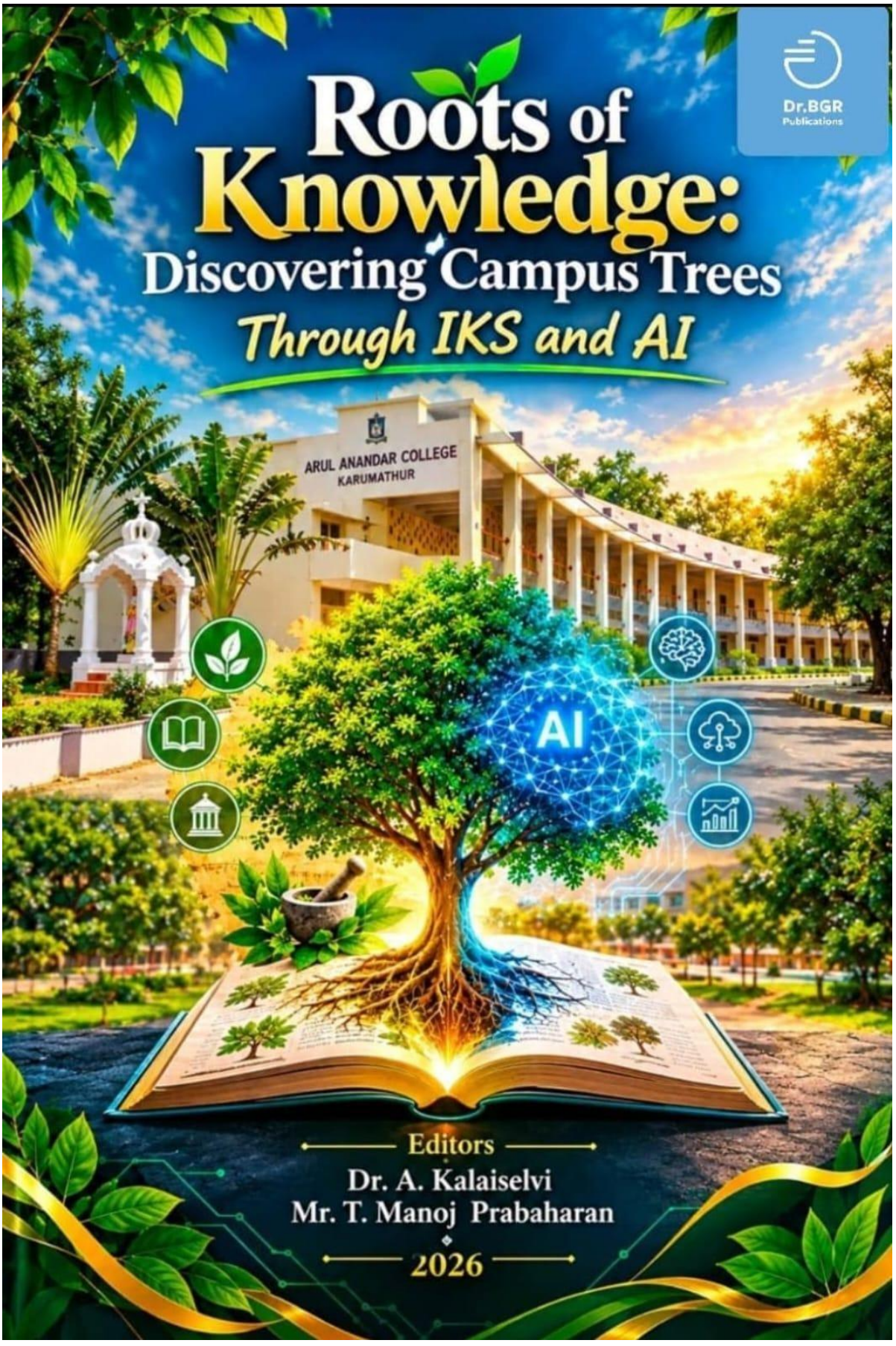

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Roots of Knowledge:
Discovering Campus Trees
Through IKS and AI
ARUL ANANDAR COLLEGE
KARUMATHUR
AI
Editors
Dr. A. Kalaiselvi
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2026

Roots Of Knowledge: Discovering Campus Trees Through IKS And AI

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PREFACE

Trees are an essential part of our natural environment, supporting biodiversity, maintaining ecological balance and enriching human life in numerous ways. Beyond their environmental importance, trees also hold cultural, traditional, medicinal and historical significance. Understanding the value of trees helps develop environmental awareness and encourages a deeper appreciation of the natural world around us.

Roots of Knowledge: Discovering Campus Trees Through IKS and AI is an educational initiative that brings together the traditional wisdom of Indian Knowledge Systems (IKS) and the possibilities of Artificial Intelligence (AI) to explore and document the trees found on our college campus. The book presents information about selected trees, including their botanical names, families, Tamil and English names, cultural significance, scientific importance and interesting facts.

This publication is a collective academic effort of 48 students from I CS and 39 students from III BCA, comprising a total of 87 student contributors. As part of their academic assignment, the students explored the importance of campus trees, gathered relevant information and developed an understanding of their botanical characteristics, ecological roles and traditional associations.

The project also provided an opportunity to understand how AI can support learning, information organisation and the presentation of knowledge. By connecting traditional knowledge with scientific understanding and digital tools, the students experienced an interdisciplinary approach to learning beyond the conventional classroom.

We hope this book will serve as a useful learning resource for students, teachers, researchers and nature enthusiasts. More importantly, we hope it inspires readers to observe, appreciate and protect the trees in their surroundings.

ACKNOWLEDGEMENT

The successful completion of *Roots of Knowledge: Discovering Campus Trees Through IKS and AI* has been made possible through the collective effort, encouragement and support of many individuals and institutions.

First and foremost, we express our sincere gratitude to the Management and the Principal of **Arul Anandar College (Autonomous), Karumathur**, for providing an encouraging academic environment and supporting innovative learning initiatives that promote knowledge, creativity and environmental awareness.

We extend our heartfelt appreciation to the **48 students of I CS and 39 students of III BCA**, whose active participation, enthusiasm and collaborative efforts made this publication possible. Their involvement in exploring campus trees, gathering information and preparing the content reflects the importance of experiential learning, teamwork and academic responsibility.

We sincerely thank the faculty members and colleagues of the Department of Computer Science and Applications for their encouragement and support throughout this academic initiative.

We express our special thanks to **BGR Publications** for their valuable support, cooperation and guidance in bringing this academic work towards publication. Their contribution and encouragement are greatly appreciated in helping us present the collective efforts of our students in a meaningful and professional form.

We also acknowledge the role of digital resources and Artificial Intelligence tools in assisting students with information exploration, content organisation and presentation. These tools served as supportive learning aids in connecting traditional knowledge with contemporary scientific perspectives.

Finally, we extend our sincere thanks to everyone who directly or indirectly contributed to the successful completion of this book. This publication stands as a reflection of shared learning, student creativity, academic collaboration and our collective responsibility towards nature.

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A GREEN JOURNEY THROUGH THE WORLD OF TREES

✦ LEARN • EXPLORE • PROTECT ✦

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EVERY TREE IS A TREASURE OF NATURE!

Let us learn from trees and protect our green planet.

INTRODUCTION

Nature is one of the greatest sources of knowledge, and trees are among its most valuable components. They play a vital role in maintaining ecological balance, supporting biodiversity, improving air quality, providing shade and contributing to the well-being of living organisms. Every tree has its own identity, structure, uses and ecological importance. Learning about the trees in our immediate surroundings is therefore an important step towards developing environmental awareness and scientific curiosity.

The college campus is not merely a place for academic learning; it is also a living environment that offers opportunities to observe and understand nature. The trees found within the campus represent a valuable natural resource and provide an excellent foundation for experiential learning. Their botanical characteristics, traditional uses, cultural associations and environmental contributions offer meaningful subjects for exploration.

The book *Roots of Knowledge: Discovering Campus Trees Through IKS and AI* has been developed as a student-centred academic initiative involving 48 students of I CS and 39 students of III BCA. Undertaken as an academic assignment, this initiative encouraged students to explore the trees on their campus and document their importance through an organised and informative approach. The publication adopts an interdisciplinary perspective by bringing together three important dimensions:

1. Indian Knowledge Systems (IKS)

Indian Knowledge Systems preserve valuable traditional understanding of plants and their relationship with human life. Trees have been associated with food, medicine, agriculture, culture, spirituality and community practices for generations. This book highlights selected traditional associations and uses of campus trees while recognising the importance of preserving indigenous knowledge.

