Ecological Significance of Tree Flora in NEERI Smriti Van

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Forward

The degradation of natural ecosystems and the rapid pace of urbanization have brought biodiversity conservation to the forefront of global environmental priorities. Trees, the most enduring elements of terrestrial ecosystems, not only define landscapes but also sustain the delicate balance of life on Earth. Their ecological services from carbon sequestration and air purification to soil stabilization and habitat creation are indispensable in mitigating the impacts of climate change and maintaining environmental quality. Against this backdrop, the present work, **"Ecological Significance of Tree Flora in NEERI Smriti Van"** is both timely and significant. Smriti Van, located within the CSIR-National Environmental Engineering Research Institute (NEERI) campus at Nagpur, stands as a living symbol of ecological restoration and scientific stewardship. Conceived as a green sanctuary to commemorate and conserve, it has evolved into a vibrant ecosystem supporting a rich diversity of tree species. The author's meticulous documentation of 123 species belonging to 102 genera and 41 families provides not only a floristic inventory but also an ecological narrative that underscores the resilience and vitality of urban green spaces. Of particular importance is the inclusion of conservation assessments following IUCN Red List criteria, revealing the presence of Critically Endangered, Endangered, Vulnerable, and Near Threatened species within the campus. This finding demonstrates that institutional green zones like Smriti Van are not merely ornamental landscapes but critical refugia for threatened biodiversity. Such spaces embody the concept of "urban conservation," integrating ecological function with human purpose.

This book goes beyond species listing, it weaves a comprehensive account of the ecological, environmental, and educational significance of trees. It articulates how each species contributes to maintaining the local ecosystem through carbon sequestration, air quality improvement, microclimate regulation, and faunal support. It also highlights the broader implications of conserving tree diversity in urban-industrial environments, aligning perfectly with India's national objectives under the United Nations Sustainable Development Goals (SDGs). The documentation of Smriti Van's flora is not just a scientific contribution but an act of environmental foresight. It emphasizes that even within human-dominated landscapes, nature can thrive if managed with vision and care. The work

exemplifies CSIR-NEERI's longstanding commitment to environmental research, green technology, and sustainable urban development.

I commend the author for this valuable contribution to botanical science and ecological understanding. The book will serve as a resource for researchers, students, planners, and environmentalists alike, offering a model of how biodiversity documentation and ecological interpretation can merge to support conservation action. It is my hope that this work will inspire similar biodiversity assessments in other institutional and urban ecosystems, ultimately contributing to a greener, more resilient future.

Dr. S. Venkata Mohan
Director,
CSIR- NEERI Nagpur, India

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We also express our sincere appreciation to Dr. M.P. Patil, Head of the Solid and Hazardous Waste Management Division, for his invaluable support throughout this endeavor. We would like to extend our heartfelt gratitude to the Eco-Rejuvenation team for their dedication, passion, and hard work. Your unwavering commitment and the countless hours of meticulous research and collaboration have been the driving force behind this publication.

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Last but not least, I extend my heartfelt thanks to my wife whose constant support and encouragement have been a source of strength throughout this journey. Without her, this book would not have been possible. Finally, we are deeply thankful to the communities who shared their knowledge and experiences.

Contents

Preface

Trees have always occupied a central place in human culture and ecological thought. They are not only the most visible and enduring components of our landscapes but also the very foundation of terrestrial ecosystems. They sustain biodiversity, regulate the environment, and provide resources that have supported human societies since time immemorial. At the same time, trees carry deep cultural and spiritual meanings, reflected in traditions, rituals, and philosophies across civilizations. The inspiration for this book stems from the unique green landscape of Smriti Van, situated within the campus of the CSIR-NEERI, Nagpur. Smriti Van is not just a plantation; it is a living repository of biodiversity, established with the vision of creating a space for conservation, remembrance, and ecological restoration. Over time, it has become a microcosm of tree diversity, representing a harmonious blend of native and exotic species. While serving as a site for commemoration and reflection, Smriti Van simultaneously contributes to ecological balance by offering habitat for birds and insects, sequestering carbon, moderating the local climate, and enriching the soil through natural processes.

During extensive fieldwork and floristic documentation, I recorded a total of 123 tree species representing 102 genera and 41 families within Smriti Van. This remarkable assemblage demonstrates the resilience and ecological potential of institutional green belts. While urban and industrial landscapes are often associated with biodiversity loss and ecological degradation, Smriti Van stands as a testimony to the opposite that with vision and commitment, even anthropogenically influenced spaces can emerge as significant centers of biodiversity conservation. The present study, *"Ecological Significance of Tree Flora in NEERI Smriti Van,"* has been conceptualized with the aim of documenting this diversity and interpreting its ecological functions. It is intended as both a scientific record and an educational resource. The documentation of 123 species is more than a checklist; it provides taxonomic description as well as insights into the ecological roles of trees in urban-industrial settings. Each species contributes uniquely whether by fixing atmospheric nitrogen, enhancing soil fertility, absorbing pollutants, stabilizing soils, or providing food and shelter to faunal communities. Together, they form a complex ecological network that sustains life within the campus and beyond.

The idea of writing this book also reflects a personal journey. As an environmental botanist

with training in plant taxonomy, floristic studies, and ecological research, I have always been fascinated by the hidden diversity that exists around us, often unnoticed in our daily lives. Smriti Van became both a research site and a source of inspiration. Each field visit revealed new patterns of flowering and fruiting, bird-plant interactions, and the resilience of species in the face of environmental stresses. What might appear to be just a plantation to a casual observer unfolded, through careful observation, into a vibrant ecosystem teeming with ecological processes. This book is therefore not limited to taxonomy alone. While species identification and classification form the backbone, equal emphasis is placed on the ecological significance of the flora. The role of trees in carbon sequestration, air purification, soil health improvement, and biodiversity conservation is highlighted in order to create an integrated understanding of their value. Such an approach is crucial in today's context of climate change, environmental degradation, and loss of green cover. By focusing on Smriti Van, this book hopes to demonstrate how relatively small patches of greenery in urban-industrial areas can deliver disproportionately large ecological benefits.

Another distinctive feature of this work is its potential application in policy and environmental management. With India's commitment to biodiversity conservation and climate action, institutional landscapes such as NEERI's Smriti Van can be models for green campus development. Documenting and showcasing their biodiversity not only enhances scientific knowledge but also supports initiatives like urban forestry, smart city planning, and green belt development. The findings from this book can thus serve as a reference point for planners, researchers, students, and conservationists interested in replicating similar efforts in other parts of the country. This book is also a contribution to environmental education. Students of botany, ecology, and environmental science often learn plant taxonomy and ecology in isolation, without seeing their integration in real landscapes. Smriti Van provides a living classroom where one can simultaneously study plant identification, ecological processes, and ecosystem services. I hope that this book will serve as a guide and inspiration for students to engage more deeply with field-based learning, encouraging them to see green spaces not just as background scenery but as complex systems that sustain life.

Dr. Lal Singh

Introduction

Trees, the most prominent and long standing components of terrestrial ecosystems, form the structural and functional support of landscapes across the earth. They are not only components of vegetation, but also living reservoirs of biodiversity, climate regulators, and providers of ecosystem services that sustain human societies. In both natural and anthropogenically influenced ecosystems, tree diversity plays a crucial role in maintaining ecological stability, regulating biogeochemical cycles, and sustaining a variety of faunal communities. From tropical rainforests to dry deciduous woodlands, trees anchor the ecological fabric by contributing to nutrient cycling, carbon sequestration, soil fertility, and hydrological balance. At the same time, they provide timber, fuel wood, fodder, fruits, medicines, and cultural values that are deeply rooted in local populations' daily lives.

The global significance of tree diversity has gained increasing attention in the wake of climate change, habitat loss, and urban expansion. Forests harbor more than 80% of terrestrial species, and trees form the dominant life form in these ecosystems. However, biodiversity assessments often reveal alarming trends of decline due to deforestation, over-exploitation, invasive species, and pollution. In this context, documenting and understanding the diversity of trees in any landscape becomes a vital step toward conservation and sustainable management. Trees not only provide substantial resources but also play imperceptible roles in regulating microclimate, reducing atmospheric pollutants, and offering psychological and aesthetic benefits to human societies. Their ecological significance extends beyond the boundaries of forests into urban landscapes, agricultural mosaics, and industrial campuses, where they help mitigate the adverse impacts of human activities.

The state of Maharashtra, particularly the Nagpur region, is endowed with a rich diversity of tropical dry deciduous forests, scrub lands, and semi-evergreen patches. The climate, characterized by hot summers, monsoon rains, and mild winters, provides a suitable environment for a wide array of tree species adapted to both moist and dry conditions. In recent years, the importance of documenting tree diversity in urban-industrial ecosystems has gained prominence. Industrial establishments, research institutes, and urban green belts represent unique habitats where native and exotic tree species coexist. Such landscapes not only serve ecological functions but also demonstrate the role of planned plantations in biodiversity conservation, microclimate regulation, and pollution mitigation. Within this framework, the CSIR National Environmental Engineering Research Institute (NEERI), Nagpur, stands as a living example of how an industrial-research campus can harbor remarkable tree diversity.

Tree Diversity at CSIR-NEERI, Nagpur

The present book,"Tree Diversity and Their Ecological Significance," is based on a comprehensive survey and documentation of trees occurring within the CSIR-NEERI campus, Nagpur. Through systematic field investigations, a total of 123 tree species representing 102 genera and 41 families were recorded. This inventory not only highlights the floristic richness of the campus but also reflects the ecological strategies of native and exotic species that thrive under the prevailing edaphic and climatic conditions.

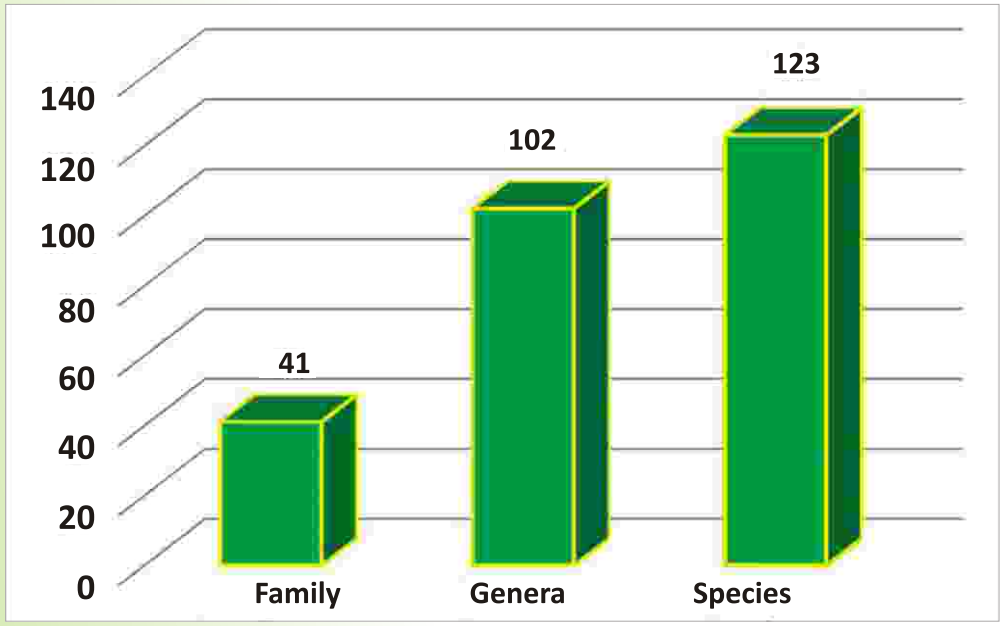


Fig. 1. Status of Families, Genera and Species

The diversity spans across a wide range of families, including the ecologically dominant Fabaceae, Anacardiaceae, Moraceae, Apocynaceae, and Combretaceae, as well as several rare and less-represented families. Many of these species play multiple ecological roles such as nitrogen fixation (e.g., members of Fabaceae), carbon sequestration, provision of food and shelter for birds and insects, and regulation of the soil-water regime. Several species hold ethnobotanical significance, being used in traditional medicine, rituals, and local livelihoods. At the same time, certain exotic species have been intentionally introduced to enhance greenery, stabilize soils, and improve aesthetic and environmental quality within the campus.

This floristic documentation serves as a baseline for understanding ecological processes operating in the urban-industrial landscape of Nagpur. The coexistence of species with

varied life history traits evergreen, deciduous, shade-tolerant, drought-resistant illustrates the resilience of the tree community in maintaining ecological functions under diverse stressors.

Ecological Significance of Tree Diversity

The ecological roles of trees extend across multiple spatial and functional scales. At the local scale, tree canopies regulate microclimate by lowering air temperature, providing shade, and reducing surface heat radiation a function particularly vital in urban and industrial settings where heat islands prevail. Trees intercept particulate matter, absorb gaseous pollutants such as SO_2, NOx, and CO_2, and thus contribute to air purification. Species like *Azadirachta indica* (neem), *Ficus benghalensis*, *Polyalthia longifolia* (False Ashok) and different type of bamboo species are well recognized for their pollution-ameliorating properties.

At the landscape scale, trees contribute to soil stabilization through root systems that prevent erosion, enhance water infiltration, and recycle nutrients through litter deposition. The leaf litter and organic matter enrich soil fertility, supporting the growth of under story plants and microorganisms. In addition, the structural complexity provided by tree crowns and branches creates diverse niches for birds, bats, insects, and epiphytes, thereby fostering overall biodiversity.

From a global perspective, trees are indispensable agents of carbon sequestration, mitigating greenhouse gas emissions and buffering the impacts of climate change. Forests and tree-dominated landscapes act as carbon sinks, storing large amounts of carbon in biomass and soil. In urban settings, individual trees collectively contribute to significant carbon storage and energy savings by reducing cooling demands.

The ecological significance also encompasses cultural and psychological domains. Sacred groves, urban parks, and institutional green belts often serve as refuges of spiritual and aesthetic values. Trees like Peepal (*Ficus religiosa*), Mango (*Mangifera indica*), and Banyan (*Ficus benghalensis*) hold deep religious symbolism in Indian traditions, reinforcing the link between biodiversity and cultural identity. Research institutes such as CSIR-NEERI exemplify how maintaining tree diversity within campuses not only enhances ecological sustainability but also provides a conducive environment for research, education, and well-being.

Objectives of the Book

This book is envisioned as a comprehensive account of tree diversity and their ecological

significance, with a special emphasis on the floristic assemblage at CSIR-NEERI, Nagpur. The primary objectives are:

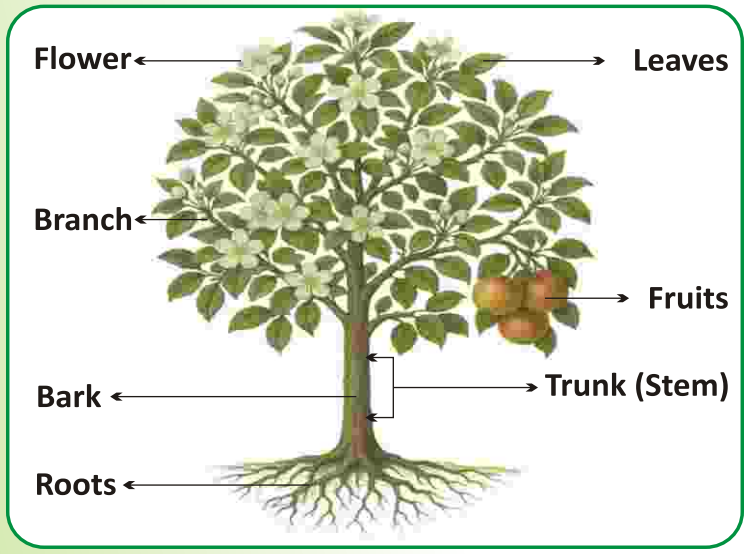
1. To document and describe the diversity of tree species recorded within the campus.
2. To highlight the ecological roles and functions of these species in maintaining environmental quality.
3. To provide a baseline resource for researchers, students, policy makers, and conservationists interested in urban and institutional biodiversity.

By integrating taxonomic details with ecological insights, the book aspires to bridge the gap between floristic documentation and ecological interpretation. It underscores the message that tree diversity is not merely an academic record but a living system of immense ecological, social, and economic significance.

The documentation of 123 species under 102 genera and 41 families at CSIR-NEERI, Nagpur, is more than a floristic exercise; it is a testimony to the resilience of biodiversity in human-dominated landscapes. As global challenges such as climate change, deforestation, and environmental degradation intensify, understanding and conserving tree diversity becomes urgent. This book aims to contribute to that endeavor by providing a detailed account of the species richness and ecological services offered by trees, thereby fostering awareness, conservation, and sustainable management of biodiversity within and beyond institutional boundaries.

