrier?

We describe below how to install a root barrier for a sapling that will grow into a tree as well as for an existing tree.

*Installing root barrier for a new tree*

- Identify the spot where you will be planting the sapling.
- Measure the diameter of the stem and multiply that by at least three or a little more—extra room is always advisable. Mark this out as a square or circle.
- Remove the soil up to a depth of around three to four feet, in the above marked square or circle.
- Size the panels you will be using as a root barrier, with the same height as the hole made and ensure enough number of panels to



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- Place the panels against the side of the hole, sticking them firmly into the soil.
- Ensure that at least an inch is sticking out of the ground to ensure that the roots do not grow over the barrier.
- Start filling the hole with soil. Place the sapling at an appropriate depth and fill the soil.
- You could also add mulch on the surface of the barrier.

### *Installing a root barrier for existing trees*

While the process is similar, in the case of existing trees some more attention will have to be paid as the depth and width of the trench dug will vary depending on the type, age and size of the tree. You also need to assess where the root barrier needs to be installed, depending on where the structure, say a wall or footpath that needs to be protected, is situated.

- Measure how far away from the tree the trench has to be dug. Again it is best to estimate a distance three times that of the trunk's diameter. A little more is always good.
- Dig a deep trench of a narrow width into which the root barrier panels (measured and cut of appropriate length) will be inserted. The width of the trench should be measured carefully as it should allow the root barrier to be inserted.
- Slide the panels into the trench, ensuring that at least 1- inch sticks above the ground to ensure that no roots try to grow over the barrier.
- Fill the trench with dirt, adding a bit of water.

## Have installing root barriers been successful?

Yes! In our very own Bengaluru, in June 2017, two brothers aged nine and seven helped save a majestic cluster fig tree (*Ficus racemosa*) from being axed in their apartment as the roots of the tree were damaging the sewage line. The boys identified that the tree was home to over 18 species of birds which would lose their habitat if the tree was cut. The alternative provided by the

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Residents wanted to plant four saplings in the place of the one big tree but was pointed out by the brothers that this would not provide a suitable habitat for the birds and squirrels as it would take time for the saplings to grow. A root barrier was installed that would arrest the growth of the root without impacting the sewage line.

Similarly, a 48-year-old peepul (*Ficus religiosa*) tree in Bengaluru that was affecting the foundation of the apartment, was saved from felling by installing a root barrier. The root barrier saved the entire tree habitat that had nests of various bird species and left the apartment foundation intact.

## Be a tree doctor: Treating trees and plants affected by pests and diseases

How do we know if the trees and plants around us, that contribute to our health and well-being, are doing well? Just like we check on our own health and the health of our near and dear ones, it is good to give the trees around us a health check too. In this section we have provided information on how to assess the health of a tree and also to treat wounds and diseases in some specific trees.

PLEASE NOTE: The remedies suggested here do mention use of organic substances such as neem oil, but we have also mentioned chemical treatments that are best for more severe infections.

### A health check-up for trees

- Are there any dead branches in the tree?
- Are there detached branches hanging in the tree?
- Are there cavities or rotten wood along the trunk or major branches?
- Are there cracks or splits in the trunk or where major branches attach?
- Has the trunk developed a strong lean?
- Have any branches or bark fallen from the tree?
- Have adjacent trees fallen over or died?



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- Do many of the major branches arise from one point on the trunk?
- Have roots been damaged by eroding soil or digging trenches?
- Have roots been broken while installing pavement or repairing sidewalks?
- Has the site changed by construction, raising the soil level or installing lawns?
- Have the leaves prematurely developed an unusual colour or size?
- Has the tree been topped or otherwise heavily pruned?
- Are insects, fungi etc., visible on the tree?

If a tree shows evidence of any of the above, it is an indication that the health of the tree has been affected. Most importantly, such trees, whose trunks, branches and roots, have been compromised can fall and pose a danger to life and property. It is important to ensure that branches in danger of falling are removed, and trunks and roots affected are treated and provided with support.

### Treating a tree's wounds

We often have to chop or prune trees. When trees are chopped or pruned, there is a chance of the trees being affected. These "tree wounds" need to be treated as well. How do we treat such tree wounds?

A concentrated mix of beeswax and orange oil or a paste of Copper Oxy-Chloride 50% WP (wetable powder) fungicide of the tree, should be applied on the tree wound and covered.

### Treating diseases and pest infestations

Some specific trees have been impacted in Bengaluru, and we provide the diseases or insect pests that compromised the trees health. We also provide ways in which the tree can be treated.

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### **Disease 1:**

Mealy bug infestation

### **Cause:**

The mealy bug, a wingless, soft-bodied insect

### **Symptoms:**

The mealy bugs appear as white cottony masses in the shoots, leaves and fruits of the custard apple. The insects also bore holes and tunnel into the fruits destroying the fruits.