2. Scientific Understanding

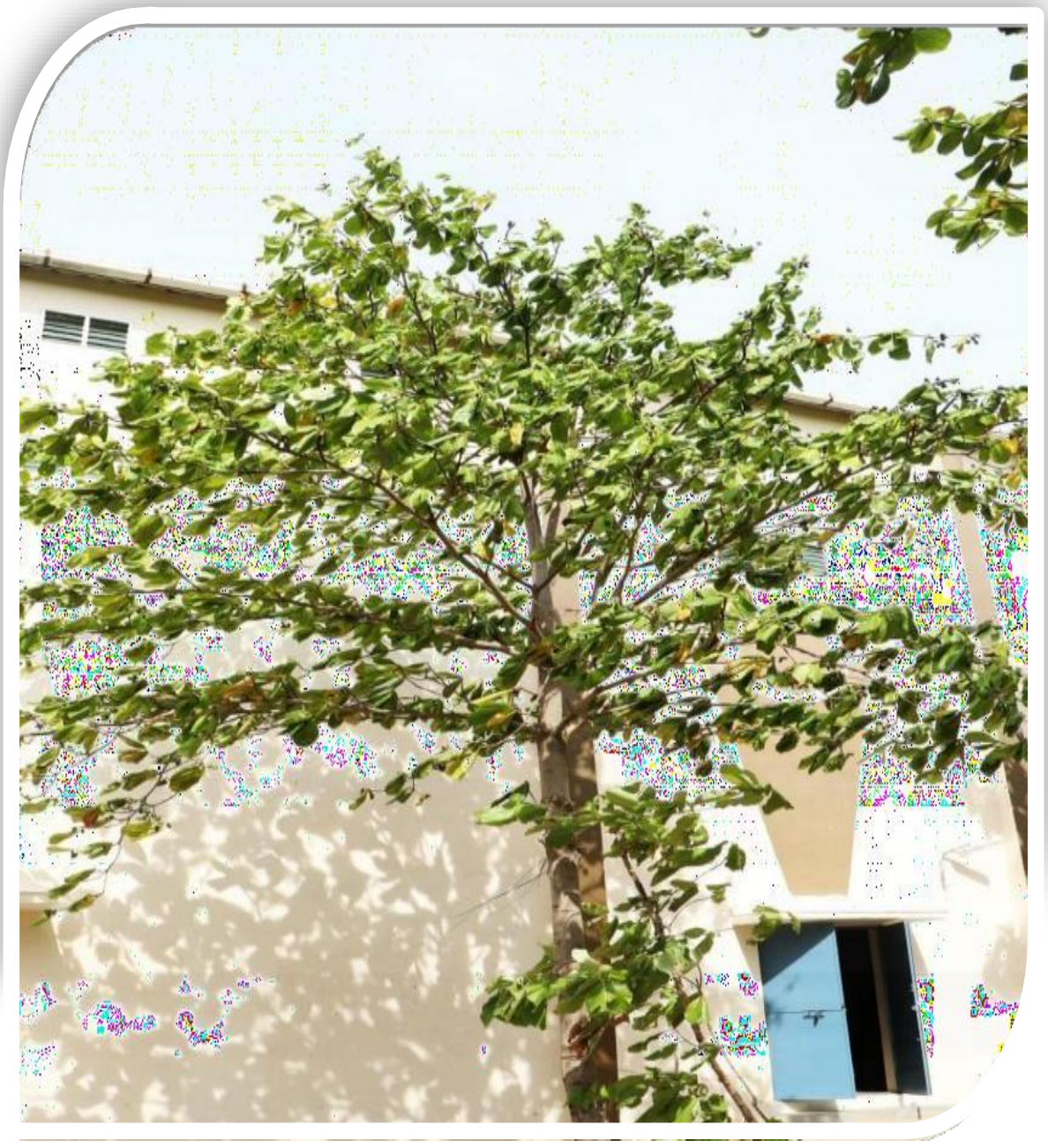
Each tree is introduced through its botanical name, family, Tamil name and English name. The information further explores its significance, scientific characteristics, ecological contributions and interesting facts. This approach helps readers understand plant diversity and appreciate the scientific principles underlying the natural world.

3. Artificial Intelligence (AI) and Digital Learning

Artificial Intelligence provides new opportunities for exploring information, organising knowledge and supporting educational activities. In this project, AI is incorporated as a supportive learning tool to assist students in researching, structuring and presenting information. Its use also encourages students to understand the importance of reviewing information critically and combining digital resources with reliable knowledge. Through this initiative, students gain exposure to collaborative learning, information gathering, scientific documentation, digital literacy and environmental responsibility. The project demonstrates how classroom assignments can extend beyond textbooks and become meaningful academic contributions. This book is intended for students, educators, researchers and readers interested in trees, biodiversity, traditional knowledge and technology-supported learning. It encourages everyone to look at the trees around them not merely as part of the landscape, but as valuable sources of knowledge, life and heritage.

ALMOND TREE

(வாதுமை)



Plant a tree today, grow a better tomorrow!

Botanical Name: *Prunus dulcis*

Family : Rosaceae

Tamil Name :(வாதுமை)

English Name : **Almond Tree**

SIGNIFICANCE

- Badammaram has an important place in traditional food practices because its seeds are widely valued as a nutritious food
- Almonds are commonly included in Indian diets, especially in sweets, milk preparations, snacks and traditional recipes
- The tree represents the importance of plant-based food resources and is valued for its useful seeds
- Almonds are traditionally associated with nourishment and are often included in foods prepared for children and special occasions

SCIENTIFIC IMPORTANCE

- It belongs to the Rosaceae family, which also includes plants such as apples, peaches and cherries
- The almond is botanically considered the seed inside the fruit's hard stone, rather than a true nut
- Almond trees are important in agriculture because their flowers depend greatly on pollination for successful fruit and seed production

INTERESTING FACT

- Almondtrees produce beautiful flowers before the leaves becomefully developed
- Theedible almond develops inside ahard protective shell andan outer fruit covering
- Bees play an important role in almond production by helping pollinate the flowers
- Almond trees are among the earliest flowering fruit trees, producing delicate blossoms that attract pollinating insects
- Almond trees require a suitable climate, with cool winters and warm, dry summers, for healthy growth and successful nut production

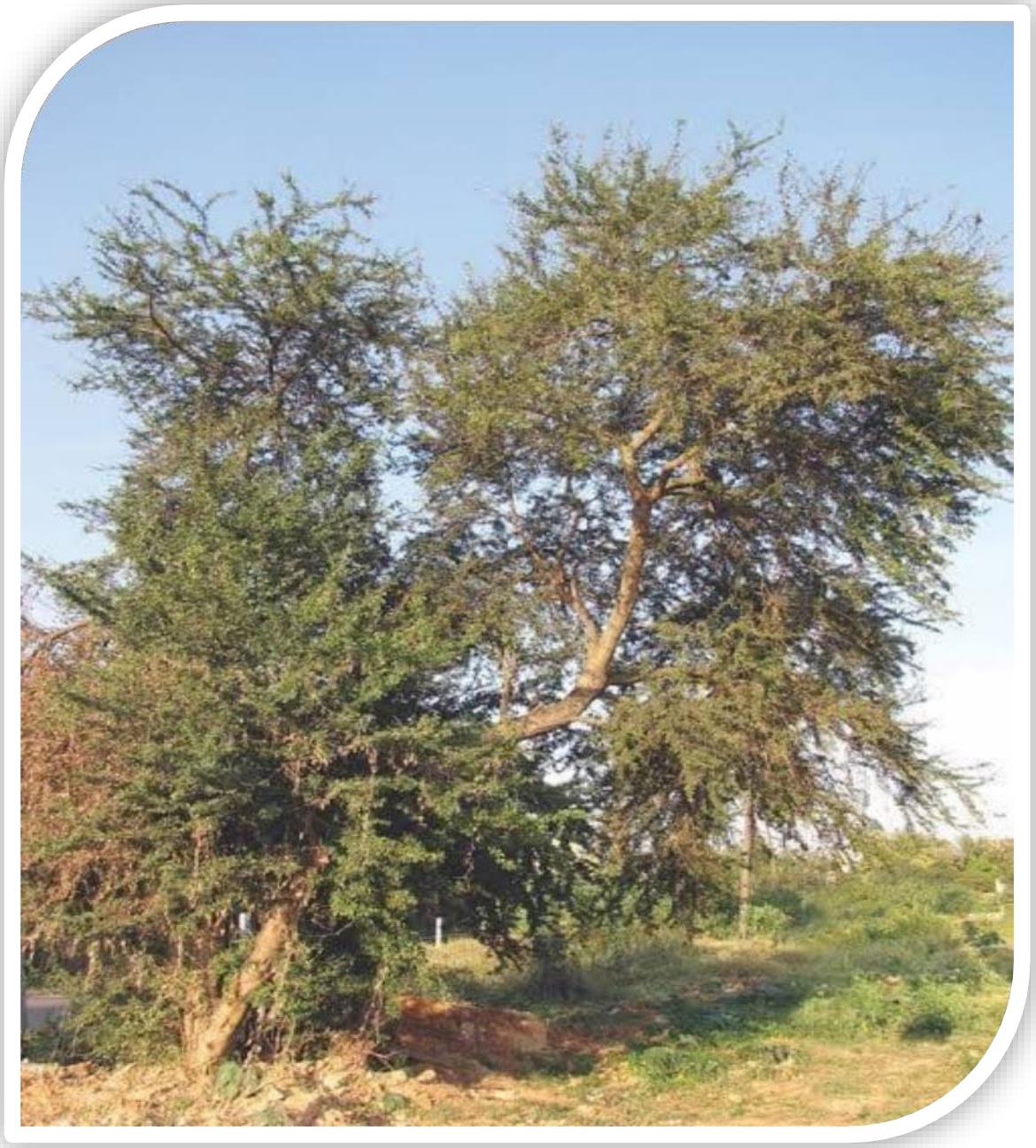
"Scan today, connect instantly."



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MANILA TREE

(கொடுக்காப்புளி மரம்)



A tree for healthier, greener tomorrow!

Botanical Name : *Pithecellobium dulce*

Family : **Fabaceae**

Tamil Name : கொடுக்காப்புளி

English Name : **Manila Tamarind, Madras Thorn, Monkey Pod.**

SIGNIFICANCE

- The Manila tamarind tree provides shade and supports biodiversity in the environment.
- It is drought-resistant and can grow well in hot climates and relatively poor soils.
- Its sweet-and-sour fruits are edible and consumed fresh in many parts of India.
- Different parts of the tree have been used in traditional medicine.
- As a leguminous tree, it can contribute to soil fertility through nitrogen-fixing associations.
- Its flowers and fruits provide food for pollinators, birds, and other animals.
- The tree is useful for fencing, livestock fodder, fuelwood, and environmental conservation.