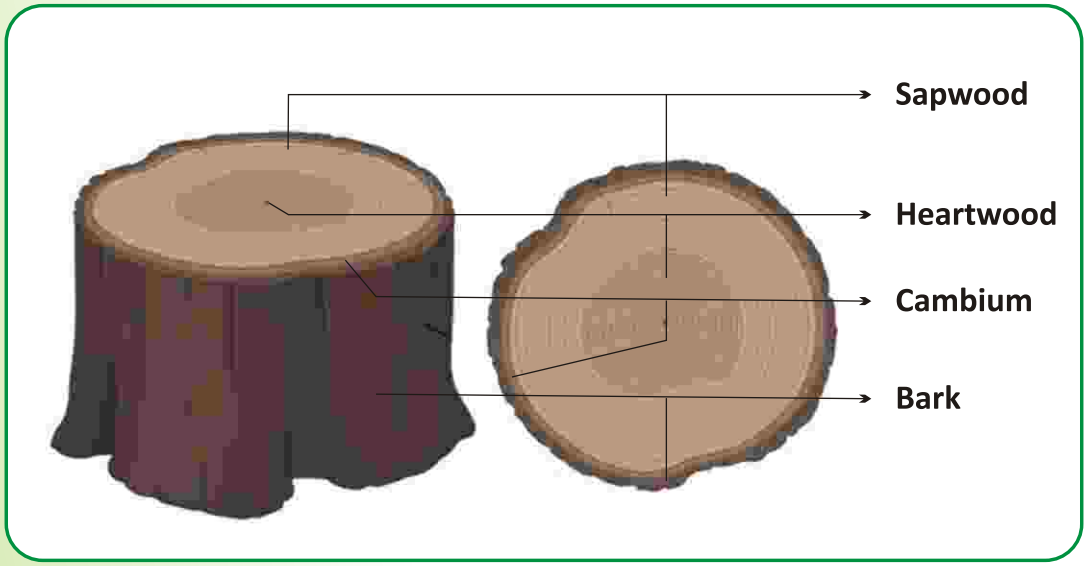
The Tree :

A tree is a perennial plant with an elongated stem or trunk, supporting branches and leaves. Trees are typically tall and can live for many years. They play a crucial role in producing oxygen, improving air quality, conserving water, and supporting wildlife.



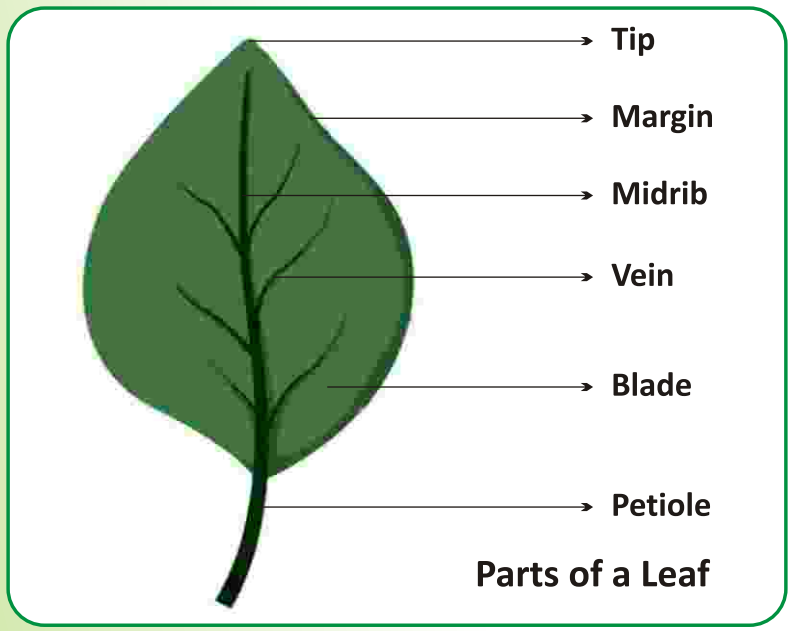
Anatomy of a Tree Trunk :

The trunk of a tree is more than just a stem it is a complex structure made up of several **layers**, each with a specific function that supports the tree's life.



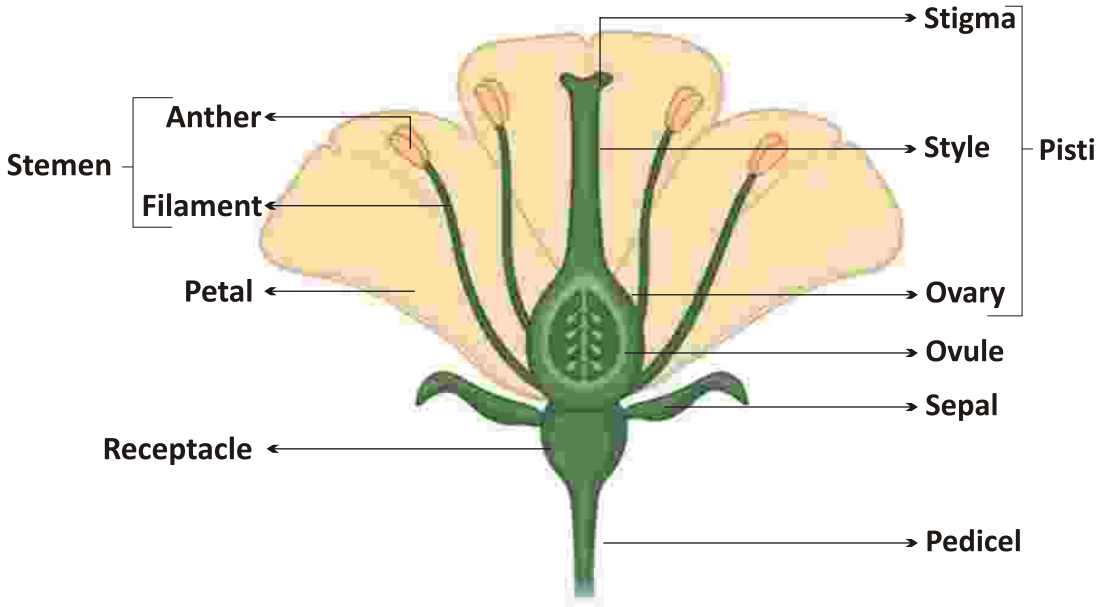
Leaf :

A leaf is a flat, green, and typically thin part of a plant that grows from the stem or branch. It is the main site of photosynthesis, where the plant makes its food by using sunlight, carbon dioxide, and water.



Flower :

A flower is the reproductive part of a flowering plant. It is often colourful and fragrant to attract pollinators like bees and butterflies. Flowers contain the organs for sexual reproduction, enabling the plant to produce seeds and fruit.



Parts of a Flower

Conservation Status of Tree Species

Smriti Van, CSIR-NEERI, Nagpur, provides a crucial perspective on their ecological significance and conservation priorities. Out of the 123 species (under 102 genera and 41 families), the distribution across categories reflects both ecological stability and emerging threats. The majority of individuals belong to the Least Concern (95 individuals) and Not Evaluated (14 individuals) categories. Maintaining their genetic diversity is essential for long-term ecosystem resilience and human well-being. In contrast, a smaller but highly significant proportion of species belong to threatened categories. Notably, one species (Commiphora wightii) is classified as Critically Endangered, representing the highest risk of extinction in the wild. Similarly, two species (Cordia macleodii and Pterocarpus santalinus) are Endangered, largely due to unsustainable timber harvesting and habitat degradation. These categories reflect intense anthropogenic pressure and underscore the urgent need for conservation interventions. Additionally, five species (Mesua ferrea, Dalbergia latifolia,

Saraca asoca, Khaya senegalensis and Santalum album) are Vulnerable, facing elevated risks from selective logging, land-use change, and overexploitation. Their populations may decline further without sustainable management. Likewise, two species (Boswellia serrata and Swietenia mahagon) fall under the Near Threatened category, indicating that they are not yet in immediate danger but could move into higher threat categories if present trends continue. Interestingly, four species are recorded as Data Deficient, highlighting the lack of comprehensive global assessments for these taxa. This gap points to the importance of regional studies like Smriti Van, which help document ecological roles and conservation needs at local scales.

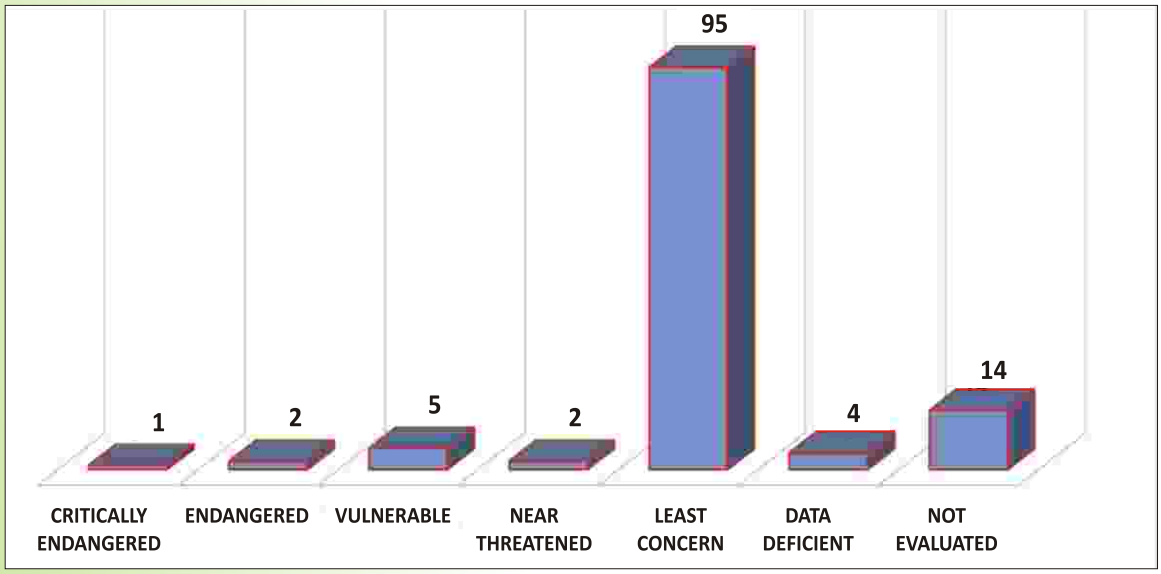


Fig. Conservation Status of Tree Flora in Smriti Van, CSIR-NEERI

This distribution demonstrates that while the majority of species are relatively secure, the presence of threatened and rare taxa enhances the biodiversity and conservation value of Smriti Van. Beyond being a green urban landscape, the site functions as a living repository of genetic resources, offering ecosystem services such as carbon sequestration, soil and water conservation, and microclimatic regulation. By aligning with the IUCN Red List framework, these findings not only highlight the current conservation status of tree species but also provide a scientific foundation for prioritizing actions. Protecting threatened species through habitat conservation, community engagement, and restoration initiatives is vital to ensure the long-term ecological health of Smriti Van and its role in sustaining biodiversity.

Table : List of Tree with Conservation status

S. No	Scientific Name	Family	IUCN Status
1	*Mangifera indica*	Anacardiaceae	Data Deficient
2	*Spondias pinnata*	Anacardiaceae	Least Concern
3	*Annona reticulata*	Annonaceae	Least Concern
4	*Annona squamosa*	Annonaceae	Least Concern
5	*Monoon longifolium*	Annonaceae	Least Concern
6	*Alstonia scholaris*	Apocynaceae	Least Concern
7	*Cascabela thevetia*	Apocynaceae	Least Concern
8	*Plumeria rubra*	Apocynaceae	Least Concern
9	*Cocos nucifera*	Arecaceae	Not Evaluated
10	*Phoenix sylvestris*	Arecaceae	Least Concern
11	*Roystonea regia*	Arecaceae	Least Concern
12	*Dolichandrone falcata*	Bignoniaceae	Least Concern
13	*Kigelia pinnata*	Bignoniaceae	Least Concern
14	*Millingtonia hortensis*	Bignoniaceae	Least Concern
15	*Oroxylum indicum*	Bignoniaceae	Least Concern
16	*Spathodea campanulata*	Bignoniaceae	Least Concern
17	*Tabebuia rosea*	Bignoniaceae	Least Concern
18	*Bixa orellana*	Bixaceae	Least Concern
19	*Cordia dichotoma*	Boraginaceae	Least Concern
20	*Cordia macleodii*	Boraginaceae	Endangered
21	*Ehretia laevis*	Boraginaceae	Data Deficient
22	*Boswellia serrata*	Burseraceae	Near Threatened
23	*Commiphora wightii*	Burseraceae	Critically Endangered
24	*Garuga pinnata Roxb.*	Burseraceae.	Least Concern
25	*Calophyllum inophyllum*	Calophyllaceae	Least Concern
26	*Mesua ferrea*	Calophyllaceae	Vulnerable
27	*Carica papaya*	Caricaceae	Data Deficient
28	*Casuarina equisetifolia*	Casuarinaceae	Least Concern
29	*Terminalia catappa*	Combretaceae	Least Concern
30	*Terminalia mantaly*	Combretaceae	Least Concern

31	*Terminalia pendula*	Combretaceae	Least Concern
32	*Alangium salviifolium*	Cornaceae	Least Concern
33	*Cycas revoluta*	Cycadaceae	Least Concern
34	*Dillenia indica*	Dilleniaceae	Least Concern
35	*Shorea robusta*	Dipterocarpaceae	Least Concern
36	*Elaeocarpus angustifolius*	Elaeocarpaceae	Least Concern
37	*Jatropha curcas*	Euphorbiaceae	Least Concern
38	*Ricinus communis*	Euphorbiaceae	Least Concern
39	*Albizia lebbeck*	Fabaceae	Least Concern
40	*Albizia odoratissima*	Fabaceae	Least Concern
41	*Albizia procera*	Fabaceae	Least Concern
42	*Bauhinia racemosa*	Fabaceae	Least Concern
43	*Bauhinia variegata*	Fabaceae	Least Concern
44	*Butea monosperma*	Fabaceae	Least Concern
45	*Cassia fistula*	Fabaceae	Least Concern
46	*Dalbergia latifolia*	Fabaceae	Vulnerable
47	*Dalbergia sissoo*	Fabaceae	Least Concern
48	*Delonix regia*	Fabaceae	Least Concern
49	*Erythrina suberosa*	Fabaceae	Least Concern
50	*Leucaena leucocephala*	Fabaceae	Least Concern
51	*Neltuma juliflora*	Fabaceae	Least Concern
52	*Peltophorum pterocarpum*	Fabaceae	Least Concern
53	*Pithecellobium dulce*	Fabaceae	Least Concern
54	*Pongamia pinnata*	Fabaceae	Least Concern
55	*Pterocarpus santalinus*	Fabaceae	Endangered
56	*Samanea saman*	Fabaceae	Least Concern
57	*Saraca asoca*	Fabaceae	Vulnerable
58	*Senna siamea*	Fabaceae	Least Concern
59	*Tamarindus indica*	Fabaceae	Least Concern
60	*Vachellia leucophloea*	Fabaceae	Least Concern
61	*Vachellia nilotica*	Fabaceae	Least Concern

62	*Tectona grandis*	Lamiaceae	Least Concern
63	*Camphora officinarum*	Lauraceae	Not Evaluated
64	*Cinnamomum tamala*	Lauraceae	Least Concern
65	*Persea americana*	Lauraceae	Least Concern
66	*Couroupita guianensis*	Lecythidaceae	Least Concern
67	*Lagerstroemia speciosa*	Lythraceae	Least Concern
68	*Punica granatum*	Lythraceae	Least Concern
69	*Bombax ceiba*	Malvaceae	Least Concern
70	*Grewia tiliifolia*	Malvaceae	Least Concern
71	*Pterospermum acerifolium*	Malvaceae	Least Concern
72	*Sterculia foetida*	Malvaceae	Least Concern
73	*Thespesia populnea*	Malvaceae	Least Concern
74	*Azadirachta indica*	Meliaceae	Least Concern
75	*Khaya senegalensis*	Meliaceae	Vulnerable
76	*Melia azedarach*	Meliaceae	Least Concern
77	*Soymida febrifuga*	Meliaceae	Least Concern
78	*Swietenia mahagoni*	Meliaceae	Near Threatened
79	*Artocarpus heterophyllus*	Moraceae	Least Concern
80	*Ficus arnottiana*	Moraceae	Not Evaluated
81	*Ficus auriculata*	Moraceae	Least Concern
82	*Ficus benghalensis*	Moraceae	Not Evaluated
83	*Ficus benjamina*	Moraceae	Least Concern
84	*Ficus hispida*	Moraceae	Least Concern
85	*Ficus krishnae*	Moraceae	Not Evaluated
86	*Ficus lyrata*	Moraceae	Least Concern
87	*Ficus racemosa*	Moraceae	Least Concern
88	*Ficus religiosa*	Moraceae	Least Concern
89	*Morus alba*	Moraceae	Least Concern
90	*Moringa oleifera*	Moringaceae	Least Concern
91	*Muntingia calabura*	Muntingiaceae	Least Concern
92	*Eucalyptus globulus*	Myrtaceae	Least Concern