### **Treatment:**

Spray 1.5% neem oil or Buprofezin 25 EC (1.25ml/l) and repeat after two weeks.

### **Disease 2:**

Fruit rot

### **Cause:**

Fungus

### **Symptoms:**

The fruits will have dark brown to blackish spots or lesions predominantly on the stalk end of fruit.

### **Management:**

The disease can be controlled by spraying contact fungicide Copper oxychloride (0.2%) as preventive spray and Carbendazim 0.1% or Thiophanate methyl 0.1% soon after the disease outbreak during June-July, coinciding with the onset of monsoon.



## **Neem**

### **Diseases:**

Neem die-back

### **Cause:**

Fungus (*Phomopsis azadirachta*)

### **Symptoms:**

The fungus causes the fruit to rot. It also causes twig and inflorescence blight (decay of branches, twigs and flowers). The disease affects the terminal branches of the trees first and progressively spreads till the tree itself may die if not treated.



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**Management:**  
Use Bavistin 50% WP, 5 gms in one litre of water and has to be used to drench the entire tree.

### Indian beech

#### Diseases:

Leaf spot and blight

#### Cause:

Fungi (*Fusicladium pongamiae*, *Microstroma pongamiae*, *Phyllochora pongamiae*, *Robillarda makatii*, *Urohendersonia pongamiae*, *Cercospora pongamiae* and *Sphaceloma pongamiae*)

#### Symptoms:

The symptoms of the fungi in Indian beech include severe leaf deformities, white or cream coloured spots on leaves, damage to pods and exfoliation of young seedlings and trees.

#### Management:

Bavistin fungicidal solution (0.1%) can effectively reduce the infestation.



### Guava

#### Diseases:

Algal leaf spot

#### Cause:

Caused by the pathogen *Cephaleuros virescens*

#### Symptoms:

The presence is indicated in leaves by orange, rust-coloured, dense, silky tufts. These appear on both upper and lower surfaces of leaves and turn reddish-purple in colour in older leaves. When the tufts are scraped away, a thin grey-white or dark-coloured necrotic spot remains on the leaf. The fungus also affects the bark on twigs and branches causing cracks to appear. Young stems and fruit may also be attacked.

#### Management:

The health of the tree needs to be maintained with fertilisation and pruning that allows fresh air to circulate through the canopy. Periodic applications of a copper-based fungicide,



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### Mango

#### Disease 1:

Infestation by mango stem borer

#### Cause:

The stem borer insect, *Batocera rufomaculata*, is greyish in colour, with two pink dots. The grub or caterpillar is fleshy.

#### Symptoms:

The grub of the mango stem borer causes the most damage to the mango tree, especially the trunk. The grub tunnels into the trunk, causing damage to plant tissue, sap ooze out and branches wilt.

#### Management:

The Arka Borer control, developed by the Indian Institute of Horticultural Research, located in Bengaluru is an effective remedy. Arka borer control formulation is mixed with water to form a gel or melted ice cream consistency, to be applied on the mango stem, using a two to three inch brush. Active larval holes should be plugged with cotton dipped in Dichlorovos (4ml/l) and covered with mud.

#### Disease 2:

Powdery mildew

#### Cause:

Fungus (*Oidium mangiferae*)

#### Symptoms:

This is a serious disease that affects mango trees especially the young leaves. An affected tree will have a powdery coating on the leaves, stalks, flowers and fruits.

#### Management:

Fungicides such as Azoxystrobin (0.1%), Hexaconazole (0.1%)



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### **Diseases:**

Algal leaf spot

### **Cause:**

The algal *Cephaleuros virescens*

### **Symptoms:**

An indication of a tree affected by algal leaf spot is the presence of, raised, orange-red spots on both upper and lower surfaces of leaves. The spots may merge to also form irregularly shaped patches. These spots and patches may also be present on twigs and branches. When the surface of the spot is scraped away, a grey to dark necrotic crust is visible.

### **Management:**

An important thing to do is to ensure that the trees are properly fertilised and pruned to ensure circulation of air within the canopy. We need to remove all weeds from around tree bases. A badly infested tree can be treated with copper containing fungicides.



## **Chikoo**

### **Disease:**

Chikoo moth infestation

### **Cause:**

Caused by the chikoo moth *Nephopteryx eugraphella*. The adults are greyish in colour and have brown or black spots in the forewing. The larvae are pinkish in colour with stripes on the side of the body.

### **Symptoms:**

The caterpillars of this moth are the most damaging as they bore into flowers and fruits. They also feed on the leaves. Their presence is indicated by webs, often with dried leaves hanging from these webs.

### **Management:**

Spraying of neem seed kernel extract 4% will reduce the infestation. To control this pest, remove and destroy all the infested clumps and spray with 0.05% chlorpyrifos.



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### Thrips

**Disease:**

Infestation of thrips

**Cause:**

Thrips are very small, slender insects with fringed wings.