SCIENTIFIC IMPORTANCE

- The scientific name of the Manila tamarind tree is *Pithecellobium dulce*, and it belongs to the family Fabaceae.
- It is a leguminous plant that can contribute to soil nitrogen enrichment through associations with nitrogen-fixing bacteria.
- The tree exhibits drought tolerance and is adapted to hot and semi-arid climatic conditions.
- Its leaves contain various phytochemicals, including phenolic compounds and flavonoids, that are studied for their biological activities.
- The fruit pulp contains nutrients and antioxidant compounds that contribute to its nutritional value.
- Different plant parts have been investigated for potential antimicrobial, antioxidant, and anti-inflammatory properties.
- The tree provides ecological benefits by supporting birds and other organisms in its habitat.
- Its ability to grow in a range of soil conditions makes it a useful species for ecological restoration, soil conservation, and sustainable landscaping.

INTERESTING FACT

- The Manila tamarind tree is scientifically known as *Pithecellobium dulce* and belongs to the family Fabaceae.
- Despite its name, it is not a true tamarind tree; the two belong to different plant species.
- Its fruit pods are twisted or coiled and often resemble small spirals.
- The ripe fruit has a sweet-and-sour pulp that surrounds shiny black seeds.
- The tree is known by different local names in India, including *Kodukkapuli* in Tamil.
- Its thorny branches make it useful as a natural living fence around farms and properties.
- The tree is hardy and drought-tolerant, allowing it to grow in hot climates and survive under relatively dry conditions.

SCAN TO View me!



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GOOSEBERRY TREE

(நெல்லி மரம்)



“Protect the Environment today”

Botanical Name : *Phyllanthus emblica* (syn. *Emblica officinalis*)

Family : Phyllanthaceae

Tamil Name : நெல்லி மரம்

English Name : Amal Tree / Indian Gooseberry

SIGNIFICANCE

- Amla is highly valued for its rich Vitamin C content and natural antioxidant compounds, making it an important fruit in traditional Indian diets and Ayurvedic preparations.
- The fruits have considerable commercial importance and are widely used in the preparation of pickles, preserves, juices, herbal formulations and cosmetic products.
- The tree is suitable for agroforestry, social forestry and dryland horticulture because of its adaptability to a range of environmental conditions.
- Different parts of the tree, including the fruits, leaves, bark and roots, have traditional medicinal and commercial applications.

SCIENTIFIC IMPORTANCE

- *Phyllanthus* emblica contains several bioactive phytochemicals, including tannins, flavonoids, phenolic compounds and vitamin C, which contribute to its antioxidant properties.
- The fruits contain characteristic hydrolysable tannins, including emblicanin A and emblicanin B, which have been investigated for their antioxidant activities.
- The tree is adapted to tropical and subtropical climates and can tolerate relatively dry conditions and a range of soil types.
- Its cultivation contributes to agroforestry systems, soil conservation and the maintenance of biodiversity in suitable habitats.

INTERESTING FACT

- Amla is scientifically known as *Phyllanthus emblica*.
- Amla belongs to the Phyllanthaceae family.
- A single small Amla fruit contains nearly 20 times more Vitamin C than an orange.
- The fruit features a unique flavor profile encompassing five distinct tastes: sour, sweet, bitter, astringent, and pungent.

- Amla trees can grow to a height of 8–18 meters in favorable soil and climate conditions.
- The leaves are small, narrow, and closely arranged along slender branchlets, giving them a delicate, feather-like appearance.
- The tree bears greenish-yellow, unisexual flowers that bloom in clusters along the lower foliage.

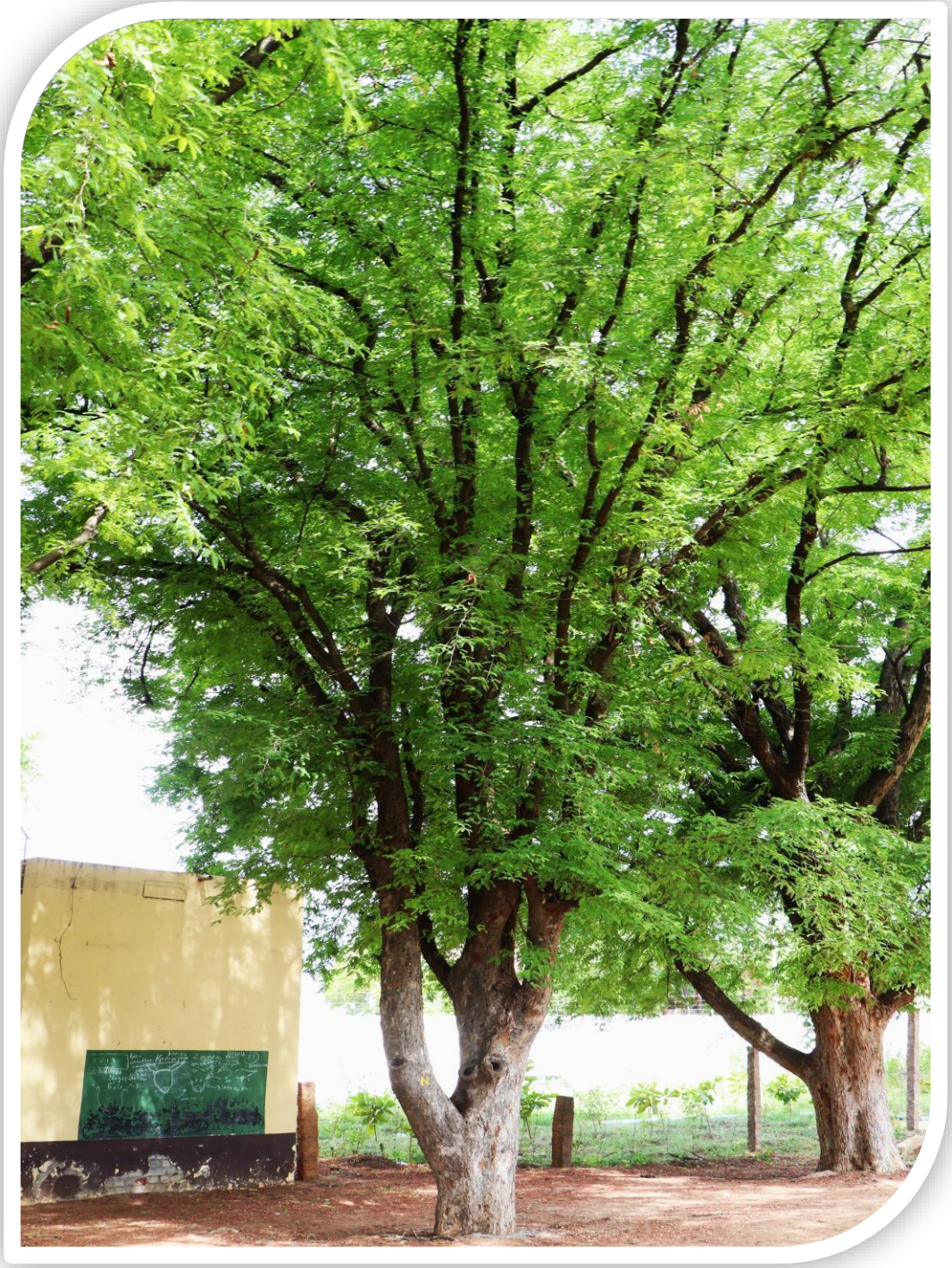
SCAN TO LEARN!



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TAMARIND TREE

(புளிய மரம்)



“Nurture Nature, Secure the Future!”

Botanical Name : *Tamarindus indica*

Family : Fabaceae

Tamil Name : புளிய மரம்

English Name : Tamarind Tree / Tamarind

SIGNIFICANCE

- Tamarind is widely valued for its sour fruit pulp, which is used in cooking, beverages, sauces, pickles and traditional preparations.
- The tree provides valuable shade, supports local biodiversity and contributes to environmental sustainability through its long lifespan.
- Its fruits, leaves, flowers and seeds have traditional, cultural and household uses in different regions.
- Tamarind fruit contains organic acids and is widely used as a natural souring agent in food.
- The tree can tolerate relatively dry conditions and grows well in many tropical and subtropical regions.
- Tamarind seeds can be processed into seed powder and other useful products, while its durable wood is used for furniture and tools.
- Tamarind has economic and cultural importance through its use in traditional cuisines and its sale in local markets.

SCIENTIFIC IMPORTANCE

- Tamarind trees support biodiversity by providing food, shelter and habitat for insects, birds and other organisms.
- The tree is well adapted to tropical and subtropical climates and can tolerate relatively dry conditions.
- Its deep root system helps stabilize the soil and allows the tree to access water from deeper soil layers.
- Tamarind fruit contains tartaric acid, dietary fibre, minerals and various bioactive compounds.
- Different parts of the tree contain phytochemicals with antioxidant and other biological properties.

INTERESTING FACT

- Tamarind is commonly known as the **"Indian Date"** because of its brown, sweet-sour pulp.
- The scientific name of tamarind is ***Tamarindus indica***.
- The sour taste of tamarind is mainly due to the presence of **tartaric acid**.
- Tamarind pulp is widely used in **chutneys, pickles, sauces, candies, and beverages**.
- Tamarind trees can live for **many decades** and are well adapted to warm and relatively dry climates.
- Tamarind belongs to the **Fabaceae (legume) family**.
- The tamarind fruit grows inside a **brown, brittle pod**.
- Tamarind seeds are **hard, shiny, and dark brown** in colour.
- The tree has a **broad, spreading crown** and provides good shade.
- Tamarind leaves are **small and arranged in pairs**, giving the tree a delicate, feathery appearance.
- Tamarind flowers are usually **yellow with red or orange markings**.

STEP INTO THE WORLD OF TAMARIND



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INDIAN BEECH TREE

(புங்கை மரம்)



"Look deep into nature, and then you will understand everything better."