93	*Melaleuca citrina*	Myrtaceae	Not Evaluated
94	*Psidium guajava*	Myrtaceae	Least Concern
95	*Syzygium aromaticum*	Myrtaceae	Not Evaluated
96	*Syzygium cumini*	Myrtaceae	Least Concern
97	*Syzygium samarangense*	Myrtaceae	Not Evaluated
98	*Nyctanthes arbor-tristis*	Oleaceae	Least Concern
99	*Bridelia retusa*	Phyllanthaceae	Least Concern
100	*Phyllanthus acidus*	Phyllanthaceae	Not Evaluated
101	*Phyllanthus emblica*	Phyllanthaceae	Least Concern
102	*Grevillea robusta*	Proteaceae	Least Concern
103	*Putranjiva roxburghii*	Putranjivaceae	Least Concern
104	*Ziziphus mauritiana*	Rhamnaceae	Least Concern
105	*Adina cordifolia*	Rubiaceae	Least Concern
106	*Gardenia resinifera*	Rubiaceae	Least Concern
107	*Mitragyna parvifolia*	Rubiaceae	Least Concern
108	*Morinda citrifolia*	Rubiaceae	Least Concern
109	*Morinda pubescens*	Rubiaceae	Least Concern
110	*Neolamarckia cadamba*	Rubiaceae	Not Evaluated
111	*Aegle marmelos*	Rutaceae	Least Concern
112	*Bergera koenigii*	Rutaceae	Least Concern
113	*Citrus aurantium*	Rutaceae	Not Evaluated
114	*Citrus sinensis*	Rutaceae	Not Evaluated
115	*Santalum album*	Santalaceae	Vulnerable
116	*Sapindus emarginatus*	Sapindaceae	Not Evaluated
117	*Schleichera oleosa*	Sapindaceae	Least Concern
118	*Madhuca indica*	Sapotaceae	Not Evaluated
119	*Manilkara zapota*	Sapotaceae	Least Concern
120	*Mimusops elengi*	Sapotaceae	Least Concern
121	*Ailanthus excelsa*	Simaroubaceae	Data Deficient
122	*Simarouba glauca*	Simaroubaceae	Least Concern
123	*Holoptelea integrifolia*	Ulmaceae	Least Concern

Family, genus and species keys for identification (Indented Keys)

Families Keys

1a. Plants with unbranched trunk:
  2a. Woody cones present.....14. Cycadaceae
  2b. Cones not present.....Arecaceae
1b. Plants with branched trunk:
  3a. Latex present:
    4a. Stamens epipetalous:
      5a. Corolla lobes twisted.....3. Apocynaceae
      5b. Corolla lobes not twisted.....39. Sapotaceae
    4b. Stamens not epipetalous:
      6a. Multiple fruits (syncarps.....26. Moraceae
      6b. Fruits not as above.....18. Euphorbiaceae
  3b. Latex absent:
    7a. Leaves with aromatic glands:
      8a. Stamens numerous.....29. Myrtaceae
      8b. Stamens 3-12.....21. Lauraceae
    7b. Leaves not aromatic:
      9a. Resin ducts, fruit drupe:
        10a. Leaf or leaflet margin entire.....1.Anacardiaceae
        10b. Leaf or leaflet margin not entire.....8.Burseraceae
      9b. Plant not as above:
      11a. Leaves reduced or scale-like.....11.Casuarinaceae
      11a. Leaves not reduced:
        12a. Simple leaves:
          13a. Alternate phyllotaxy:
            14a. Palmately lobed.....10. Caricaceae
            14b. Not palmately lobed:
              15a. Calyx persistent.....15. Dilleniaceae
              15b. Calyx not persistent:
                16a. Stamens in group.....24. Malvaceae
                16b. Stamens not in group:
                  17a. Fruits echinate; seeds with red fleshy testa.....6. Bixaceae
                  17b. Fruits not echinate:
                    18a. Perianth 3.....2. Annonaceae
                    18b. Perianth more than 3:
                      19a. Flowers in scorpioid cymes.....7. Boraginaceae
                      19b. Flowers not in scorpioid cymes:
                        20a. Disc present.....22. Lecythidaceae
                        20b. Disc absent:
                          21a. Plants armed.....34. Rhamnaceae

21b. Plants unarmed:
22a. Ovules pendulous.....13. Cornaceae
22b. Ovules not pendulous:
23a. Fruits winged:
24a. Persistent calyx lobes form wing.....16. Dipterocarpaceae
24b. Flattened wing develops from ovary wall.....41. Ulmaceae
23b. Fruits not winged:
25a. Leaf margin entire
26a. Stamens 4-5.....37. Santalaceae
26a. Stamens more than 5.....16.Elaeocarpaceae
25b. Leaf margin not entire:
27a. Fruits berry.....28.Muntingiaceae
27b. Fruits drupe.....33.Putranjivaceae
13b. Opposite or sub-opposite phyllotaxy:
28a. Stipules interpetiolar.....35. Rubiaceae
28b. Stipules not interpetiolar:
29a. Stamens many:
30a. Capsule with persistent calyx.....9. Calophyllaceae
30b. Capsule without calyx.....23. Lythraceae
29b. Stamens 2-5:
31a. Fruits winged.....12. Combretaceae
31b. Fruits not winged:
32b. Stamens 2.....30. Oleaceae
32a. Stamens 4.....20. Lamiaceae
12b. Compound leaves:
33a. Tripinnaty compound.....27. Moringaceae
33b. Uni or bipinnately compound:
34a. Flower zygomorphic:
35a. Fruits pod.....19. Fabaceae
35b. Fruits capsule:
36a. Trumpet-shaped flowers.....5. Bignoniaceae
36b. Trumpet-shaped flowers.....32. Proteaceae
34b. Flowers actinomorphic:
37a. Filaments of anther united into a tube.....25. Meliaceae
37b. Filaments not united:
38a. Stamens with scales at the base.....40. Simaroubaceae
38b. Stamens not as above:
39a. Plants with secretory cavities containing aromatic oil.....36. Rutaceae
39b. Plants without aromatic oil glands in leaves:
40a. Stigma lobed .....31. Phyllanthaceae
40b. Stigma not lobed.....38.Sapindaceae

Genus and species keys

1. Anacardiaceae

1a. Leaves simple.....*Mangifera*

1b. Leaves compound.....*Spondias*

2. Annonaceae

1a. Outer petals connivent.....*Annona*

1b. Outer petals spreading.....*Monooon*

Annona

1a. Fruits non-segmented.....*A. reticulata*

1b. Fruits segmented.....*A. squamosa*

3. Apocynaceae

1a. Leaves alternate:

2a. Leaves more than 20 cm long.....*Plumeria*

2b. Leaves upto 15 cm long.....*Cascabela*

1b. Leaves opposite.....*Alstonia*

4. Arecaceae

1a. Pericarp fibrous.....*Cocos*

1b. Pericarp not fibrous:

2a. Trunk covered with petiole bases.....*Phoenix*

2b. Trunk smooth.....*Roystonea*

5. Bignoniaceae

1a. Pinnately compound:

2a. Unipinnate:

3a. Flowers in lax panicles.....*Kigelia*

3b. Flowers in erect racemes:

4a. Corolla bright red or reddish orange.....*Spathodea*

4b. Corolla white.....*Dolichandrone*

2b. Bi or tripinnate

5a. Capsule up to 30 cm long.....*Millingtonia*

5b. Capsule more than 30 cm long.....*Oroxylum*

1b. Palmately compound.....*Tabebuia*

6. Bixaceae

Bixa orellana

7. Boraginaceae

1a. Style 4-fid.....*Cordia*

1b. Style 2-fid.....*Ehretia*

Cordia

1a. Calyx glabrous outside.....*C. dichotoma*

1b. Calyx pubescent outside.....*C. macleodii*

8. Burseraceae

1a. Large size tree:

2a. Leaflet hairy.....*Garuga*

2b. Leaflet not hairy.....*Boswellia*

1a. Small size tree.....*Commiphora*

9. Calophyllaceae

1a. Fruit drupe.....*Calophyllum*

1b. Fruit capsule.....*Mesua*

10. Caricaceae

Carica papaya

11. Casuarinaceae

Casuarina equisetifolia

12. Combretaceae

1a. Flowers in globose head.....*Terminalia pendula*

1b. Flowers in spike:

2a. Leaves up to 7 cm long.....*Terminalia mantaly*

2b. Leaves more than 9 cm long.....*Terminalia catappa*

13. Cornaceae

Alangium salviifolium

14. Cycadaceae

Cycas revoluta

15. Dilleniaceae

Dillenia indica

16. Dipterocarpaceae

Shorea robusta

17. Elaeocarpaceae

Elaeocarpus angustifolius

18. Euphorbiaceae

1a. Fruits echinates.....*Ricinus*

1b. Fruits smooth.....*Jatropha*

1. Fabaceae

1a. Leaves simple, lobed.....*Bauhinia*

1b. Leaves compound:

2a. Leaves bipinnate

3a. Inflorescence in dense heads or spikes:

4a. Flowers yellow:

5a. Inflorescence globose head.....*Vachellia*

5b. Inflorescence spike .....*Neltuma*

4b. Flowers not Yellow:

6a. Pod flat, not coiled:

7a. Flower pink.....*Samanea*

7b. Flower white:

8a. Leaves 10-20 cm long .....*Leucaena*

8b. Leaves more than 40 cm long.....*Albizia*

6b. Pods coiled.....*Pithecellobium*

3b. Inflorescence in racemes or panicles

9a. Flowers yellow.....*Peltophorum*

9b. Flowers red or orange.....*Delonix*

2b. Leaves unipinnate:

10a. Leaflets in pair:

11a.Flowers orange.....*Saraca*

11b. Flower yellow:

12a Flower pale yellow with red veins .....*Tamarindus*

12b. Flower bright yellow without veins:

13a. Stamens in equal length.....*Cassia*

13b. Stamens in unequal length.....*Senna*

10b. Leaflets unpaired:

14a. Leaflets three:

15a. Leaflet round at apex.....*Butea*

15b. Leaflet acute or acuminate at apex.....*Erythrina*

14b. Leaflets more than three:

16a. Leaflets arrangement alternate.....*Dalbergia*

16b. Leaflets arrangement opposite:

17a. Pods obliquely round.....*Pterocarpus*

17b. Pods elongated.....*Pongamia*

Albizia

1a. Mid-vein central; calyx teeth not distinct.....*A. odoratissima*

1b. Mid-vein not central; calyx teeth distinct:

2a. Flowers pedicellate; pods pale straw coloured.....*A. lebbek*

2b. Flowers sessile, pods brown. .....*A. procera*

Bauhinia

1a. Leaves broader than long.....*B. racemosa*

1b. Leaves longer than broad.....*B. variegata*

Dalbergia

1a. Leaflet apex round.....*D. latifolia*

1b. leaflet apex acute.....*D. sissoo*

Vachellia

1a.Bark blackish-grey to brown, pods constricted between seeds.....*V. leucophloea*

1b. Bark yellowish, young branches velvet, pods not constricted between seeds.....*V. nilotica*

20. Lamiaceae

Tectona grandis

21. Lauraceae

1a. Leaves aromatic when crushed, 3 prominent veins from base:

2a. Leaves broad, glossy; strong camphor smell.....*Camphora*

2b. Leaves lanceolate, leathery; spicy aroma.....*Cinnamomum*

1b. Leaves not aromatic.....*Persea*

22. Lecythidaceae

Couroupita guianensis

23. Lythraceae

1a. Dry, capsule with winged seeds.....*Lagerstroemia*

1b. Fleshy berry with many seeds.....*Punica*

24. Malvaceae

1a. Compound leaves:

2a. Trunk and branches with bulbous prickles .....*Bombax*

2b. Trunk smooth.....*Sterculia*

1b. Simple leaves:

3a. Leaves irregularly lobed.....*Pterospermum*

3b. Leaves cordate, acute at apex:

4a. Leaf margin serrate.....*Grewia*

4b. Leaf margin entire.....*Thespesia*

25. Meliaceae

1a. Leaves Unipinnate:

2a. Leaflets toothed.....*Azadirachta*

2b. Leaflets entire:

3a. Leaflets arrangement alternate.....*Khaya*

3b. Leaflets arrangement opposite:

4a. Anthers between the teeth of staminal tube.....*Swietenia*

4b. Anthers between the two teeth of free of the tube.....*Soymida*

1b. Leaves bi or tripinnate.....M*elia*

26. Moraceae

1a. Plant with large, multiple fruit (syncarpous):

2a. Leaf margin entire.....*Artocarpus*

2b. Leaf margin toothed.....*Morus*

1b. Plant with simple syconium type fig fruit.....*Ficus*

Ficus

1a. Receptacles sessile or subsessile:

2a. Leaves caudate-acuminate at apex:

3a. Apical tail of leaf longer, 1/3 of the length of lamina.....*F. religiosa*

3b. Apical tail of leaf shorter, less than 1/3 of the length of lamina.....*F. arnottiana*

2b. Leaves otherwise at apex:

4a. Fruits red:

5a. Leaves obtuse at apex:

6a. Leaves cupuliform, bases joined together forming a cup like structure.....*F. krishnae*

6b. Leaves not cupuliform.....*F. benghalensis*

5b. Leaves acuminate at apex.....*F.benjamina*

4b. Fruits green.....*F. lyrata*

1b. Receptacles distinctly pendunculate:

7a. Leaves opposite, decussate..... *F. hispida*

7b. Leaves alternate, rarely opposite:

8a. Leaves heart shape, serrate..... *F. auriculata*

8b. Leaves not as above..... *F. racemose*

27. Moringaceae

Moringa oleifera

28. Muntingiaceae

Muntingia calabura

29. Myrtaceae

1a. Fruit dry:

2a. Petals not calyptrate, flower in spikes..... *Melaleuca*

2b. Petals calyptrate, flower not in spike.....*Eucalyptus*

1b. Fruit fleshy:

3a. Ovary more than two celled.....*Psidium*

3b. Ovary two-celled.....*Syzygium*

Syzygium

1a. Fruits 4-6 cm long.....*S. aromaticum*

1b. Fruits less than 4 cm long:

2a. Flower white or greenish..... *S. cumini*

2b. Flower reddish or pink..... *S. samarangense*

30. Oleaceae

Nyctanthes arbor-tristis

31. Phyllanthaceae

1a. Leaves simple..... *Bridelia*

1b. Leaves pinnately compound..... *Phyllanthus*

Phyllanthus

1a. Fruits with 6-8 ribs..... *P. acidus*

1b. Spherical fruits with a smooth, hard skin..... *P. emblica*

32. Proteaceae

Grevillea robusta

33. Putranjivaceae

Putranjiva roxburghii

34. Rhamnaceae

Ziziphus mauritiana

35. Rubiaceae

1a. Flowers in globose heads:

2a. Ovules single in each locule.....*Morinda*

2b. Ovules many in each locule:

3a. Receptacle glabrous; flowers ebracteolate..... *Neolamarckia*

3b. Receptacle hairy; interfloral bracteoles present:

4a. Stigma mitriform to elongate-clavate.....*Mitragyna*

4b. Stigma ovoid to globose.....*Adina*

1b. Flowers solitary or in fascicle, panicle or corymbose.....*Gardenia*

Morinda

1a. Leaves glabrous.....*M. citrifolia*

1b. Leaves tomentose.....*M. pubescens*

36. Rutaceae

1a. Unarmed trees..... *Bergera*

1b. Trees unarmed:

2a. Leaves trifoliate.....*Aegle*

2b. Leaves not trifoliate..... *Citrus*

Citrus

1a. Fruits yellow in colour.....*C. sinensis*

*1*b. Fruits green in colour.....*C. aurantium*

37. Santalaceae

Santalum album

38. Sapindaceae

1a. Fruits smooth or coriaceous.....*S. oleosa*

1b. Fruits rusty..... *S. emarginatus*

39. Sapotaceae

1a. Calyx-lobes 4: staminodes absent..... *Madhuca*

1b. Calyx-lcbes 6 or 8: staminodes present:

2a. Stamens 6. staminodes 6. Glabrous..... *Manilkar*

2b. Stamens 8: staminodes 8, hairy..... *Mimusups*

40. Simaroubaceae

1a. Leaflets serrete.....*Ailanthus*

1b. Leaflets entire..... *Simarouba*

41. Ulmaceae

Holoptelea integrifolia

Tree Flora

Comprehensive Scientific Terminology

1. Botanical Name : ***Mangifera indica* L.**

(Syn : *Mangifera amba*)

Family : **Anacardiaceae**

Vernacular Name : **Aam, mango**

Morphological characteristics :

Trees. Leaves simple, alternate, petioled. Stem . Calyx, imbricate, caducous. Flowers polygamous in terminal or axillary panicles. Petals free, imbricate, often with excrescences from the glands thickened into ridges on the inner surface. Disc 4-5 lobed. Stamens 5, sometime 10, 1-2 fertile, other much shorter and smaller; anthers dorsifixed. Ovary 1-celled, abortive in male flowers; style lateral, stigma simple. Drupes 1-celled, resinous, mesocarp fleshy; endocarp woody, fibrous. Seed ovoid-oblong, constricted; cotyledons plano-convex.