**Symptoms:**

Thrips mainly attack the buds of hibiscus causing them to fall off from the plant after first changing colour and then rotting. The insects also attack leaves and fruits causing them to become discoloured or twisted.

**Management:**

Concentrated neem oil sprayed on the plant is effective in treating thrips. Any rotten buds, leaves or other parts can be cut and disposed of carefully at a distance from the plant.



### Star gooseberry

**Diseases:**

Mealy bug infestation

**Cause:**

The mealy bug is a wingless, soft-bodied insect.



**Symptoms:**

The mealy bugs mainly damage the fruit or the berry.

**Management:**

Spray a mix of 1.5% neem oil and soap oil 3 ml in a litre water and repeat after two weeks.



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## Be a tree nurturer by providing a helping hand

You can nurture and grow trees from cuttings and grafting. Here are some details below, along with a few tips on rooting tonics and growing mediums.

### What is cutting?

A “cutting” is a plant part that is cut from the parent plant and grows into a whole new plant. Stem cuttings are one of the easiest ways of plant propagation. Cuttings can also be taken from leaves and roots. The steps for propagation using stem cuttings are:

1. Choose a healthy, disease free, parent plant.
2. Take a cutting from the upper part of a parent plant using a sharp knife. The cutting should be three to six inches long.
3. The cutting should not have leaves, flowers or buds. This is to ensure that all the energy and nutrition is used for growth and not for seed, flower or fruit production. Be sure to remove leaves from the bottom of the cutting. A couple of small leaves can be left on the top.
4. Dipping the tip of the cutting in a rooting hormone/tonic will help prevent bacterial and fungal infection. These tonics can be made with simple ingredients from the kitchen (described later).
5. Insert the cutting into a container with a rooting medium such as compost, cocopeat, coarse sand, soil, water or a mix of these. The best rooting mediums are those that allow the cutting to root well. Take care to ensure that the stem is placed upright.
6. Once the cutting roots and grows a few feet, then you can replant it into the landscape.

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In grafting, part of one plant is joined with another. The part of the plant that forms the root is called the stock or rootstock, while the portion fixed onto it is called scion. A wound or cut is made on the stock or the rooted plant and the scion or the part from the other plant is attached here. But why graft? Grafting is done to combine the best characteristics of two plants. Grafting requires skill and a lot of care and attention but is something that can be learnt and done at home. There are different ways of grafting, T budding, Chip budding, whip grafting, trying bark grafting and cleft grafting, but here are some broad steps:

1. It is best if the stem size of the rootstock and scion are the same.
2. Make 3-inch cuts on the branch or stem of the stock plant.
3. Tie a rubber band at the bottom of the cut on the rootstock.
4. Insert the scion into these cuts. You may have to pare the end of the scion a bit in order to do this.
5. Tie the scion to the rootstock using string or rubber.

### Rooting tonics

In cutting or grafting, rooting tonics are an important requirement in the process. These can be purchased commercially but for small quantities they can be made at home using some simple ingredients. These tonics and hormones will help the cutting or grafting to be more successful. Below are examples of rooting tonics.

#### *Honey based rooting medium*

Boil two cups of water in a pan over high heat until the water comes to a boil. Reduce to a simmer and add two tablespoons (30 ml) of honey. Mix the honey and water well, turn off the heat and let the mixture cool. Keep the stem cuttings in this rooting mixture for two to three hours. Then transfer the stem cuttings, that are now rich in anti-bacterial, anti-fungal and antiseptic properties, into a growing medium.



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*Aloe vera based rooting medium*

Remove the gel from a fresh aloe vera leaf into a bowl, and mash the gel till it attains the consistency of water. You can add a few drops of water as well. Dip the stem cuttings into this mixture, coating the cut evenly, before putting it in the soil. Aloe vera protects the cutting from bacteria or fungi in the soil.

### *Cinnamon powder*

Dip the base of the cut stem into cinnamon powder before planting it in the soil. Cinnamon has anti-microbial properties and keeps the plant healthy during the rooting process.

### *Apple cider vinegar*

Apple cider vinegar has anti-bacterial properties. Add a teaspoon of apple cider vinegar to five to six cups of water. Dip the cutting in this tonic before planting it in a growing medium. Too much of the vinegar can stop rooting and so a small amount is sufficient.

## Common growing mediums

Growing mediums are materials apart from soil that are used to grow plants, especially in the early stages of propagation. Propagation methods like grafting and cutting require growing mediums during the propagation process. Growing mediums are preferred over soil in the initial stages of growing because they are typically airy, help in water absorption and retention, supply nutrients to the root/stem and provide stability for the new stem cutting. Some common growing mediums are cocopeat, coir, bark, compost, green waste, mulch, rice husks, clay, sand, pumice or a combination of these. A lot of these growing mediums can be made or found at home. Using a growing medium can benefit your garden by ensuring the cut stems/roots grow strong and healthy especially during the initial stages of growth.

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