Botanical Name: *Pongamia pinata*

Family : Fabaceae

Tamil Name : புங்கை மரம்

English Name : Indian Beech Tree

SIGNIFICANCE

- **Carbon Sink & Oxygen Booster:** It acts as a powerful natural air purifier, absorbing high amounts of carbon dioxide and releasing large volumes of oxygen through its dense, shady canopy.
- **Soil Fertilizer:** As a leguminous tree, its roots host bacteria that fix atmospheric nitrogen into the ground, naturally enriching poor soil and preventing land erosion.
- **Green Fuel Source:** Its seeds yield a high percentage of non-edible oil that can be processed into eco-friendly **biodiesel**, offering a renewable energy alternative.
- **Natural Medicine:** Every part of the tree holds value in Ayurveda and Siddha; the seed oil heals chronic skin conditions like eczema, while its twigs serve as antimicrobial toothbrushes.
- **Eco-Friendly Farming:** The leaves make excellent nutrient-rich green manure, and the seed cake acts as a potent, organic bio-pesticide to protect crops from insects.

SCIENTIFIC IMPORTANCE

- **Ecological Restoration:** It acts as a "soil healer." Through nitrogen fixation, it injects vital nutrients back into barren lands,

  transforming dead soil into fertile ground while its massive root network controls soil erosion and prevents landslides.
- **Climate Change Mitigation:** It is a heavy-duty carbon filter. Its large, dense canopy absorbs vast amounts of greenhouse gases (carbon dioxide) and survives extreme weather—including severe droughts, heavy floods, and high soil salinity—making it ideal for urban forestry.
- **Green Energy Security:** It offers a sustainable alternative to fossil fuels.
- The non-edible oil extracted from its seeds is a primary raw material for producing **biodiesel**, helping reduce carbon emissions without competing with food crops for agricultural land.
- **Natural Alternative to Chemicals:** It drives sustainable farming.
- The processed seed cake and oil act as potent organic bio-pesticides and bio-fertilizers, reducing farmers' reliance on toxic chemical alternatives that poison the food chain.

INTRESTING FACTS

- **The "Illuminating" Seed:** Long before electricity, the oil extracted from its seeds (Karanja oil) was widely used across Indian villages to **light street lamps and household lanterns**, earning it a reputation as a literal source of light.
- **A "Vegetarian" Insecticide:** While most commercial pesticides are chemically synthesized, the leaves and seed cakes of this tree contain a natural compound called **Karanjin**.
- It acts as a powerful repellent that disrupts the feeding and breeding cycles of destructive insects without killing beneficial earthworms or pollinators.
- **The Nighttime Oxygen Supplier:** Unlike most trees that only release oxygen during the day via photosynthesis, the Indian Beech has a high metabolic rate and an expansive canopy that makes it an **exceptional air purifier**.

- Local folklore even suggests sleeping under it delivers a therapeutic dose of fresh oxygen that cures headaches and fatigue.
- **Ancient Literary Fame:** This tree is deeply rooted in Indian culture. It is mentioned in Sangam literature (ancient Tamil poetry dating back over 2,000 years) under the name **'Punku' (புங்கு)**, where poets frequently praised its shade and beautiful clusters of white and purple flowers.

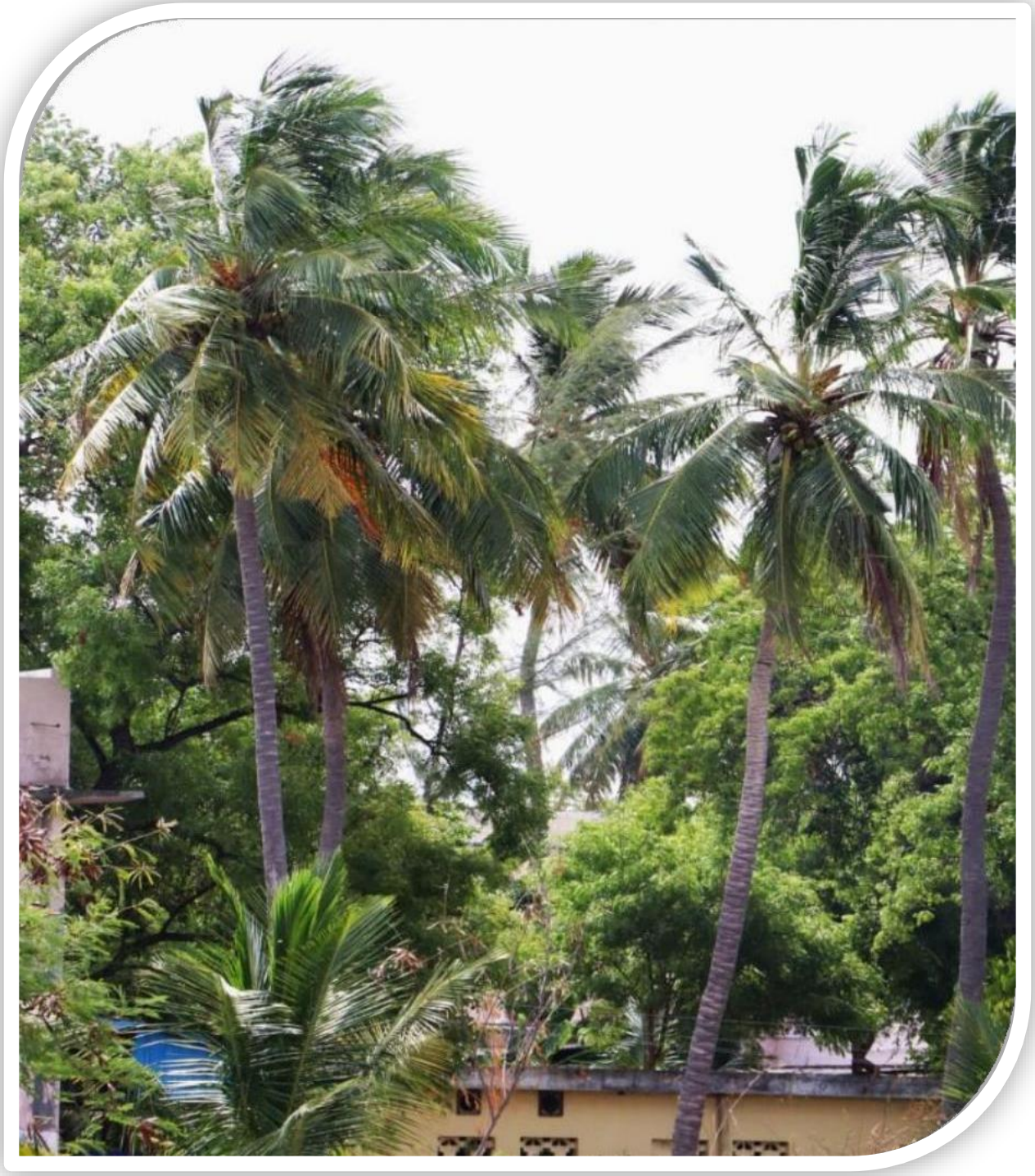
"EXPLORE THE WORLD OF INDIAN BEECH TREE"



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COCONUT TREE

(தென்னன மரம்)



“Root yourself in learning and rise towards your dreams.”

Botanical Name : *Cocos nucifera*

Family : Arecaceae

Tamil Name : தென்னை மரம்

English Name : Coconut Tree / Coconut

SIGNIFICANCE

- Coconut is an important tree widely grown in tropical regions and has great cultural and traditional value.
- Different parts of the coconut tree, including the fruit, leaves, flowers, husk and shell, are useful in daily life.
- Coconut is commonly used in traditional food, cooking and various cultural and religious practices.
- Coconut trees provide useful products such as coconut oil, coconut milk, coir and other household materials.
- Coconut cultivation provides employment and income to farmers and supports various coconut-based industries.
- Coconut trees contribute to environmental sustainability by protecting soil from erosion and providing shade in tropical regions.

SCIENTIFIC IMPORTANCE

- Coconut trees are well adapted to warm tropical climates and are commonly found in coastal and humid regions.
- The coconut fruit contains water and edible flesh, which provide nutritional value.
- The strong root system helps the coconut tree remain stable in sandy and coastal soils.
- Coconut trees provide habitat and resources for different insects, birds and other organisms, supporting local biodiversity.
- Coconut oil contains a high proportion of saturated fatty acids, particularly lauric acid, making it an important subject of nutritional and biochemical research

INTERESTING FACT

- Almost every part of the coconut tree can be used. The coconut fruit provides water and edible flesh, while the husk can be used to make coir products.
- Coconut trees are often called the "Tree of Life" because almost every part of the tree is useful to humans.
- Coconut fruits can float on seawater and travel long distances, helping the plant spread naturally to different coastal regions.
- A mature coconut tree can grow up to 30 metres tall, depending on the variety and growing conditions.
- Coconut water is naturally rich in electrolytes, such as potassium, and is commonly consumed as a refreshing drink.
- Coconut shells are used to make handicrafts, bowls, decorative items and charcoal.
- Coconut leaves are traditionally used for making baskets, mats, roofing materials and other household products.

"Scan to bring the coconut tree"



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SIRIS TREE

(வாகை மரம்)



A tree for a healthier, greener tomorrow!

Botanical Name : ***Albizia lebbeck*** (L.) Benth

Family : **Fabaceae**

Tamil Name : **வாகை (Vaagai)**

English Name : **Siris Tree / East Indian Walnut / Woman's Tongue Tree**

SIGNIFICANCE

- Mentioned in Ayurvedic and Siddha traditional medicine.
- Different parts such as leaves, bark, flowers and seeds have traditional medicinal uses.
- Provides wide and dense shade because of its spreading crown.
- Valuable as a source of timber and wood products.
- Commonly used for roadside and avenue plantation.
- Helps create a cooler and more comfortable environment in urban and rural areas.
- Its flowers and foliage add beauty and greenery to the surroundings.

SCIENTIFIC IMPORTANCE

- Belongs to the Fabaceae family, which includes many nitrogen-fixing plants.
- Its root association with microorganisms can contribute to nitrogen enrichment of soil.
- Helps improve soil quality by adding organic matter through fallen leaves.
- The large canopy helps provide shade and microclimate regulation.
- Contributes to carbon storage as the tree grows.
- Helps support soil conservation and reduction of erosion.
- Provides shelter and resources for birds, insects and other organisms.
- Plant extracts have been studied for antibacterial and antifungal activity.