Flowering & Fruiting : Feb. **-** July

Ecological Significance :

Mangifera indica (mango) plays a vital ecological role in tropical and subtropical ecosystems. Being a long-lived tree with a broad canopy, it creates essential shelter and shade for numerous birds, insects, and small mammals. The blossoms serve as a food source for pollinators such as bees and butterflies, thereby supporting biodiversity and improving pollination within the ecosystem. The fruit serves as a significant food for wildlife, bats, monkeys, and birds, aiding seed dispersal across landscapes. Additionally, the tree contributes to soil stability through its extensive root system, helps in carbon sequestration, and improves microclimatic conditions by regulating temperature and humidity. Thus, *Mangifera indica* supports both ecological balance and environmental sustainability.


Branch
Leaf
Inflorescence

2. Botanical Name : ***Spondias pinnata* (L.f.) Kurz**

(Syn : *Mangifera pinnata*)

Family : **Anacardiaceae**

Vernacular Name : **Amera, Amra**

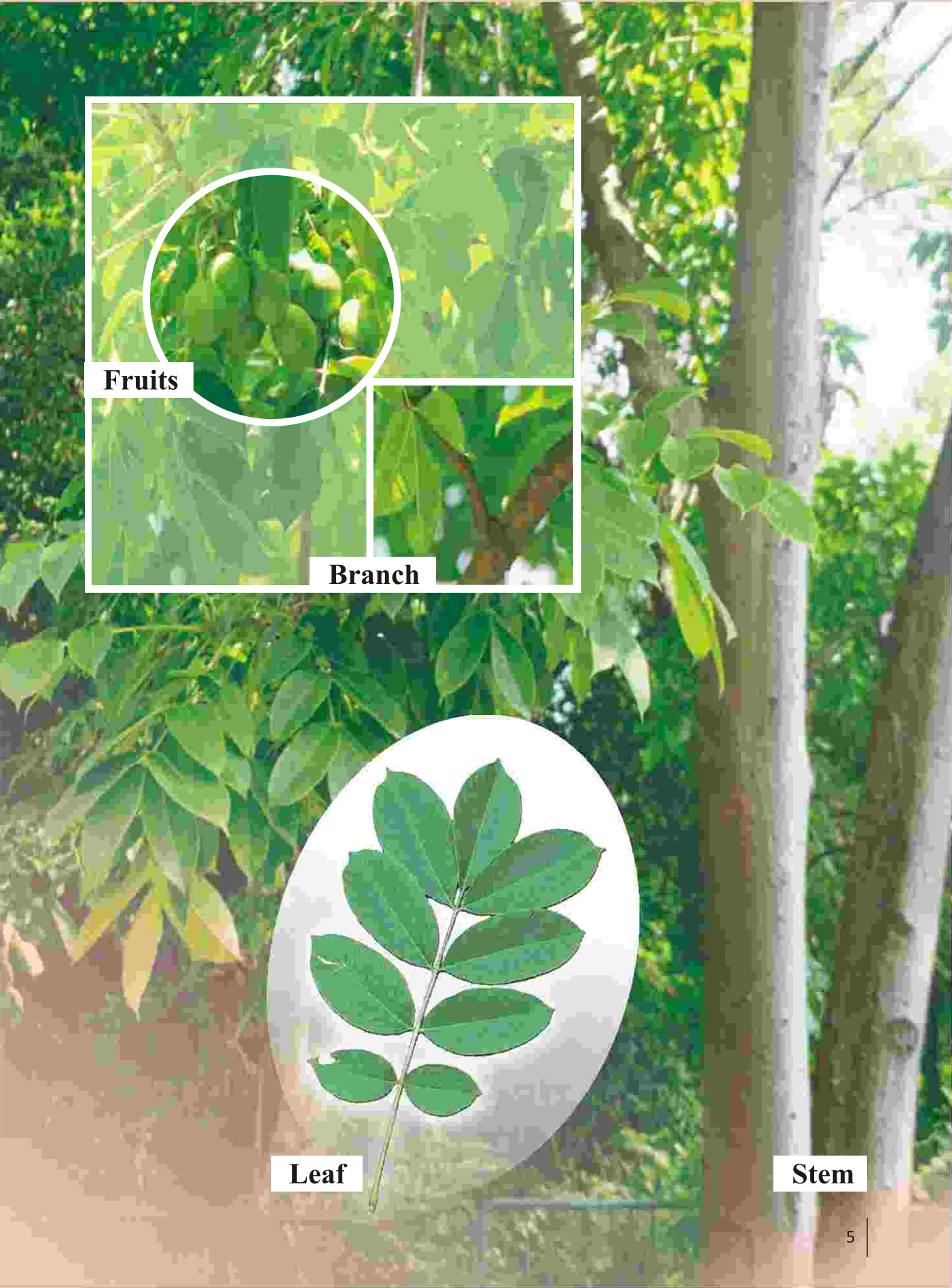
Morphological characteristics:

The tree can reach a height of about 10 meters, with smooth bark that appears white to brownish-grey. Its leaves are compound and imparipinnate, having elliptic-oblong leaflets with slightly wavy margins, a tapering caudate-acuminate tip, and a base that is either subacute or slightly oblique. The petiolules measure around 2–3 mm in length. Flowers are white and borne in axillary or terminal panicles, typically ranging from 15–30 cm long. Sepals minute, ovate-triangular, imbricate. Petals, ovate, acute. Disc fleshy, 10-crenated. Stamens 8-10. Ovary ovoid, situated inside the disc; ovule 1 in each locule. Drupe yellow, ovoid; pyrene woody with tuberculate, fibrous surface, 1-5-celled.

Flowering & Fruiting : April-Oct.

Ecological Significance :

Spondias pinnata plays a crucial role in tropical forest ecosystems to support both the soil health and the wildlife diversity. Its robust root system helps control soil erosion and enhances fertility of soil through organic matter contribution. The tree produces nutritious fruits that serve as a key food source for various insects, birds and mammals facilitating seed dispersal, sustaining local fauna. Additionally, its canopy provides shade and shelter, creating a favorable microhabitat for understory plants and animals. By contributing to nutrient cycling and habitat complexity, *Spondias pinnata* helps maintain ecosystem stability and biodiversity in its native regions.


Fruits
Branch
Leaf
Stem

3. Botanical Name : ***Annona reticulata* L.**

(Syn : *Annona excelsa*)

Family : **Annonaceae**

Vernacular Name : **Ramphal**

Morphological characteristics :

Small deciduous trees. Leaves, acuminate, glabrous. The flowers occur in hanging clusters and are aromatic, slender, and composed of three outer fleshy, narrow petals measuring about 2–3 cm. Externally, the petals are light green, while the inner side is pale yellow with a reddish-purple spot at the base. The blossoms remain partially closed and never open completely. The fruits are compound, ranging from 8–16 cm in diameter, and may appear heart-shaped, asymmetrical, nearly round, or flattened with either a shallow or deep basal depression. At the time of fruit ripening, the tree typically sheds its leaves.

Flowering: Sept.-Feb., **Fruiting :** Dec.- May

Ecological Significance :

Annona reticulata, often referred to as custard apple or bullock's heart, plays an important role in tropical and subtropical ecosystems. The species enhances biodiversity by offering both food and shelter to insects, birds, and small mammals. Its blossoms are visited primarily by beetles, which act as pollinators and help sustain ecological pollination networks. The fruits are consumed by wildlife, supporting seed dispersal and facilitating natural forest regeneration. In addition, the organic litter from fallen leaves and fruits enriches the soil by boosting nutrient availability and improving structure. The tree's root system also helps stabilize soil and reduce erosion, particularly in sloping landscapes. Collectively, these ecological contributions make *A. reticulata* vital for maintaining ecosystem balance and resilience.


Fruit
Stem
Leaf

4. Botanical Name : ***Annona squamosa* L.**

(Syn : *Annona asiatica*)

Family : **Annonaceae**

Vernacular Name : **Sharifa, Sitaphal**

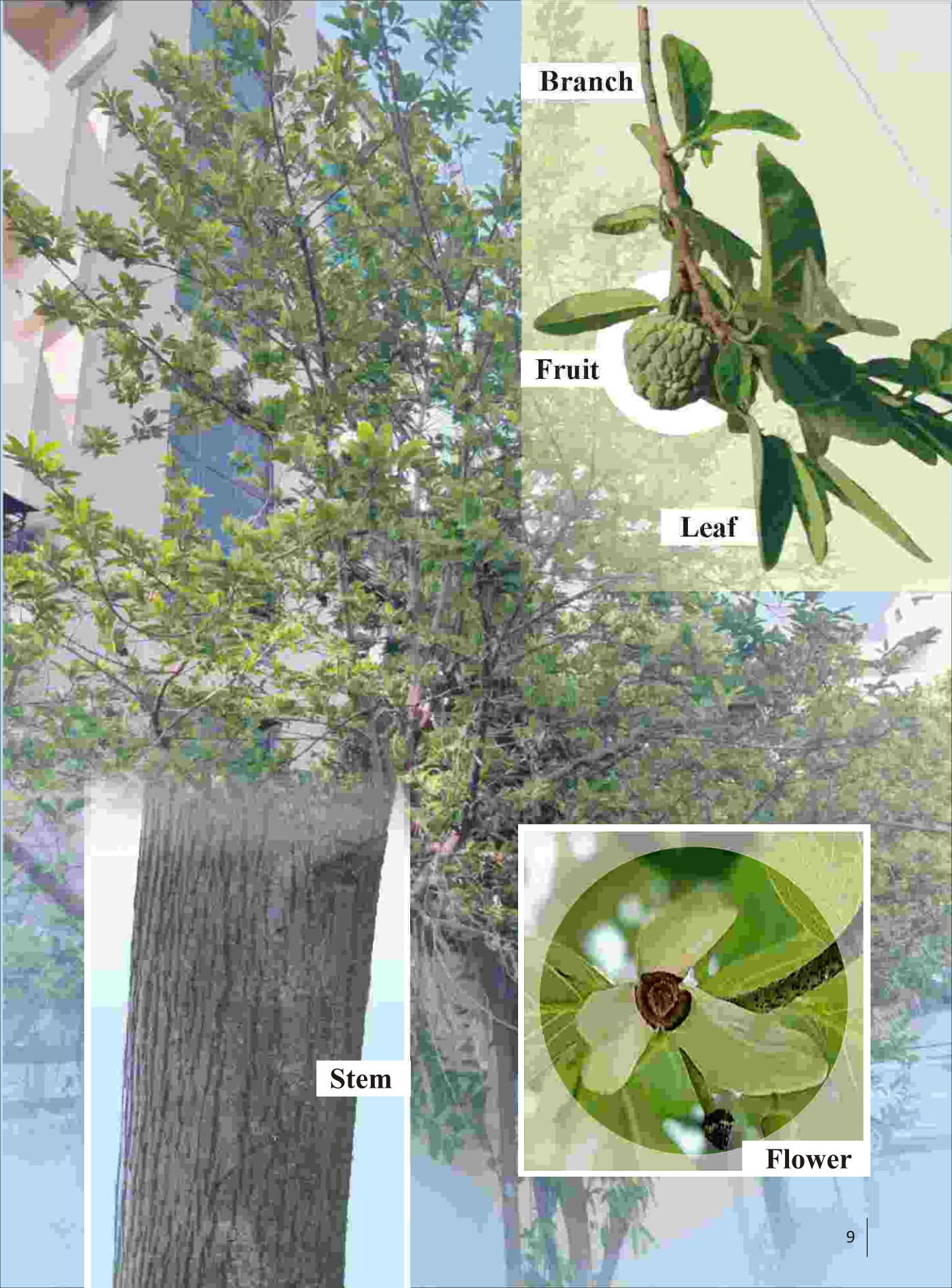
Morphological characteristics :

These plants occur as shrubs or small trees. The leaves, 8–15 cm in length, are oblong-lanceolate, tapering to an acute or slightly elongated tip, and are almost hairless. The flowers are pendulous, yellowish-green, about 2–3 cm long, and remain partially closed. Each flower develops on a drooping stalk about 1 inch long and bears three fleshy outer petals, greenish-yellow externally and pale yellow inside, marked with a dark red or purple spot at the base. The fruit is oval or conical, covered with a purplish, knobby rind, and has a very sweet flavor. It is edible when fresh and is also used in beverages like shakes. The flesh is juicy, creamy white, and may enclose up to 40 black seeds

Flowering : March-May, **Fruiting :** July-Sept.

Ecological Significance :

Annona squamosa, commonly called sugar apple or sweetsop, is ecologically significant in both native and cultivated areas. The tree supports biodiversity by offering habitat and food to birds, insects, and small mammals. Its fragrant flowers attract beetles, key pollinators for reproduction and local pollination systems. The sweet fruits are eaten by wildlife, aiding seed dispersal and forest regeneration. Decomposition of organic matter enriches soil fertility, while its roots stabilize land and reduce erosion. Overall, A. squamosa contributes to ecological balance and strengthens environmental resilience.


Branch
Fruit
Leaf
Stem
Flower

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

(Syn : *Polyalthia longifolia*)

Family : **Annonaceae**

Vernacular Name : **False Ashok**

Morphological characteristics :

Evergreen straight trees. Leaves 8-20 cm long, narrowly- lanceolate,, long acuminate, glabrous margins undulate. Flowers many, fascicled, green. Petals lanceolate, acuminate. Sometimes the flowers are racemed on short, special lateral branches or elongated tubercles, with slender pedicels. Carpels 1-2 ovuled, 1-seeded.

Flowering : April-May, **Fruiting :** May-Aug.

Ecological Significance :

Monoon longifolium, commonly known as the Ashoka tree or False Ashoka, holds considerable ecological significance in urban and natural landscapes. This evergreen tree is highly effective in mitigating air pollution by absorbing particulate matter and gaseous pollutants, thus improving air quality in densely populated areas. Its dense, drooping foliage acts as a natural sound barrier, making it valuable for noise reduction along roadsides and in residential zones. Moreover, the tree enhances urban biodiversity by offering habitat and nesting spaces for different bird species. Its extensive root system helps stabilize soil and prevent erosion, making it valuable for ecological restoration projects and the development of green belts. Owing to its ability to thrive under diverse climatic conditions, it plays a significant role in urban landscaping and the provision of ecosystem services.


Stem

6. Botanical Name : ***Alstonia scholaris* (L.) R. Br.**

(Syn: *Echites scholaris*)

Family : **Apocynaceae**

Vernacular Name : **Saptaparni**

Morphological characteristics:

Trees. Leaves oblong-lanceolate or obovate, acute, cuneate at base, margin entire, shining, coriaceous, glabrous. Flowers are terminal, umbelliform cymes. Calyx tubular, lobes ovate, unequal. Corolla greenish yellow: lobes obovate, overlapping to left. The fruit is formed by two follicles, each typically ranging from 20 to 40 cm in length (sometimes extending up to 63 cm).

Flowering: Oct - Feb, **Fruiting**: April-June

Ecological Significance:

Alstonia scholaris, also called the devil's tree or blackboard tree, plays an important role in tropical and subtropical ecosystems. Its wide canopy offers shade and shelter, supporting a variety of birds and insects and promoting biodiversity. The tree's dense foliage aids in air purification by absorbing carbon dioxide and releasing oxygen, which can help improve air quality in urban areas. Known for its tolerance to pollution, it is well-suited for planting along roadsides and in cities. The leaves and bark decompose to add organic matter to the soil, improving fertility and structure. Additionally, *A. scholaris* helps stabilize soil and prevent erosion, particularly in degraded or deforested regions. Overall, this tree contributes significantly to environmental sustainability and ecosystem health.


Leaves
Stem

7. Botanical Name : ***Cascabela thevetia* (L.) Lippold**

(Syn : *Thevetia peruviana*)

Family : **Apocynaceae**

Vernacular Name : **Pili Kaner, Mexican oleander**

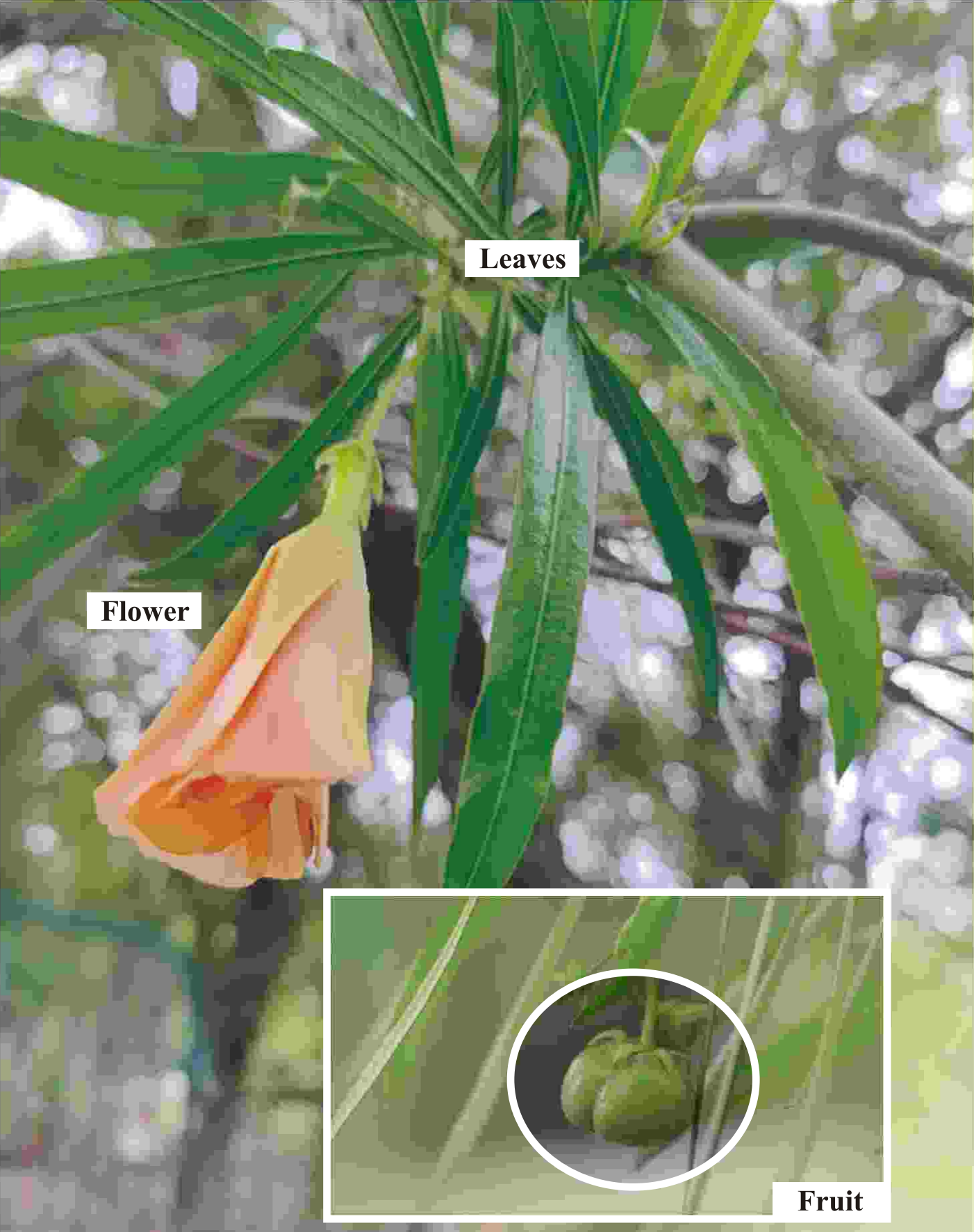
Morphological characteristics :

Evergreen plants, either large shrubs or small trees. Leaves are alternate, densely arranged, tapering at both ends, with rolled-under margins. Flowers occur in terminal cymes with few blossoms. The calyx has five lobes, glandular at the base internally, with spreading lobes. The corolla is funnel-shaped, with overlapping lobes on the left and a cylindrical tube. There are five stamens attached to the throat; anthers are lance-shaped with branched tips. No floral disk is present. The ovary is formed by two fused carpels, each with two ovules; the style is slender, and the stigma is disc-shaped. The fruit is a drupe, wider than it is long, and the seeds are broad with thin margins.

Flowering & Fruiting : Throughout the year

Ecological Significance :

This plant contributes to ecological systems primarily through its adaptability to a range of environments, often thriving in degraded or disturbed areas where other plants struggle. Its dense foliage offers shelter for birds and insects, enhancing local biodiversity. The plant's toxic compounds help deter herbivores, influencing herbivore feeding patterns and potentially reducing overgrazing in fragile ecosystems. Additionally, *Cascabela thevetia* plays a role in soil stabilization, preventing erosion in urban and rural landscapes.


Leaves
Flower
Fruit

8. Botanical Name : ***Plumeria rubra* L.**

(Syn : *Plumeria acuminata*)

Family : **Apocynaceae**

Vernacular Name : **Champa**

Morphological characteristics :

Small trees, deciduous; branches swollen and leafy towards tip: sap milky. Leaves oblong-lanceolate to obovate, acuminate at apex, acute at base, sparsely to glabrous pubescent beneath; marginal nerves conspicuous: petioles, glandular above. Flowers in umbelliform cymes. Corolla pink or white with yellow inside or combination of these colours; lobes broadly ovate, tube 1-2.5 cm long. Follicles cylindrical, rigid, drooping. Seeds with basal wing.

Flowering & Fruiting : Nov - June

Ecological Significance :

Plumeria rubra, or frangipani, plays an important ecological role by supporting urban biodiversity and pollinator communities. Its aromatic, nectar-filled flowers draw numerous pollinators such as bees, butterflies, and moths, aiding in local pollination processes. Being drought-resistant and commonly used in landscaping, it also contributes to increasing green spaces in dry and semi-dry areas, helping mitigate urban heat and enhance local microclimates. Additionally, its ability to grow in poor soils makes it valuable for ornamental greening in degraded environments, indirectly aiding soil stabilization and ecological restoration efforts.


Flower
Leaves

9. Botanical Name : ***Cocos nucifera* L.**

(Syn : *Calappa nucifera*)

Family : **Arecaceae**

Vernacular Name : **Nariyal, Coconut**

Morphological characteristics :

Tall palms with stems thickened at the base and a dense cluster of rootlets. Leaves measure 1.5–4.5 m in length, with linear-lanceolate leaflets reaching up to 1 m; leaves are leathery, and petioles are long and robust. The inflorescences are interfoliar and androgynous, forming panicles, with branches carrying female flowers near the base and male flowers positioned above. Lower spathes short, hard, splitting lengthwise; upper fusiform or clavate. Drupes green or yellowish, subglobose, I-celled; pericarp fibrous; endocarp stony.

Flowering & Fruiting : Throughout the year

Ecological Significance :

Cocos nucifera holds significant ecological importance in tropical coastal ecosystems. It stabilizes shorelines by reducing soil erosion with its root system, provides habitat for different type of organisms, including birds, insects, and epiphytes. The palm contributes to nutrient cycling through leaf litter decomposition, enriching sandy soils. Its flowers support pollinators, while the fruits are a vital food source for wildlife, including crabs and birds, aiding seed dispersal. Additionally, coconut palms play a role in climate change and mitigation carbon sequestration of carbon. In coastal regions, they act as windbreaks, protecting inland areas from storms and salt spray, thus maintaining ecological balance.


Leaves
Fruits
Stem

10. Botanical Name : ***Phoenix sylvestris* (L.) Roxb.**

(Syn : *Elate sylvestris*)

Family : **Arecaceae**

Vernacular Name : **Khajur, Indian wild date palm**

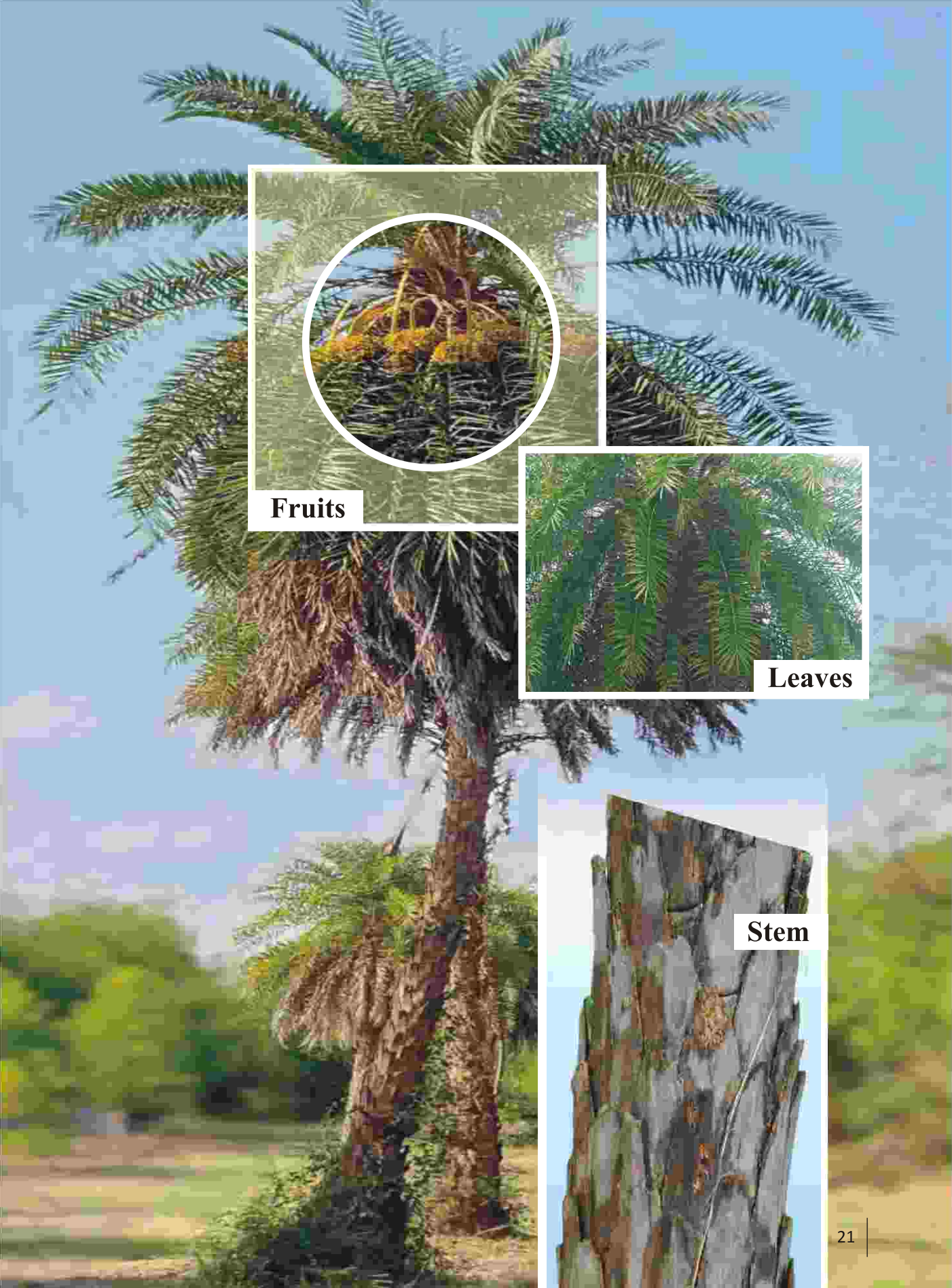
Morphological characteristics:

Robust palms, without root suckers. Trunk 20-40 cm across, rough covered with petiole bases Leaves 2-4 m long, lower leaves arching, leaflets in several fascicles, greyish green, 15-45 x 2-3 cm, rigid, ensiform, canaliculate, spinous-pointed, petioles compressed towards the apex and bearing few short spines at the base. Female inflorescence drooping, Male flowers white, fragrant. Drupes reddish brown, oblong. up to 15 mm long. Seeds pale brown, grooved on one face.

Flowering: Jan.-March **& Fruiting:** Sept.-Oct.

Ecological Significance:

Phoenix sylvestris holds significant ecological importance in its native habitats across the Indian subcontinent. This hard palm species thrives in diverse ecosystems, including dry deciduous forests, riverbanks, and open plains, where it contributes to soil stabilization and prevents erosion with its deep-rooted system. It provides food and shelter to various animals, birds, and insects its sweet fruits are consumed by frugivores, while its canopy offers nesting sites and to support the biodiversity. Additionally, the plant plays a role in nutrient cycling through organic litter deposition. Its adaptability to arid and semi-arid situations also makes this valuable in reforestation and ecological restoration efforts, especially in degraded landscapes.


Fruits
Leaves
Stem

11. Botanical Name : ***Roystonea regia* (Humb., Bonpl. & Kunth) O.F. Cook**

(Syn : *Oreodoxa regia*)

Family : **Arecaceae**

Vernacular Name : **Bottle palm, Royal palm**

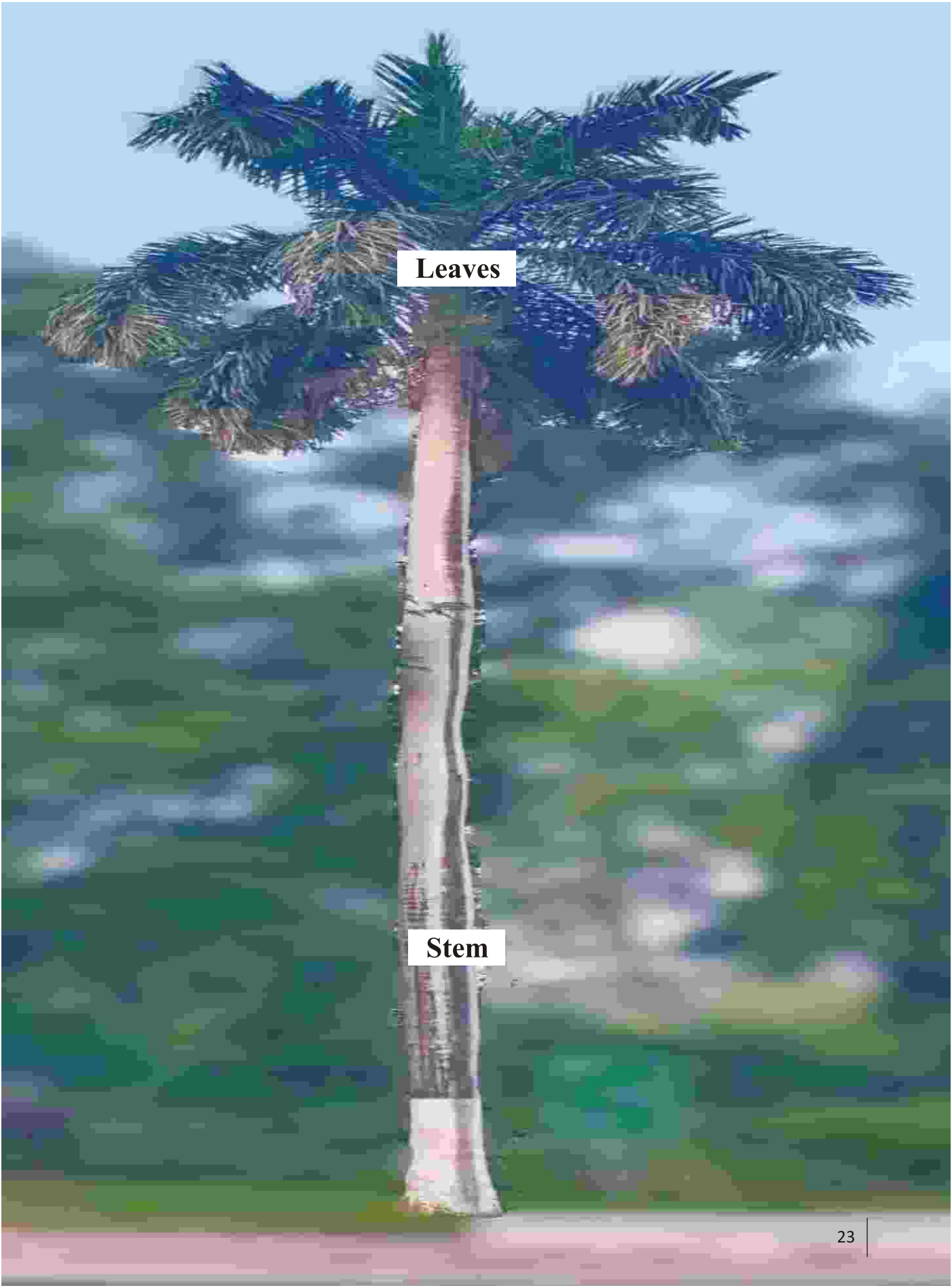
Morphological characteristics :

Tall palms. Trunk smooth, dull grey, faintly annulate. Leaves pinnate, 2-3 m long, terminal very large, lower leaves drooping; leaflets papyraceous, ensiform, many-nerved lengthwise, shortly 2-fid at apex: leaf-sheath elongate. Spadices ca 1 m long. Male flowers ca 5 mm long. Stamens 6. Female flowers smaller than males. Drupes brown to dark purple, globose, ca 1 cm across.