INTERESTING FACT

- Its botanical name is *Albizia lebbeck*.
- It is commonly known as the Siris Tree.
- It is also called the East Indian Walnut.
- Another famous name is “Woman's Tongue Tree.”
- The name “Woman's Tongue Tree” comes from the sound produced by its dry seed pods.
- When the pods become dry, the seeds move inside them and create a rattling sound in the wind.
- The tree can develop a large, spreading crown.

SCAN TO TREE VIDEO

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TEAK TREE

(தேக்கு மரம்)



“Nurture Nature, Secure the Future!”

Botanical Name : *Tectona grandis*

Family : Lamiaceae

Tamil Name : தேக்கு மரம் (Thekku Maram)

English Name : Teak Tree / Teak

SIGNIFICANCE

- Teak is widely valued for its strong, durable and high-quality timber, which is commonly used in furniture, doors, windows, flooring and construction.
- The tree provides useful shade and contributes to the environment as a large, long-lived woody tree.
- Teak has significant economic importance and is cultivated in plantations and forests for its valuable timber.
- Its leaves and other parts of the tree also have traditional uses in different regions.

SCIENTIFIC IMPORTANCE

- Teak trees support biodiversity by providing food, shelter and habitat for insects, birds and other organisms.
- The tree is well adapted to warm tropical climates and can grow successfully in areas with distinct wet and dry seasons.
- Its strong and extensive root system helps the tree remain stable and absorb water and nutrients from the soil.
- Teak wood contains natural oils that help make it resistant to moisture, decay and insect attack, contributing to its long-lasting nature.

INTERESTING FACT

- Teak wood is naturally resistant to **moisture, decay, termites and insects**.
- Teak wood is widely used for **furniture, doors, windows, flooring, boats and construction**.
- Teak trees can grow to a height of **30–40 metres** under suitable conditions.
- Teak has very **large, broad and rough-textured leaves**, which can provide good shade.
- Teak produces small **white flowers** arranged in large clusters.
- Teak contains natural oils that help protect its wood and contribute to its **long-lasting durability**.

SCAN TO LEARN MORE ABOUT THE TEAK TREE



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ARECA TREE

(கமுகு மரம்)



“Trees teach us the Generosity, Bravery and Beauty of letting go.”

Botanical Name : *Areca catechu*

Family : Arecaceae

Tamil Name : பாக்கு மரம்

English Name : **Areca Palm / Betel Nut Palm**

SIGNIFICANCE

- Areca palm is widely cultivated in tropical regions for its fruits, commonly known as arecanuts or betel nuts.
- It is an important plantation crop in India and other tropical Asian countries and provides income to farmers.
- Its tall, slender stem and attractive green leaves make it suitable for gardens and landscaping.
- The fruits have traditional, cultural and commercial importance in several Asian communities.
- The palm grows well in warm and humid tropical climates.
- Its leaf sheaths are used to make biodegradable plates, cups and other products.
- Areca cultivation plays an important role in the agricultural economy of several regions.

SCIENTIFIC IMPORTANCE

- Areca catechu is a single-stemmed palm belonging to the family Arecaceae.
- It has a tall, slender trunk and a crown of long, feather-like (pinnate) leaves.
- The leaves are arranged at the top of the stem and consist of several narrow leaflets.
- The fruits develop in clusters and contain a single seed known as the arecanut.
- The species grows mainly in warm and humid tropical environments.
- Areca nut contains naturally occurring alkaloids, including arecoline, which are studied in plant chemistry and health research.

INTERESTING FACTS

- *Areca catechu* is commonly known as Areca Palm or Betel Nut Palm.
- It belongs to the palm family, Arecaceae.
- The palm has a slender, ringed trunk with long, feather-like leaves.
- Its fruits are green when young and turn orange or red as they mature.
- Each fruit contains a single seed called the arecanut.
- It is widely cultivated in India, particularly in Karnataka and Kerala.
- Arecanut is traditionally used in various cultural and social ceremonies.
- The nut contains arecoline, a naturally occurring alkaloid.
- Although it has traditional and economic importance, its consumption carries significant health risk.

SCAN THE QR CODE TO TAKE LOOK AT WORLD OF ARECA



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GUAVA TREE

(கொய்யா மரம்)



“Tree are the roots of life.”

Botanical Name : *Psidium guajava* Psidium guajava L.

Family : Myrtaceae

Tamil Name : கொய்யா மரம்

English Name : Guava tree

SIGNIFICANCE:

- Nutritious fruit: Guava is rich in vitamin C, fibre, and antioxidants.
- Medicinal value: Traditionally, different parts of the guava plant have been used in folk medicine.
- Environmental value: It provides shade, supports biodiversity, and helps improve the local environment.
- Economic importance: Guava is an important fruit crop for farmers and is sold fresh or processed into juices, jams, and other products.
- Cultural importance: Guava is commonly grown in Indian home gardens and farms.
- Supports nature: Its flowers and fruits can provide food for insects and birds.

SCIENTIFIC IMPORTANCE:

- Scientific name: *Psidium guajava*
- It belongs to the Myrtaceae family.
- Guava is rich in vitamin C, dietary fibre, and antioxidants.
- Its leaves contain various bioactive compounds that are studied for their potential health benefits.
- It is useful in plant science and agricultural research, especially for studying fruit production and plant growth.
- Its fruits, leaves, bark, and roots have been investigated for their phytochemical Properties.

INTERESTING FACTS:

- Boosts Immunity: One fruit contains high levels of vitamin C to protect cells from damage.
- Improves Digestion: Dietary fiber prevents constipation and promotes regular bowel movements
- Regulates Blood Pressure: Potassium helps balance sodium level and supports cardiovascular function.
- Aids Blood Sugar Control: A low glycemic index helps prevent sudden glucose spikes.

"Curious about me? Just scan & discover!"



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PAPAYA TREE

(பப்பாளி மரம்)



“Grow Papaya, Nourish Life, Protect Nature!”

Botanical Name : *Carica papaya*

Family : Caricaceae

Tamil Name : பப்பாளி மரம் (Pappali Maram)

English Name : Papaya / Papaya Plant

SIGNIFICANCE

- Papaya is an important tropical fruit plant widely cultivated for its nutritious and delicious fruits.
- The ripe fruit is commonly eaten fresh and is also used in juices, smoothies, salads, desserts and other food preparations.
- Papaya fruit is a good source of vitamin C, vitamin A, folate and dietary fibre, making it an important part of a balanced diet.
- Unripe papaya is used in various culinary preparations and can also be cooked as a vegetable.
- Papaya contains the natural enzymes papain and chymopapain, which are important for their ability to break down proteins.
- The plant grows relatively quickly and can produce fruits within a short period under suitable growing conditions.
- Papaya is economically important for farmers and is cultivated commercially in many tropical and subtropical regions.

SCIENTIFIC IMPORTANCE

- Papaya belongs to the family Caricaceae and is scientifically known as *Carica papaya*.
- The fruit contains important nutrients such as vitamin C, carotenoids, folate, potassium and dietary fibre.
- Papaya contains the proteolytic enzymes papain and chymopapain, which have been studied for their protein-digesting properties.
- The plant is generally fast-growing and can begin producing fruits relatively early compared with many perennial fruit trees.
- Papaya is a dioecious or polygamous species, meaning plants may have male, female and hermaphrodite flowers depending on the variety.
- Its large, deeply lobed leaves are arranged near the top of the plant on long leaf stalks.
- The fruit develops from the flowers and contains numerous black seeds surrounded by a soft, juicy pulp.

INTERESTING FACT

- Papaya is scientifically known as *Carica papaya*.
- Papaya is sometimes called the "fruit of angels," a name historically associated with its sweet and soft fruit.
- The papaya plant is not a typical woody tree; botanically, it is a large, soft-stemmed herbaceous plant.
- The plant can grow several metres tall under favourable conditions. Papaya leaves are large, deeply lobed and palm-like.
- Ripe papaya usually has yellow to orange flesh with numerous small black seeds in the centre.
- Papaya flowers may be male, female or bisexual depending on the type of plant.
- The plant grows best in warm climates and is sensitive to frost and prolonged cold conditions.

Step Into the World Pula Thali Tree Scan



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PEEPAL TREE

(அரச மரம்)



"Save trees, save life, save the future."

English Name : PEEPAL TREE

Tamil name : அரச மரம்

Scientific Name : Ficus religiosa

Family : Moraceae

SIGNFICANCE

- Buddhism: Siddhartha Gautama is traditionally said to have attained enlightenment under a Bodhi tree, a type of Peepal tree.
- Spiritual significance: Many people believe it represents the connection between earth, heaven, and the divine. It is commonly worshipped and circumambulated.
- Ecological importance:It provides food and shelter for many birds and insects and is an important native tree in South Asia.

SCIENTIFIC IMPORATNCE

- Peepal leaves use sunlight, carbon dioxide, and water to produce food and release oxygen through photosynthesis.
- As a large, long-lived tree, it stores carbon in its trunk, branches, roots, and soil, helping reduce atmospheric carbon dioxide.
- Its leaves can trap some dust and particulate matter, contributing to cleaner local air.
- Peepal fruits provide food for birds, bats, and other animals. The tree also provides shelter and nesting spaces.

INTERSTING FACT

- Long Lifespan**:** Peepal trees can live for several hundred years under suitable conditions.
- Religious Significance**:** The tree is considered sacred in Hinduism, Buddhism, and Jainism.
- Buddha's Enlightenment**:** Gautama Buddha is traditionally believed to have attained enlightenment under a Peepal tree, also known as the Bodhi tree.
- Supports Biodiversity: Its fruits provide food for birds and other animals.
- Medicinal Importance: Different parts of the Peepal tree have been traditionally used in folk medicine.

“Scan to learn, learn to protect!”