Flowering & Fruiting : Sept. - May

Ecological Significance :

Roystonea regia (royal palm) plays an essential ecological role in tropical and subtropical ecosystems. Its tall, sturdy trunk and large crown offer roosting and nesting sites for birds, particularly in open or urban landscapes where tree cover is sparse. The tree produces abundant fruit that serves as food source for insect, birds, bats, and mammals, aiding in seed dispersal and supporting local food webs. Moreover, its widespread root system helps stabilize soil and manage water runoff, especially in flood-prone areas. As an ornamental and native species, it contributes to urban greening, microclimate regulation, and the overall biodiversity of the regions it inhabits.


Leaves
Stem

12. Botanical Name : ***Dolichandrone falcata* (Wallich ex DC.) Seem**

(Syn : *Bignonia falcata*)

Family : **Bignoniaceae**

Vernacular Name : **Medsingi**

Morphological characteristics :

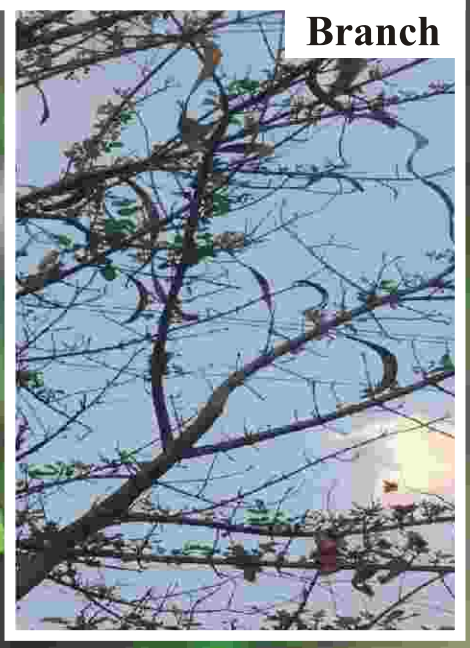
Deciduous trees reaching heights of 6–8 m, with young shoots covered in short hairs or fine villi. Leaves consist of 5–7 opposite leaflets, obovate to nearly circular, measuring 2–5 × 1.5 cm, with apex rounded or slightly pointed and base cuneate or rounded; surfaces may be smooth or slightly hairy. Flowers are arranged in racemes, each pedicel approximately 1 cm long. The calyx is covered with star-shaped hairs. The corolla is white, about 2.5 cm long, with obovate-oblong lobes that have wavy, crisped margins; the tube is narrow at the base and gradually widens upward. Capsules are flat, curved like a sickle, 30–40 cm long, tapering at the tip, initially green and glabrescent, turning black upon ripening.

Flowering & Fruiting : March - June

Ecological Significance :

Dolichandrone falcata is a deciduous tree found across South and Southeast Asia, valued for its ecological contributions. Its fragrant flowers, which bloom at night, attract pollinators such as bats and insects, supporting local biodiversity. The tree also provides dense foliage that offers shade and nesting opportunities for birds, and its extensive root system aids in controlling soil erosion. Additionally, *D. falcata* contributes to nutrient cycling by shedding leaves that decompose and enrich the soil. Its presence in riparian zones and tropical dry forests supports ecosystem stability, making it an important species for conservation in its native range.

Leaves



13. Botanical Name : ***Kigelia africana* (Lam.) Benth.**

(Syn : *Bignonia africana*)

Family : **Bignoniaceae**

Vernacular Name : **Jharfanoos**

Morphological characteristics :

The tree is highly branched, reaching a height of 10–15 m. Leaves are arranged in a decussate or ternate pattern, measuring 20–50 cm in length, with 5–9 leaflets that are ovate-oblong to elliptic-ovate in shape and 4–12 × 2–6 cm in size. The leaflets have acute or mucronate tips, often an asymmetrical base, smooth margins, a leathery texture, and may be rough or glabrous on the surface, sometimes showing pubescence along the veins. Flowers are borne in loose panicles and are nocturnal. The calyx is green and smooth, while the corolla is dark wine-red, 5–10 cm long, with a broad throat and a basal tube roughly equal in length to the calyx. Fruits measure 25–40 cm in length.

Flowering & Fruiting : March-Dec.

Ecological Significance :

Kigelia africana, commonly known as the sausage tree, plays a vital ecological role in its native African habitats. Its large, sausage-shaped fruits serve as a food source for a variety of animals, like baboons, elephants, and bats, which also aid in seed dispersal. The tree's striking, bell-shaped flowers produce copious nectar, attracting pollinators such as bats and insects, thereby supporting pollination networks. Additionally, its dense canopy provides shelter for birds and other small wildlife, while its roots help stabilize soil and prevent erosion, especially along riverbanks. Overall, *Kigelia africana* contributes significantly to ecosystem functioning, support biodiversity, and habitat integrity in savanna and riparian landscapes.


Stem
Leaves

14. Botanical Name : ***Millingtonia hortensis* L. f.**

(Syn : *Bignonia hortensis*)

Family : **Bignoniaceae**

Vernacular Name : **Akash neem, Neem chameli**

Morphological characteristics :

Trees reach a height of about 8–10 m, with young shoots covered in fine hairs. The leaves measure 40–50 cm in length, composed of ovate to elliptic leaflets that taper to a pointed tip and have a cuneate to truncate base, with margins that are sinuate-dentate and globular surface glabrous. The flowers occur in large, erect, and much-branched panicles. The calyx is truncate with very short lobes, while the corolla is bright white, its lobes ovate and unequal, arising from a slender, cylindrical tube. The fruit is a capsule, extending up to 30 cm in length.

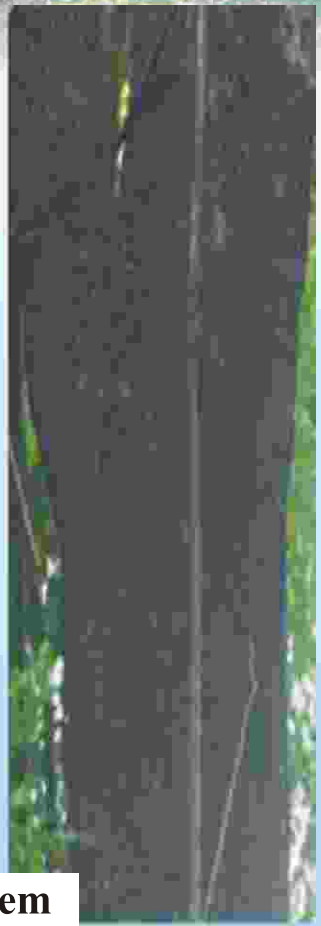
Flowering & Fruiting : Dec. - May.

Ecological Significance :

Millingtonia hortensis, popularly referred to as the Indian Cork Tree, plays an important role in enhancing urban greenery and supporting biodiversity. Being a fast-growing and decorative species, it offers shelter and nourishment to several pollinators such as bees and butterflies, largely through its aromatic flowers that bloom at night. Its broad canopy offers shade, reducing the urban heat island effect, while its ability to absorb pollutants contributes to improved air quality. Additionally, *Millingtonia hortensis* helps in soil stabilization and enhances aesthetic and ecological value in both urban and semi-natural landscapes, making it an important species for sustainable green infrastructure.

Leaves

Leafless during dry season



Stem

15. Botanical Name : ***Oroxylum indicum* (L.) Kurz**

(Syn : *Arthrophyllum ceylanicum*)

Family : **Bignoniaceae**

Vernacular Name : **Arlu, Saona, Ullu**

Morphological characteristics :

The trees grow to a height of about 10–15 meters with irregular branching. Leaves typically clustered near the tips of the twigs and borne on long petioles. The leaflets are ovate to elliptic in shape, with an acuminate tip. The margins may be entire or coarsely serrate-dentate, and the surface is glossy, dark green above. Flowers borne singly on tubercles and arranged in erect racemes, supported by peduncles about 40 cm long. The calyx campanulate, dirty-violet in color, and measures 3–5 cm, later hardening into a woody structure at fruiting. The corolla deep maroon, with a glandular inner surface; its lobes are obovate with slight marginal teeth. The floral disk is shallowly five-lobed. Fruits are flat, pendent capsules, measuring, tapering at both ends.

Flowering & Fruiting : June - March

Ecological Significance :

Oroxylum indicum holds significant ecological importance in tropical and subtropical forest ecosystems. As a fast-growing deciduous species, it contributes to forest regeneration, particularly in degraded areas, by improving soil health through litter decomposition. Flowers bloom at night, attract nocturnal pollinators like bats and moths, playing a key role in sustaining pollinator populations. The tree's large, winged seeds are adapted for wind dispersal, aiding in its propagation across varied landscapes. Additionally, it provides shelter and food for various organisms, thereby enhancing local biodiversity and supporting ecological balance.


Leaves

16. Botanical Name : *Spathodea campanulata* P. Beauv.

(Syn : *Spathodea campanulata subsp. congolana*)

Family : **Bignoniaceae**

Vernacular Name : **Rugtoora, African tulip tree**

Morphological characteristics :

Medium-sized trees, 8–10 m tall, with a broad crown formed by wide branching. Leaves are compound, odd-pinnate, with 9–13 elliptic-oblong leaflets (5–10 × 3–5 cm), acute to acuminate at apex, rounded at base, entire, and slightly hairy beneath along veins; petiole short. Flowers in erect racemes on stout peduncles, pedicels 3–4 cm, jointed at base. Calyx golden-brown, velvety outside, smooth within, fissures not reaching apex. Corolla bright red to reddish-orange, bell-shaped, orange inside, lobes deltoid, 3–4 cm broad; tube 7–8 cm, yellowish-orange within, glandular, inflated 6–7 cm. Capsules 15–20 × 3–5 cm, brownish-black when ripe.

Flowering & Fruiting : July - Dec

Ecological Significance :

Spathodea campanulata is ecologically significant for its role in providing abundant nectar that attracts different type of pollinators, including various type of insects, birds, and butterflies and supports local ecosystem. Its fast growth and dense canopy offer habitat for nesting sites for many bird species. Additionally, the tree contributes to soil stabilization in disturbed areas and can improve microhabitats by creating shaded environments that help retain moisture. However, in some regions where it has been introduced, it may outcompete native species, influencing local ecological dynamics. Overall, it plays a key role in pollinator support and habitat formation within its native range.


Leaf
Stem

17. Botanical Name : ***Tabebuia rosea* (Bertol.) DC.**

(Syn : *Bignonia fluviatilis*)

Family : **Bignoniaceae**

Vernacular Name : **Cuban pink trumpet tree**

Morphological characteristics :

Trees. Leaves composed of five leaflets arranged palmately: leaflets ovate-oblong or elliptic-oblong, the terminal one 10–30 × 5–15 cm, the middle pair 8–30 × 5–15 cm, the lateral pair 5–20 × 3–10 cm, tips acute to acuminate, margins entire, texture chartaceous to subcoriaceous. Inflorescences borne in terminal panicles, faintly fragrant. Calyx two-lipped. Corolla tubular-funnel shaped, rosy pink to lavender, throat initially yellow, later becoming white.

Flowering & Fruiting : Dec.-March

Ecological Significance :

Tabebuia rosea holds significant ecological importance across tropical and subtropical zones. Its showy blossoms draw numerous pollinators such as bees, butterflies, and hummingbirds, thereby sustaining pollination systems. The species also offers refuge and nesting opportunities for birds and other small fauna, increasing habitat diversity. Through the decomposition of its fallen leaves, the soil is enriched with organic material, enhancing nutrient turnover and overall fertility. Moreover, Tabebuia rosea is frequently planted in reforestation drives and urban landscapes because of its adaptability and resilience in varied environments, making it a valuable contributor to biodiversity support and ecological recovery initiatives.

Leaf

Branch

18. Botanical Name : ***Bixa orellana* L.**

(Syn : *Bixa tinctaria*)

Family : **Bixaceae**

Vernacular Name : **Sinduri**

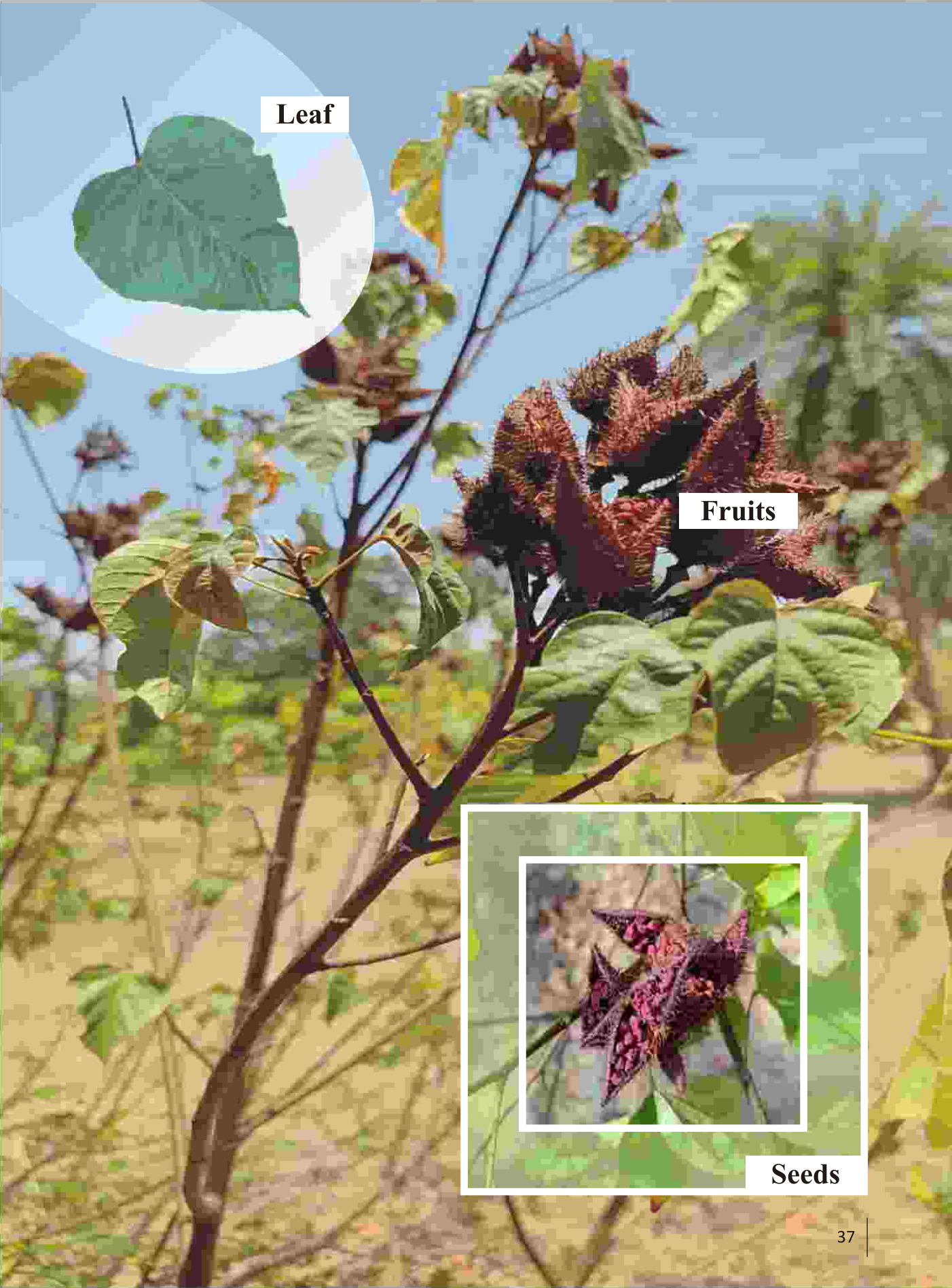
Morphological characteristics :

This shrub grows 6–20 feet high, bearing broad leaves 5–15 cm long and 4–11 cm wide with pointed tips. Its blossoms form in upright terminal clusters, standing out above the green canopy. The blooms are attractive, white to pink in color, nearly 5 cm across, consisting of five petals with a thick cluster of stamens at the center. Petals frequently curl backward. Fruits are ovoid, two-valved, red, and spiny, measuring 2.5–5 cm; the numerous seeds are ovate with a bright scarlet coat. Though originating in the West Indies, the lipstick tree has long been grown in India, valued for its seed-derived yellow-orange dye, still used safely as a food colorant.

Flowering : July-Sept., **Fruiting :** Oct.-Nov.

Ecological Significance :

Bixa orellana, commonly known as the annatto or lipstick tree, plays an ecological role in tropical environments. Its bright flower attracts various pollinators, including bees and butterflies, which support pollination and biodiversity. The seeds, encased in spiny capsules, attract small animals, aiding in seed dispersal and natural propagation. The tree contributes to soil fertility by the addition of organic matter through leaf litter, which enhances soil fertility and structure. It is used due to its adaptability and capability to grow in degraded soils, where it helps prevent erosion and restore vegetation cover. Through these functions, the species supports ecological stability and the sustainability of natural habitats.


Leaf
Fruits
Seeds

19. Botanical Name : ***Cordia dichotoma* G. Forster**

(Syn : *Cordia myxa*)

Family : **Boraginaceae**

Vernacular Name : **Lasoora**

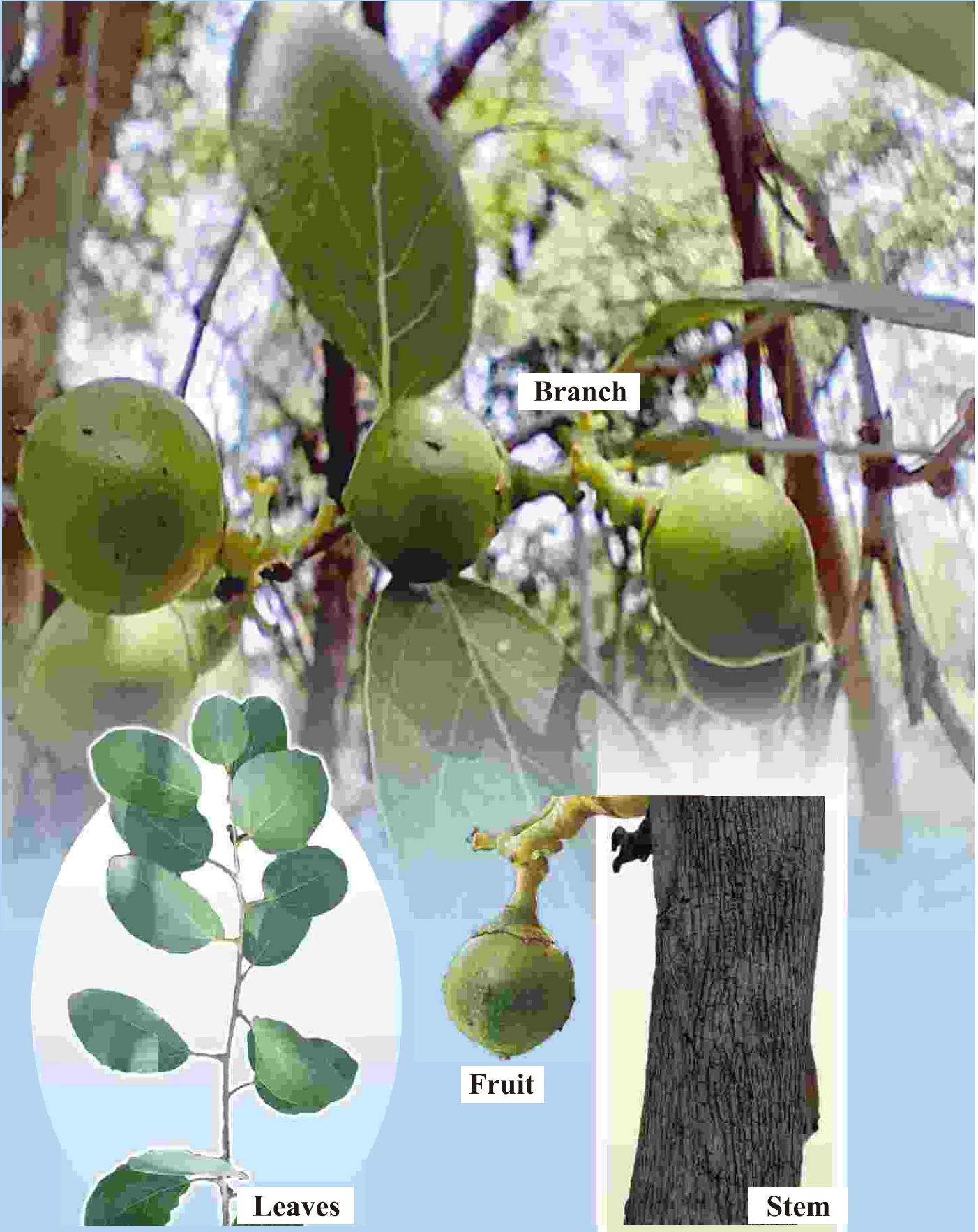
Morphological characteristics :

Small size tree, polygamodioecious. Leaves elliptic or ovate, 8-12 x 4-8 cm, obtuse at apex, cordate to rounded at base, entire, glabrescent or puberulent; petioles 2-4 cm long. Flowers in dichotomous, loosely branched cymes. bisexual or unisexual (only male), ebracteate; male flowers shorter than bisexual. Calyx campanulate, 5-6 mm long. Corolla 8-10 mm long; lobes recurved. Drupes globose, yellow to reddish orange, with sticky juice.

Flowering : April-July, **Fruiting :** November

Ecological Significance :

Cordia dichotoma, holds significant ecological importance as a keystone species in tropical and subtropical ecosystems. It provides critical habitat and food resources for various wildlife, including birds, insects and mammals, through its nectar-rich flowers and fleshy fruits. The tree supports biodiversity by acting as a host plant for pollinators like bees and butterflies, while its fruits are dispersed by frugivores, aiding in forest regeneration. Additionally, *Cordia dichotoma* improves soil fertility through leaf litter decomposition and exhibits drought resistance, making it valuable in agroforestry and reforestation efforts.


Branch
Leaves
Fruit
Stem

20. Botanical Name : ***Cordia macleodii* (Griff.) Hook.*f*. & Thomson**

(Syn : *Gerascanthus macleodii*)

Family : **Boraginaceae**

Vernacular Name : **Dahiman, Dahipalas**

Morphological characteristics :

Trees, bearing polygamous flowers, 3–8 m tall, with branches clothed in whitish hairs. Foliage alternate, occasionally nearly opposite, blades broadly ovate to circular, 8–18 × 7–17 cm, apex blunt, base heart-shaped or rounded, margins irregularly lobed; surface smooth, showing pale raised spots above, while beneath thickly covered in grey or tawny woolly hairs; petioles stout, 3–5 cm, densely hairy. Inflorescences terminal or axillary, compact, hairy, in panicled cymes, nearly sessile. Calyx 6-parted, lobes equal to or exceeding tube. Corolla white. Fruits ovoid drupes, subtended by a ribbed, hairy, cup-shaped calyx, not fit for consumption.

Flowering & Fruiting : March - May

Ecological Significance :

Cordia macleodii is an ecologically important tree native to tropical and subtropical zones, contributing significantly to ecosystem stability. Its flowers, fruits, and foliage offer shelter and nourishment to diverse wildlife such as mammals, birds, and insects. The species enhances soil conservation by reducing erosion through its extensive root network and enriches soil quality through decomposing leaf litter. It also plays a role in sustaining pollinators, including bees and butterflies, thereby promoting biodiversity. Within forest habitats, this tree assists in carbon storage, helping counter climate change. Moreover, indigenous groups utilize it for traditional medicine and cultural practices, underscoring its environmental and socio-economic value.


Leaf
Stem

21. Botanical Name : ***Ehretia laevis* (Rottler ex G. Don) Roxb.**

(Syn : *Ehretia aspera*)

Family : **Boraginaceae**

Vernacular Name : **Chamror**

Morphological characteristics :

Shrubs or small trees, about 6 m tall. Leaves show variation, ovate-elliptic, elliptic, or sometimes nearly round, 5-44 × 4-8 cm, apex obtuse or shortly pointed, base wedge-shaped, margins entire, glabrous or slightly pubescent underneath when young. Flowers arranged in loose, dichotomous, terminal and axillary corymbose cymes, nearly stalkless. Calyx bell-shaped, with 5 lobes almost free to the base. Corolla white; lobes oblong, tube short. Stigmas disc-shaped. Drupes yellow to reddish-orange, splitting into 4 single-seeded pyrenes.

Flowering & Fruiting : March - May.

Ecological Significance :

Ehretia laevis is an ecologically significant tree found in tropical regions. It plays a vital role in maintaining biodiversity by providing food and habitat for various birds, insects, and mammals through its nectar-rich flowers and small fruits. The tree also contributes to soil stabilization with its robust root system, preventing erosion in fragile ecosystems. Additionally, it supports pollinators like bees and butterflies, enhancing cross-pollination in surrounding flora. Its drought-resistant nature makes it valued in arid and semi-arid lands, promoting ecological resilience. Overall, *Ehretia laevis* is an important component of forest and scrub ecosystems, fostering ecological balance and sustainability.


Leaf
Stem

22. Botanical Name : ***Boswellia serrata* Roxb. ex Colebr.**

(Syn : *Boswellia glabra*)

Family : **Burseraceae**

Vernacular Name : **Salai, Saliha**

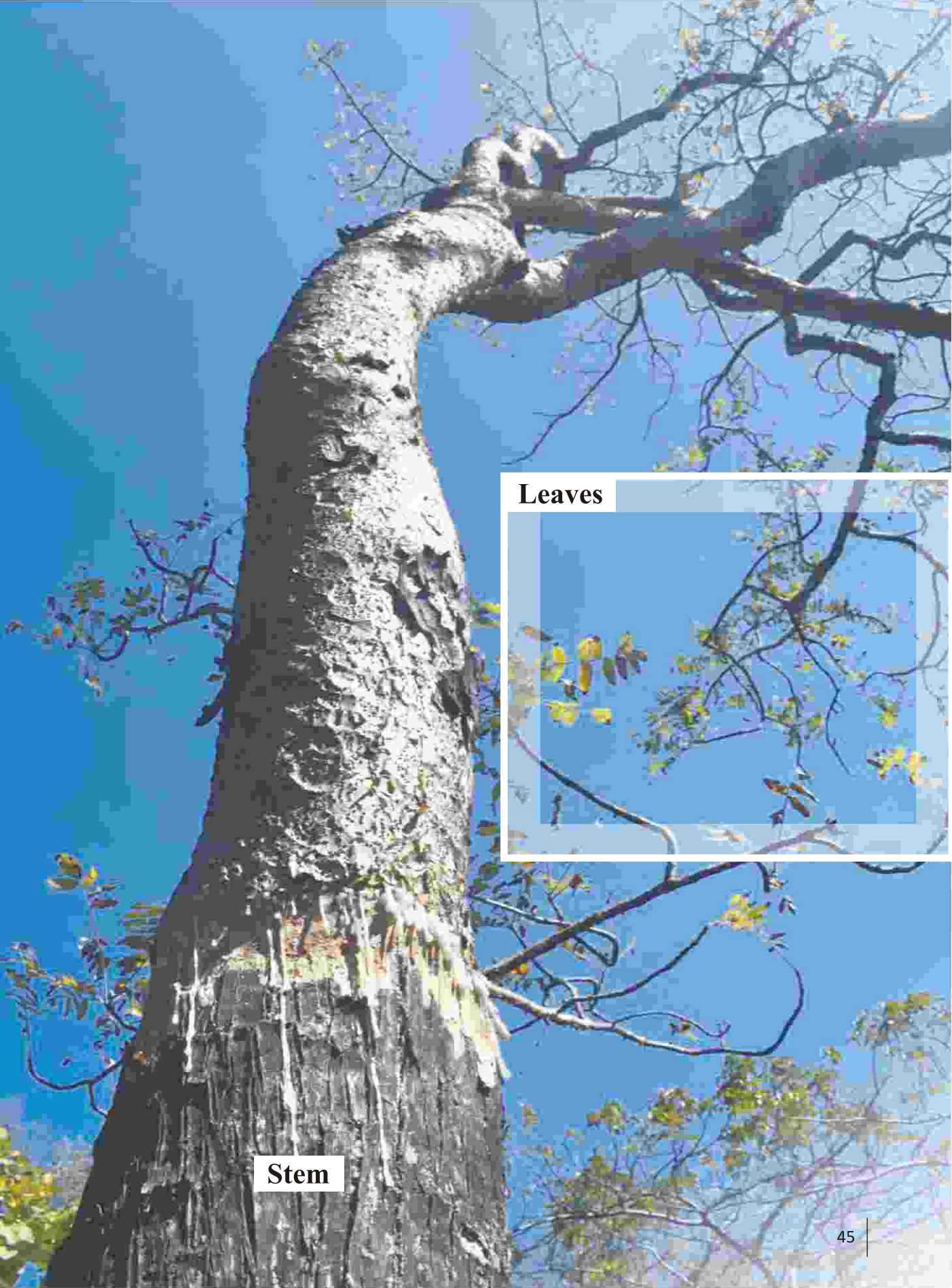
Morphology characteristic :

Trees; bark greyish-green, smooth. Leaves clustered at branch tips, pubescent, rachis thick; leaflets opposite, 19–23, sessile, 4–9 × 1.5–2 cm, shape variable, coarsely serrated, asymmetrical, acute. Flowers small, borne in axillary racemes. Calyx pubescent externally, 5–7-lobed, persistent. Disc red, annular, crenate. Petals 5–7, imbricate, ovate, bent inward, white. Stamens 10, anthers hairy. Ovary 3-locular, encircled by disc; style grooved; stigma 4–5-lobed. Drupes 1–2 cm, green, smooth.

Flowering & Fruiting : Feb.-April.

Ecological Significance :

Boswellia serrata plays an important ecological role in the dry, deciduous forests and arid regions where it naturally occurs. This drought-resistant tree helps in stabilizing fragile ecosystems by preventing soil erosion with its deep root system and by thriving in poor, rocky soils where few other plants can survive. It contributes to biodiversity by offering shelter and food to various animals, including pollinators that are attracted to its small, fragrant flowers. The tree also supports nutrient cycling by shedding of leaves and organic material, improving the soil health over time. Its natural resin, which has antimicrobial properties, may help maintain a healthier surrounding environment by reducing microbial load in the soil. Through these ecological functions, the species supports ecosystem stability and resilience in challenging environments.


Leaves
Stem

23. Botanical Name : ***Commiphora wightii* (Arn.) Bhandari**

(Syn : *Commiphora roxburghii*)

Family : **Burseraceae**

Vernacular Name : **Google plant**

Morphological characteristics :

It develops as a shrub or small tree, attaining up to 4 m in height, with thin, papery bark. The stems bear thorns. Leaves may be simple or divided into three leaflets, which are ovate, 1–5 cm long, 0.5–2.5 cm wide, and have uneven teeth along the edges. The species is gynodioecious, with some plants producing both male and bisexual flowers, while others produce only female flowers. Flowers are red to pink with four small petals. The round fruits turn red at maturity. It yields Guggul, a gum-resin from its branches.

Flowering & Fruiting : Nov. - July

Ecological Significance :

Commiphora wightii holds significant ecological importance as a keystone species in arid and semi-arid ecosystems. It plays a crucial role in soil stabilization, preventing loss of soil in fragile desert habitats, while its deep root system aids in water retention and nutrient cycling. The plant provides habitat and food for various pollinators, birds, and herbivores, supporting biodiversity. Additionally, its resin has allelopathic properties, influencing surrounding plant growth and microbial activity. Threatened by overharvesting and habitat loss, its decline could disrupt ecosystem balance, underscoring the need for sustainable conservation efforts.