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INDIAN MAST TREE

(நெட்டிலிங்கம்)



“Plant Trees, Create Green Spaces, Protect Our Future!”

Botanical Name : Monoon longifolium (Sonn.) B.Xue & R.M.K.Saunders

Family : Annonaceae

Tamil Name : நெட்டிலிங்கம்

English Name : **Indian Mast Tree / False Ashoka / Mast Tree**

SIGNIFICANCE

- Indian Mast Tree is a tall, evergreen tree commonly planted in gardens, parks, college campuses and along roadsides.
- Its tall and narrow shape makes it suitable for landscaping, avenue planting and creating natural screens.
- It has long, narrow and drooping leaves that give the tree an attractive appearance.
- Its dense green leaves add beauty to the surroundings and provide some shade.
- It grows well in tropical and subtropical climates.
- Its narrow growth habit makes it suitable for planting in areas with limited space.
- It also provides shelter for small organisms and contributes to urban greenery.

SCIENTIFIC IMPORTANCE

- Indian Mast Tree belongs to the family **Annonaceae**.
- Its accepted scientific name is *Monoon longifolium*, formerly known as *Polyalthia longifolia*.
- It is an evergreen tree with a tall, straight trunk and a narrow, column-like crown.
- Its leaves are simple, narrow, glossy and arranged alternately on the branches.
- The flowers are small and usually greenish-yellow in colour.
- Its fruits are small, rounded and grow in clusters.
- Its leaf structure and growth pattern make it useful for botanical studies and plant identification.

INTERESTING FACT

- The Indian Mast Tree is commonly known as False Ashoka or Mast Tree.
- Its accepted scientific name is *Monoon longifolium* (Sonn.) B.Xue & R.M.K.Saunders.
- The species was formerly classified under the genus *Polyalthia* and is widely known by the name *Polyalthia longifolia*.
- One of its most distinctive features is its tall, narrow and columnar crown, which differentiates it from many other ornamental trees.

- Its long, slender and drooping leaves create an attractive appearance, particularly when they move with the wind.
- The tree is frequently planted along roadsides, pathways and institutional boundaries because of its vertical growth habit.
- Being an evergreen species, it generally retains its foliage throughout the year, maintaining greenery in the surrounding landscape.

STEP INTO THE WORLD INDIAN MAST TREE SCAN



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PULA THALI TREE

(ஏழிலைப்பாலை)



“Protect Trees Today, Preserve Life Tomorrow!”

Botanical Name : *Alstonia scholaris*

Family : Apocynaceae

Tamil Name : ஏழிலைப்பாலை (Ezhilaipaalai)

English Name : **Indian Devil Tree / Blackboard Tree / Dita Tree**

SIGNIFICANCE

- Pula Thali Tree is a tall, evergreen tree commonly found in tropical and subtropical regions.
- It is valued for its medicinal, ornamental, ecological and shade-giving importance.
- Its white, fragrant flowers attract bees, butterflies and other pollinating insects.
- The tree provides shade and adds greenery and beauty to the surroundings.
- Its leaves are arranged in whorls around the branches, giving it a unique appearance.
- The bark has been traditionally used in different systems of medicine for various health conditions.
- Its lightweight wood is used for making plywood, packing cases, boards and other products.
- It is commonly planted along roadsides, in gardens and in parks as an ornamental and avenue tree.

SCIENTIFIC IMPORTANCE

- *Alstonia scholaris* belongs to the family **Apocynaceae**, which includes many flowering plants.
- It is an evergreen tree with a tall trunk and a broad crown.
- Its leaves are simple, glossy and arranged in whorls, usually with several leaves arising from the same point.
- The flowers are small, white and fragrant, and grow in clusters.
- The bark contains naturally occurring alkaloids and other chemical compounds that have been studied for their medicinal properties.
- The tree is well adapted to tropical climates and can grow in different soil conditions.
- Its dense foliage provides shelter for birds and small organisms.
- Its bark, leaves and other plant parts have traditional medicinal uses and are of interest in phytochemical research.

INTERESTING FACT

- The scientific name of the Pula Thali Tree is *Alstonia scholaris*.
- It is commonly known as the Blackboard Tree or Indian Devil Tree.
- Its flowers are small, white and strongly fragrant.
- The flowers usually grow in clusters at the ends of branches.
- Its leaves are arranged in whorls, forming a distinctive star-like pattern.
- When the bark is damaged, it produces a milky latex.
- The tree can grow to a considerable height and develop a broad crown.
- Its fruits are long, narrow and paired, containing numerous seeds with silky hairs.
- The seeds are dispersed by wind due to their light, hairy structure.
- The tree is native to the Indian subcontinent and Southeast Asia and is also cultivated in other tropical regions.

Step Into the World Pula Thali Tree Scan

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BANANA TREE

(வாழை மரம்)



“Trees are the lungs of the Earth!”

Botanical Name : ***Musa spp.***

Family : **Musaceae**

Tamil Name : **வாழை மரம்**

English Name : **Banana Plant / Banana**

SIGNIFICANCE

- Cultural importance Banana trees have an important place in Indian traditions and festivals.
- Religious significance Banana leaves and plants are commonly used in पूजा and auspicious functions.
- Food source Bananas are nutritious fruits rich in carbohydrates, potassium, and vitamins.
- Banana leaves are traditionally used as natural plates for serving food.
- Eco-friendly Banana leaves and other plant parts are biodegradable and reduce plastic use.
- Medicinal value Different parts of the banana plant are used in traditional practices.

SCIENTIFIC IMPORTANCE

- Rich in nutrients Bananas provide carbohydrates, potassium, vitamin B6, and dietary fiber.
- Medicinal research Various parts of the plant are studied for antioxidant and other biological properties.
- Plant science Banana is an important example of a plant that grows from an underground rhizome.
- Vegetative propagation & Many cultivated bananas are propagated using suckers or tissue culture.

INTERESTING FACTS

- Banana is not actually a tree — it is the world's largest herb.
- Its "trunk" is made from tightly packed leaf sheaths.
- A banana plant can produce one large bunch of ban lifetime.
- After producing fruit, the main plant usually dies, but new shoots grow from its
- The banana flower is called banana blossom and can also be used as food.
- Banana plants contain a lot of water and grow well in warm, humid climates.

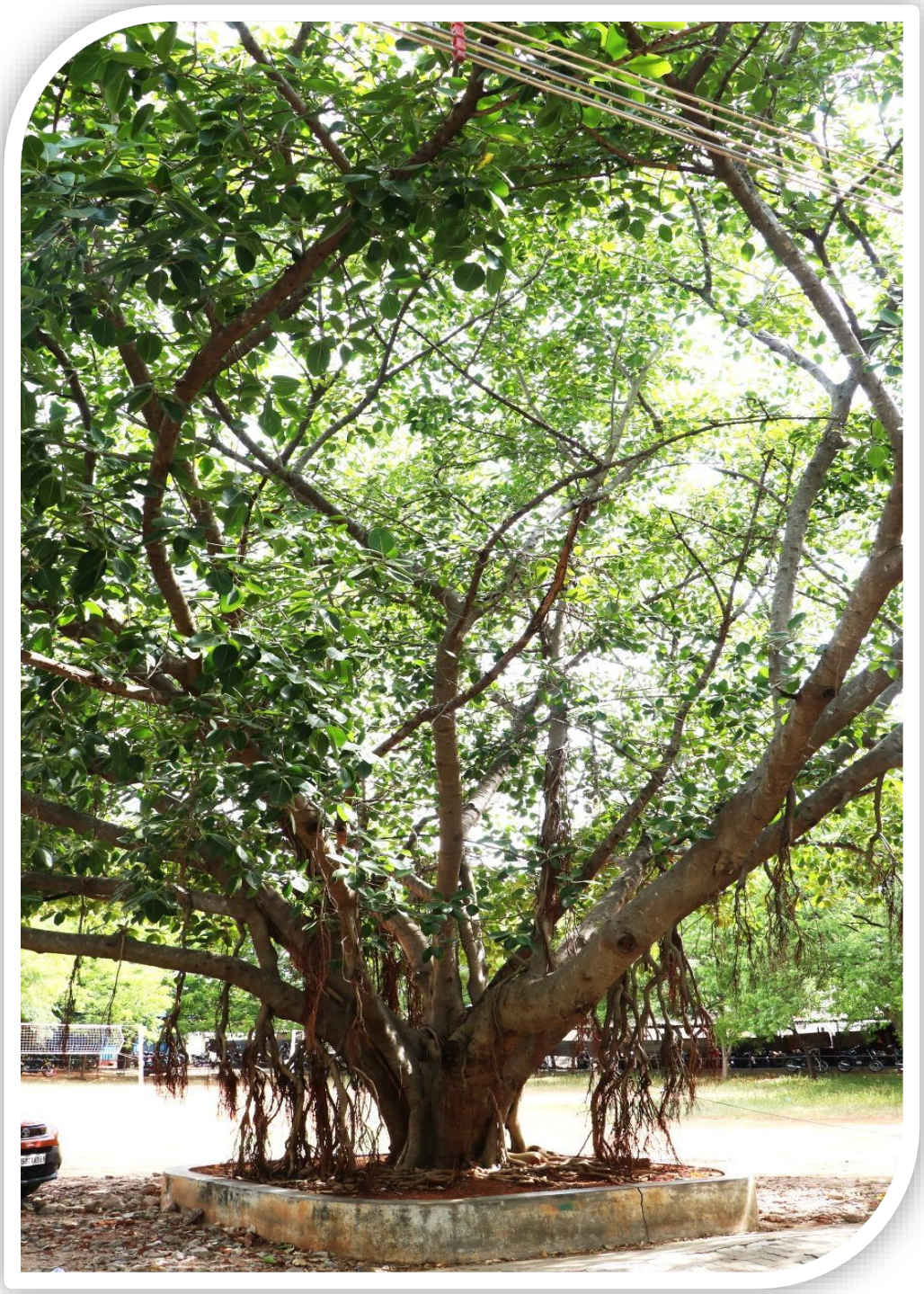
“Banana Uses.”



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BANYAN TREE

(ஆலமரம்)



“My Roots Tell the Stories of Our Past, and My Branches Embrace the Future.”

Botanical Name : ***Ficus benghalensis***

English Name : ***Banyan Tree***

Tamil Name : **ஆலமரம்**

Family : **Moraceae**

SIGNIFICANCE:

- Environmental Importance: It provides shade and helps support biodiversity.
- Home for Animals: Its branches and leaves provide shelter and food for birds, insects, and other animals. Cultural Significance: The banyan tree holds a special place in Indian culture and traditions.
- Religious Importance: It is considered sacred in Hinduism and is associated with Lord Shiva and Lord Vishnu.
- National Symbol: The banyan tree is the national tree of India.
- Medicinal Value: Various parts of the banyan tree have been used in traditional medicine.
-

SCIENTIFIC IMPORTANCE:

- Scientific Name: Ficus benghalensis
- Photosynthesis: The banyan tree uses sunlight, water, and carbon dioxide to prepare its own food and release oxygen.
- Aerial Roots: It produces aerial roots from its branches. These roots grow down into the soil and develop into supporting trunks.
- Pollination: Tiny fig wasps help pollinate its flowers, forming a special relationship with the tree.
- Biodiversity: Its branches and canopy provide shelter for birds, insects, and other animals.
- Carbon Storage: The banyan tree absorbs carbon dioxide and stores carbon in its trunk, branches, and roots

INTERESTING FACTS:

- Largest Canopy: The banyan tree can spread over a very large area.
- Aerial Roots: Its branches grow roots that hang down towards the ground.
- Natural Support: These roots grow into the soil and become extra trunks.
- Long Life: A banyan tree can live for hundreds of years.
- National Tree: The banyan tree is the national tree of India.
- Birds and Animals: It provides food and shelter for birds, insects, and other animals.

"Unlock the Secrets of the Banyan Tree"



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CHRISTMAS TREE

(கிறிஸ்துமஸ் மரம்)



Celebrate Christmas with Greenery, Protect Nature for the Future!

Botanical Name : *Araucaria heterophylla*

Family : Araucariaceae

Tamil Name : கிறிஸ்துமஸ் மரம்

English Name : Norfolk Island Pine / Christmas Tree

SIGNIFICANCE

- The Christmas Tree, commonly known as the Norfolk Island Pine, is widely grown as an ornamental tree because of its beautiful, cone-shaped appearance.
- It is especially popular during Christmas celebrations, when its branches are decorated with colourful lights, stars, bells and ornaments.
- The tree remains green throughout the year and adds beauty to gardens, parks, homes and college campuses.
- Its symmetrical branches and straight trunk make it an attractive tree for landscaping and decoration.
- The tree provides greenery and contributes to the beauty of the surrounding environment.
- It is cultivated in tropical and subtropical regions as an ornamental plant.
- The tree is also valued for its wood, which has been used for construction and other purposes.

SCIENTIFIC IMPORTANCE

- The Christmas Tree belongs to the Araucariaceae family and is an evergreen coniferous tree.
- It is a gymnosperm, which means it produces seeds in cones rather than inside fruits. Its branches grow in regular horizontal layers around a straight central trunk.
- The leaves are small, green and closely arranged along the branches.
- The tree produces male and female cones that play an important role in reproduction. It grows well in suitable warm climates and well-drained soil.
- Its root system helps anchor the tree firmly in the soil.
- The tree contributes to the environment by providing greenery and shelter for some birds and small organisms.

INTERESTING FACT

- It is commonly known as the Norfolk Island Pine or Living Christmas Tree.
  The tree is native to Norfolk Island in the Pacific Ocean.
- Although it is called a pine, it is not a true pine tree.
- Its branches grow in beautiful, symmetrical layers, giving it a natural Christmas tree shape.
- The tree remains green throughout the year because it is evergreen.
- Young Norfolk Island Pines can be grown in pots and used as living Christmas trees.
  The tree can grow very tall in its natural habitat.
- Its leaves change in appearance as the tree grows older.
- The tree is widely planted in gardens, parks, institutions and college campuses.
- Its natural cone-shaped appearance makes it popular for Christmas decorations.

"Step Into the World Christmas Tree Scan"



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CUSTARD APPLE

(சீதாப்பழம்)



Trees are the lungs of the Earth!

Botanical Name : ***Annona squamosa***

Family : **Annonaceae**

Tamil Name : **சீதாப்பழம்**

English Name : **Custard Apple**

IKS SIGNIFICANCE

- In Ayurveda, custard apple is known as Seetaphala and is traditionally valued for nourishment and strength.
- In Siddha medicine, its leaves and seeds have been used in traditional remedies.
- In some Indian traditions, custard apple is considered a seasonal fruit and is offered during festivals.
- In folk medicine, leaf paste has traditionally been used for wound care and skin problems.
- The fruit is traditionally believed to have cooling properties and is enjoyed during summer.

SCIENTIFIC IMPORTANCE

- Custard apple is rich in Vitamin C, Vitamin B6, potassium, magnesium and dietary fibre.
- It contains natural antioxidants that help protect the body's cells from damage.
- Some scientific studies show that its plant extracts have potential anti-inflammatory and antidiabetic properties.
- Its leaves contain natural compounds called acetogenins, which have potential insecticidal properties.
- Its seed powder has potential uses as a natural biopesticide in organic farming.

INTERESTING FACT

- Custard apple is a sweet and delicious seasonal fruit.
- It is green on the outside and white and creamy on the inside.
- It contains many black seeds inside its soft pulp.
- It is a nutritious fruit that provides energy to our body.
- It is also known as Sitaphal in India.
- Its botanical name is Annona squamosa.

“Scan and See my custard apple tree magic! “



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MARAMALLIGAI TREE

(மரமல்லிகை)



I bloom mostly at night

Botanical Name : ***Tabernaemontana***

Family : **Apocynaceae**

Tamil Name : **மரமல்லிகை**

English Name : **Crape Jasmine/ Pinwhell flower**

IKS SIGNIGICANCE:

- The tree has a special place in Indian traditional culture.
- Fragrant flowers are used for decorating temples.
- Flowers are associated with purity and freshness.
- The tree is traditionally valued in Ayurveda and Siddha practices.
- It is commonly planted near homes and temples.

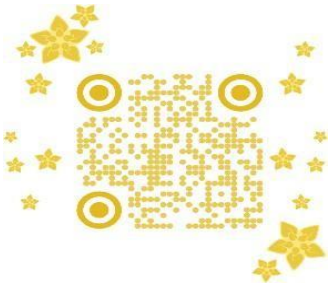
SCIENTIFIC IMPORTANCE:

- The botanical name is Millingtonia hortensis.
- It belongs to the Bignoniaceae family.
- It is a fast-growing evergreen tree.
- Its leaves are green and compound.
- Its flowers are white and trumpet-shaped.
- Its seeds have wings that help them spread through the wind.
- The tree provides shade and supports urban greenery.
- Its flowers attract insects and other pollinators.

INTERESTING FACT:

- The tree is also called the Indian Cork Tree.
- It can grow up to 15–25 metres tall.
- Its flowers produce a sweet fragrance.
- Flowers bloom at night and fall in the early morning.
- Its leaves look similar to neem leaves.
- Its fruits are long, narrow capsules.
- Birds can help in spreading its seeds.
- It is commonly planted along roadsides and in gardens.

“ONCE SCAN MANY NATURAL WONDERS”



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DRUMSTRICK TREE

(முருங்கை மரம்)



Protect a tree today and tomorrow will breathe easier

Botanical Name : *Moringa oleifera*

Family : Moringaceae

Tamil Name :முருங்கைமரம்

English Name : **Drumstick Tree**

SIGNIFICANCE

- It is known as the Miracle Tree because many of its parts are useful.
- In traditional Indian medicine, it has been used to help with joint pain and digestive problems.
- Its leaves are rich in Vitamin C, calcium and other important nutrients.
- Its pods (drumsticks) and leaves are commonly used in Indian cooking, especially in sambar.

SCIENTIFIC IMPORTANCE

- It contains natural compounds that have anti-inflammatory and antibacterial properties.
- The tree is a rich source of antioxidants, which help protect the human body from cell damage.
- Its seeds are scientifically used for natural water purification.
- The drumstick tree grows quickly, even in dry conditions and poor soil, making it environmentally important.

INTERESTING FACT

- Almost every part of this tree has traditional uses, although not all parts are safe to eat.
- It has been used in traditional Indian medicine, including Ayurveda, for centuries.
- It is a fast-growing tree.
- Its long, edible pods are called drumsticks.
- It is commonly found in many parts of India.

“Tiny Code Big Information.”



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NEEM TREE

(வேம்பு மரம்)



Neem Gives Us Life, naturally!

Botanical Name : *Azadirachta indica*

Family : Meliaceae (மமலிவேசிவே)

Tamil Name : வேம்பு / வேப்பமரம்

EnglishName : Neem Tree

SIGNIFICANCE

- Neem is known as a natural medicinal tree.
- Its leaves, bark, flowers, fruits and seeds have traditional uses.
- It is valued for its antibacterial and insect-repellent properties.
- Neem provides shade and helps support the local environment.
- It has an important place in Indian traditional knowledge and culture.

SCIENTIFIC IMPORTANCE

- Neem contains natural compounds such as azadirachtin, which has insect repellent properties.
- Neem-based compounds are widely studied for natural pest management.
- Neem oil contains several biologically active compounds and is used in scientific research.
- Neem has been studied for its antimicrobial and antioxidant properties.

INTERESTING FACTS

- Neem has been used in Indian traditional practices for thousands of years.
- Neem seeds contain azadirachtin, a natural compound that helps control many insects.
- Almost every part of the neem tree—leaves, bark, flowers, fruits and seeds—has traditional uses.
- Neem oil is extracted from neem seeds and is used in various agricultural and personal-care products.

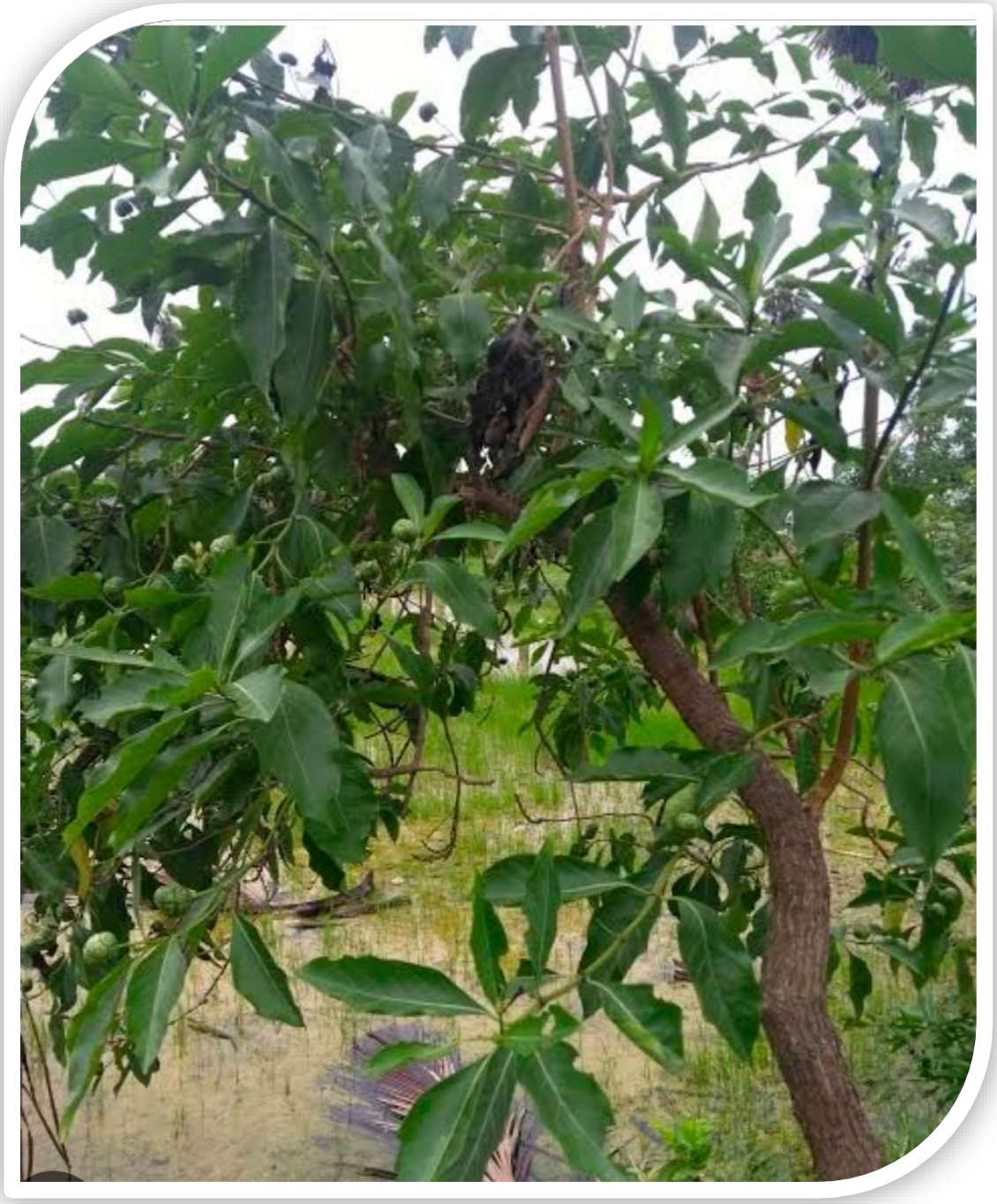
One Scan, Infinite Possibilities



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INDIAN MULBERRY / BRIMSTO NE TREE

(நுணா)



Plant a tree today, grow a better tomorrow!

Botanical Name : *Morinda citrifolia* L.

Family : Rubiaceae

Tamil Name : நுணா (Nuna)

English Name : Indian Mulberry (Noni)

SIGNIFICANCE:

- Traditionally used in Indian and Southeast Asian cultures for various purposes.
- The fruit, leaves, bark, and roots have been used in traditional practices.
- The tree is useful as a food, medicinal, and cultural plant.
- It can grow in tropical climates and tolerate relatively difficult soil conditions.
- It also provides shelter and food resources for some organisms.

SCIENTIFIC IMPORTANCE:

- Botanical name: Morinda citrifolia L.
- Family: Rubiaceae
- Genus: Morinda
- Plant type: Evergreen shrub or small tree.
- Leaves: Large, broad, glossy, and arranged opposite each other.
- Flowers: Small, white flowers grouped into rounded flower heads.
- Fruit: A multiple fruit formed from many small flowers; it develops a distinctive bumpy surface.
- Pollination: Flowers can be visited by insects and other pollinators.
- Chemical compounds: The plant contains various naturally occurring compounds such as iridoids, flavonoids, and phenolic compounds, which are studied in phytochemistry.

INTERESTING FACTS:

- Is commonly known as Indian Mulberry or Noni.
- Its fruit has a strong smell, especially when fully ripe.
- The tree can produce flowers and fruits almost throughout the year in suitable climates.
- Its flowers attract insects and other pollinators.
- The fruit has been used in traditional practices in several tropical regions.
- The plant has been valued traditionally for natural dyes, especially from its roots and bark.
- It is a hardy tropical plant and can grow in different soil conditions

"SCAN ME & DISCOVER SOMETHING SPECIAL!"



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HUMMINGBIRD TREE

(அகத்தி மரம்)



"Trees give us life, shade, and hope."

Botanical Name : *Sesbania grandiflora*

Family : Fabaceae

Tamil Name : அகத்தி மரம்

English Name : Agathi Tree / Hummingbird Tree

SIGNIFICANCE

- Agathi has been valued in South Indian traditional knowledge for generations, particularly for its role in food, household practices, and traditional medicine.
- Its young leaves and flowers are commonly included in traditional cooking, making the tree an example ofhow plants can provide both cultural and nutritional value.
- The plant is associated with Siddha traditions, where different parts have been traditionally recognized for their useful properties.
- Growing Agathi around farms and home gardens reflects the traditional practice of maintaining useful trees close to everyday life.

SCIENTIFIC IMPORTANCE

- Agathi (Sesbania grandiflora) is a fast-growing leguminous tree that can contribute to soil health through biological nitrogen fixation.
- Its ability to add nitrogen to the soil makes it useful in agroforestry and farming systems where maintaining soil fertility is important.
- The leaves and flowers can be consumed as food and provide nutrients, showing the plant's value beyond its ecological role.
- Because it grows quickly and produces substantial green biomass, Agathi can be useful in sustainable agricultural practices.

INTERESTING FACT

- Agathi is commonly known in English as the Hummingbird Tree and its botanical name is Sesbania grandiflora.
- The tree produces attractive flowers that may be white, pink, or reddish depending on the variety.
- Unlike many large trees, Agathi grows relatively quickly and can become useful within a comparatively short period.

"Scan it. Access it. Explore it...



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CONCLUSION

Roots of Knowledge: Discovering Campus Trees Through IKS and AI represents a meaningful effort to connect nature, traditional wisdom, scientific understanding and modern technology through student participation.

The documentation of campus trees has provided students with an opportunity to explore plant diversity and understand the importance of trees in maintaining ecological balance. By studying their botanical identities, characteristics, traditional uses and environmental contributions, students have developed a greater appreciation of the natural resources present in their own learning environment.

The integration of Indian Knowledge Systems has helped highlight the relationship between plants and traditional Indian life, while scientific information has provided a foundation for understanding their botanical and ecological significance. The use of Artificial Intelligence as a supporting tool has further introduced students to emerging digital approaches for information exploration, organisation and knowledge presentation.

The collective contribution of 48 - I CS students and 39 - III BCA students demonstrate the value of teamwork, creativity and learning through academic assignments. This publication is not simply a compilation of information about trees; it is also a record of student involvement, collaborative learning and the application of interdisciplinary knowledge.

We hope this initiative encourages students to observe their surroundings more carefully, recognise the importance of biodiversity and take an active interest in environmental conservation. We also hope that the book inspires further student projects that combine Indian Knowledge Systems, scientific inquiry and emerging technologies.

Ultimately, knowledge becomes meaningful when it leads to awareness, responsibility and action. May this publication remind every reader that protecting nature begins with understanding and appreciating the living world around us.

About the Editor



Dr. A. Kalaiselvi serves as an Assistant Professor in the Department of Computer Science and Applications at Arul Anandar College (Autonomous), Karumathur. She holds an M.Sc. in Computer Science (First Rank Holder), B.Ed., M.Phil. in Cloud Computing, and a Ph.D. in Cloud Computing from Bharathidasan University, Tiruchirappalli. She has also qualified the State Eligibility Test (SET). She completed her higher studies at Madurai Kamaraj University and Bharathidasan University. With over seven years of teaching experience in higher education, she is actively involved in teaching undergraduate and postgraduate students in the field of Computer Science. Her research interests include Cloud Computing, Internet of Things (IoT), Artificial Intelligence, and Cybersecurity. She has published several research papers indexed in Web of Science (WoS) and Scopus, and has presented her research at various national and international conferences. She also contributes as an editor and author for academic books and conference proceedings, reflecting her dedication to scholarly advancement and knowledge dissemination. She is committed to promoting a strong research culture among students by encouraging participation in academic activities such as research publications, conferences, and scholarly projects. Through her teaching, mentoring, and guidance, she continuously strives to enhance students' academic excellence, research aptitude, and professional development



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