Leaves
Stem

24. Botanical Name : *Garuga pinnata* Roxb.

(Syn : *Kunthia pinnata*)

Family : **Burseraceae**

Vernacular Name : **Kekad**

Morphological characteristics :

Tall trees with dark grey bark. Leaves divided into more than 10 leaflets, subsessile, lance-shaped or ovate, tapering, unequal at base, and finely serrated. Blossoms yellow, borne in extensively branched axillary or terminal hairy panicles. Calyx bell-shaped, green, hairy, split nearly halfway; lobes ovate-oblong, somewhat blunt. Petals five, narrow, valvate, inward-curved. Disc broad, covering the calyx tube, toothed. Stamens ten; filaments hairy. Ovary 4–5-chambered; style long, thick, hairy; stigma rounded. Fruits fleshy, smooth, globular drupes: stones 1–3, hard. Seeds narrow, with membranous wings.

Flowering & Fruiting : Feb. - June

Ecological Significance :

Garuga pinnata holds significant ecological value in its natural habitats. It is vital for sustaining biodiversity as it supplies nourishment and habitat for diverse fauna, such as birds, insects, and mammals, through its foliage, blossoms, and fruits. The species improves soil health by supporting nutrient cycling via leaf litter breakdown and functions as a pioneer in degraded zones, promoting forest recovery. Moreover, its deep roots curb erosion, while its canopy regulates shade and microclimate. It also supports local ecosystems by forming symbiotic relationships with pollinators and mycorrhizal fungi, further emphasizing its importance in sustaining ecological balance.


Leaves
Stem

25. Botanical Name : ***Calophyllum inophyllum* L.**

(Syn : *Balsamaria inophyllum*)

Family : **Calophyllaceae**

Vernacular Name : **Calophyllum, tamanu tree**

Morphological characteristics :

It is a slow-growing, low-branching tree with a wide, uneven crown. Its height typically ranges from 8 to 20 m. The tree forms a thick canopy of shiny, oval-shaped leaves. The strongly scented white blossoms, about 25 mm in size, appear in racemose or paniculate clusters containing 4 to 15 flowers. Each bloom has pure white petals surrounding a dense cluster of yellow stamens. These fragrant flowers are valued both for ornamentation and for their use in perfumes. The fruit is a spherical, green drupe measuring 2 to 4 cm across, enclosing a single large seed. Upon ripening, the fruit becomes wrinkled and changes in color from yellow to reddish-brown.

Flowering : April-June, **Fruiting :** Oct.-Dec.

Ecological Significance :

Calophyllum inophyllum, commonly known as tamanu tree, plays a significant ecological role in coastal and tropical ecosystems. Its dense root system helps stabilize shorelines and prevent soil erosion, making it valuable for protecting coastal areas from wave action and storm surges. The tree provides habitat and food for a range of wildlife, including birds and insects, contributing to local biodiversity. Its flowers attract pollinators such as bees, which support broader ecological pollination processes.


Leaf
Branch
Stem

26. Botanical Name : ***Mesua ferrea* L.**

(Syn : *Messua ferrea* var. *coromandeliana*)

Family : **Calophyllaceae**

Vernacular Name : **Nagkesar**

Morphological characteristics :

An attractive evergreen tree native to India, commonly grown as an ornamental species for its fragrant white blossoms that produce a pleasant perfume. The tree provides a dense, heavy hardwood often utilized for railway sleepers. Historically, its strong timber served in crafting lances. It grows as a small to medium-sized evergreen, reaching about 13 meters in height, with a trunk up to 90 centimeters wide, sometimes showing buttresses at the base. The leaves are simple, narrow, oblong, and dark green (7–15 cm long) with pale undersides; young leaves appear red to yellowish-pink and droop slightly. The flowers measure 4-7.5 cm across, featuring four white petals surrounding numerous yellow stamens.

Flowering : Feb.-July**, Fruiting :** July-Sept.

Ecological Significance :

Mesua ferrea plays a vital ecological role in tropical and subtropical forests. As an evergreen tree with dense foliage, it contributes to maintaining forest microclimates by regulating humidity and temperature. Its deep root system aids in preventing soil erosion and promoting groundwater restoration. The tree provides habitat and food for a variety of fauna, as well as pollinators attracted to its fragrant flowers and birds that feed on its seeds. Additionally, its presence supports biodiversity by offering shade and shelter to understory species, thereby enhancing forest structure and resilience.

Leaves

27. Botanical Name : ***Carica papaya* L.**

(Syn : *Papaya papaya*)

Family : **Caricaceae**

Vernacular Name : **Papeeta, Papaya**

Morphological characteristics :

Leaves are palmatifid, with lobes further divided in various ways; petioles long and hollow. Flowers are greenish-white to creamy yellow. Male flowers occur in long, drooping panicles with 10 stamens arranged in two series, the alternate ones shorter. Female flowers are borne in short clusters and contain staminodes. The ovary is free, one- to five-celled, with a short, palmately 3–5-lobed style; ovules are numerous, arranged in two rows on parietal placentas. Fruits are fleshy, one-celled, oblong, and turn orange-yellow when mature; seeds are black.

Flowering : Feb.-March, **Fruiting :** June-July; Oct.-Nov.

Ecological Significance :

Carica papaya plays a meaningful ecological role in tropical and subtropical environments. Its fast growth and broad leaves provide shelter and microhabitats for several insects, birds, and other animals. The plant's flowers attract pollinators, supporting pollination dynamics within the ecosystem. Its fruits serve as an essential food source for various animals such as birds and mammals, which aid in dispersing seeds and sustaining plant diversity. The decomposition of fallen leaves and fruits enriches the soil, improving its fertility and overall structure. Additionally, papaya's presence in agroforestry systems helps improve biodiversity and promote sustainable land use. Through these functions, *Carica papaya* supports ecological health and resilience in its growing regions.


Leaves
Stem

28. Botanical Name : ***Casuarina equisetifolia* L.**

(Syn : *Casuarina equisetifolia var. typica*)

Family : **Casuarinaceae**

Vernacular Name : **Jhau**

Morphological characteristics :

Tall trees, monoecious or dioecious; branches green, drooping. Leaves reduced in scales. Male flowers in terminal, terete spikes, monandrous. Tepals present. Stamen 1. Female flowers in axillary, cone-like spikes; bracts and bracteoles subtending flowers; bracts persistent. Tepals absent. Ovary ovoid, superior, 1-locular: ovules 2; style short, filiform. Fruit a carpophore, globose or ovoid, woody, with several winged nutlets.

Flowering : Feb.- April, **Fruiting :** Sept.- Oct.

Ecological Significance :

Casuarina equisetifolia, commonly known as coastal she-oak or whistling pine, holds significant ecological value as a pioneer species in coastal and degraded ecosystems. It thrives in sandy, nutrient-poor soils, preventing erosion through its extensive root system and stabilizing dunes and shorelines. Its nitrogen-fixing capacity through association with *Frankia* bacteria enriches soil nutrients, promoting the growth of diverse vegetation. The tree also offers shelter and nesting space for wildlife, while its slender, needle-like leaves help reduce wind velocity, forming localized microclimates. Nevertheless, in certain areas, it may exhibit invasive tendencies, displacing native plant species. Overall, it serves an essential function in shoreline stabilization, soil enhancement, and habitat restoration.

Branch

Stem

29. Botanical Name : ***Terminalia catappa* L.**

(Syn: *Juglans catappa*)

Family : **Combretaceae**

Vernacular Name : **Deshi Badam, tropical almond**

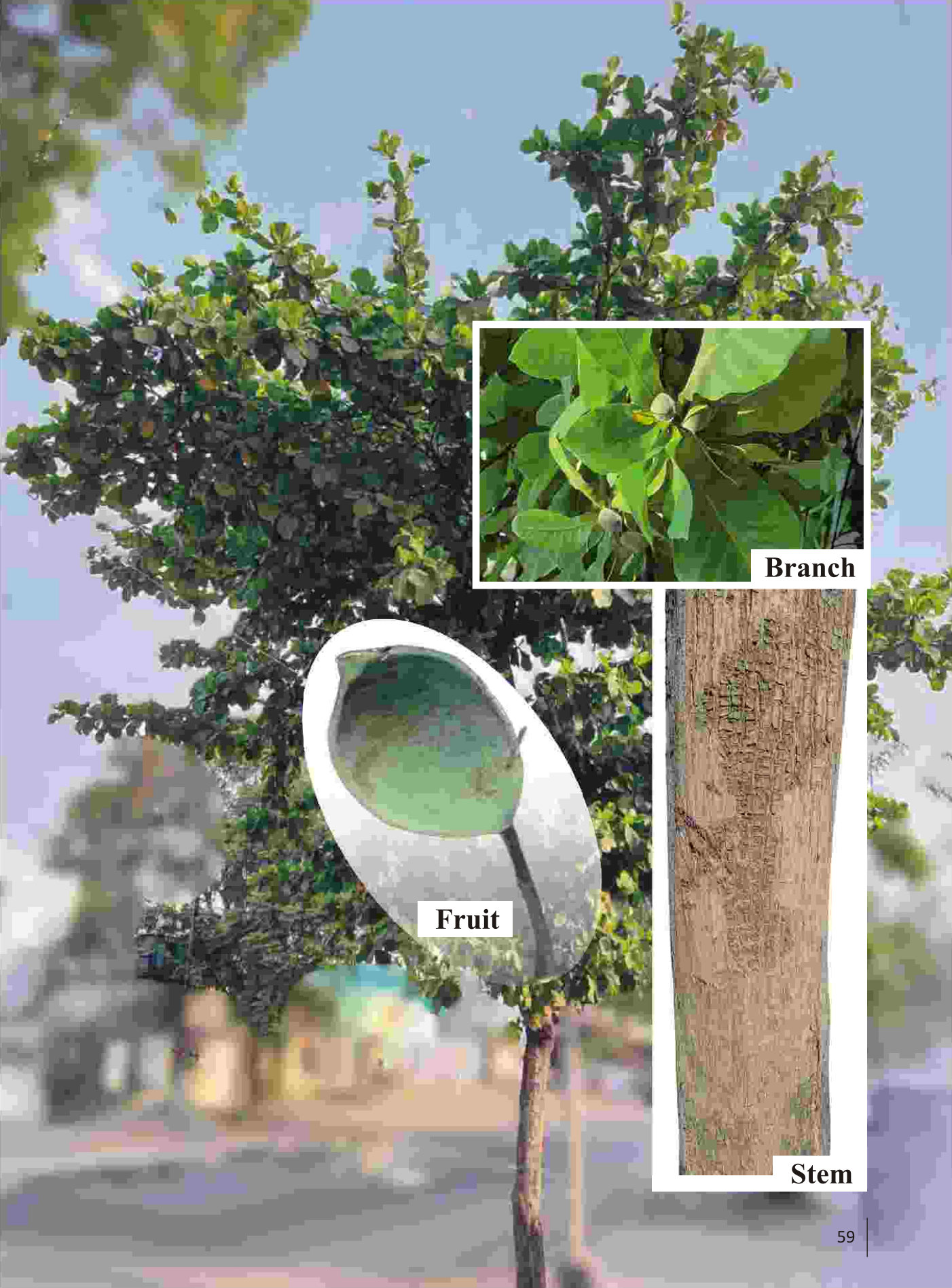
Morphological characteristics :

Trees, up to 15 m high. Leaves spiral, 9.5-30 × 5 15 cm, obovate, chartaceous, glabrous, apex rounded or sub-acuminate. base subcordate with usually 2 falling; petiole up to 2 cm, rusty-hairy. Flowers white, polygamous, in 8-15 cm long solitary axillary spikes; pedicels 14 mm. Calyx 1 - 15 x glands, leaves becoming red before 1 mm, ovate, obtuse, sericeous or glabrous. Fruits 3.5-5 x 2-3.5 cm, ellipsoid, slightly compressed.

Flowering : Dec. - Jan. , **Fruiting :** May - Sept.

Ecological Significance :

Terminalia catappa holds an important ecological function in tropical and coastal regions. It serves as a natural shield against wind and salt spray, safeguarding inland plants and helping prevent shoreline erosion. The tree's broad canopy offers shelter and habitat for numerous bird and insect species, promoting local biodiversity. Its fallen foliage contributes organic matter to the soil, improving nutrient availability and soil health. Moreover, its seeds provide nourishment for wildlife, supporting native food chains. Its ability to thrive in various soil conditions and withstand challenging coastal environments makes it a key species for ecosystem resilience and restoration initiatives.


Branch
Fruit
Stem

30. Botanical Name : *Terminalia mantaly* **H.Perrier**
Family : **Combretaceae**
Vernacular Name : **Madagascar Almond Tree**

Morphological characteristics :

The tree is deciduous, reaching 10–20 cm in height with an upright trunk and neatly layered, conspicuous branches. Its bark is pale grey, smooth, and somewhat blotchy. Leaves are glossy, bright green when young, arranged in rosettes of 4–9 uneven leaves at the ends of short, thickened stems. Each leaf grows up to 7cm long, with a broadly rounded tip, a sharply tapering base, and wavy margins. Flowers are small, greenish, clustered in erect spikes up to 5 cm long. The fruit is small and oval; seeds measure about 1.5 cm, lacking distinct wings.

Flowering & Fruiting : Oct.-March

Ecological Significance :

Terminalia mantaly plays a vital ecological role in its native habitats by enhancing biodiversity and supporting ecosystem stability. This rapidly growing tree reduces soil erosion through its wide-reaching roots, enhancing soil texture and water-holding capacity. Its expansive canopy offers shade and refuge to diverse wildlife, such as birds and insects, supporting ecological diversity. Additionally, the tree produces fruits that serve as a food source for animals, aiding in seed dispersal and forest regeneration. By thriving in diverse environmental conditions, *Terminalia mantaly* contributes to the resilience and health of the ecosystems it inhabits.

Leaves

Stem

31. Botanical Name : ***Terminalia pendula (*Edgew.) Gere & Boatwr.**

(Syn : *Anogeissus pendula*)

Family : **Combretaceae**

Vernacular Name : **Kadai, Kardhai**

Morphological characteristics :

Trees reaching 8 m in height; branches drooping. Leaves alternate or sub-opposite, elliptic to obovate; young leaves silky-hairy, later covered with short appressed hairs or becoming glabrous; apex rounded, pointed, or slightly tapering; base wedge-shaped; petioles. Inflorescence axillary and terminal; heads usually solitary; peduncles, sericeous. Flowers yellow. Calyx-stalk, villous; calyx-cup, glabrous, sometimes silky at the base. Ovary villous near the apex, style. Fruits, glabrous, except at the apex; wings narrow, jagged at the apex.

Flowering & Fruiting : Aug.-March

Ecological Significance :

Anogeissus pendula, a hardy tree found in arid deciduous forests, is vital for sustaining ecological balance in challenging landscapes. Its extensive root network stabilizes the soil, reducing erosion and aiding groundwater replenishment. During dry periods, the tree drops its leaves, adding organic material that enhances soil fertility and encourages microbial growth. Additionally, it provides shelter and nourishment for numerous insects, birds, and herbivores, thereby supporting the region's biodiversity. Furthermore, *Anogeissus pendula* is well adapted to nutrient-poor soils and helps in reclaiming degraded lands, making it valuable for ecological restoration projects. Its presence in dry ecosystems enhances resilience against desertification and supports overall ecosystem health.


Flower
Leaf

32. Botanical Name : ***Alangium salvifolium* (L. *f*.) Wang**

(Syn : *Karangolum salviifolium*)

Family : **Cornaceae**

Vernacular Name : **Akola**

Morphological characteristics :

Trees. Leaves oblong-lanceolate, ovate, or elliptic, chartaceous, with basal veins, glossy on the upper surface, glabrescent or slightly puberulent below; base oblique, apex attenuate or sub-acute, somewhat retuse; petiole tomentose. Flowers white, fragrant, arranged in irregular axillary cymes or clusters; bracts ovate, mm, deciduous. Calyx-tube cup-shaped, adnate to the ovary, tomentose; lobes triangular-ovate, subequal. Petals 10, white, linear-oblong. Berries ovoid, ellipsoid, or nearly spherical, smooth, hairless, and violet to purple.

Flowering & Fruiting : March-June.

Ecological Significance :

Alangium salvifolium, also known as sage-leaved alangium, plays a valuable role in maintaining ecological stability in dry and semi-arid regions. Its hardy nature allows it to thrive in poor soils, contributing to land rehabilitation and control soil erosion through its strong root system. The tree supports local biodiversity by offering shelter and food to various organisms. Its flowers attract pollinators such as bees and butterflies, which are vital for ecosystem health and crop pollination in surrounding areas. Birds and mammals eat the fruits, helping disperse seeds naturally and supporting plant regrowth. Moreover, the tree adds organic material to the soil via fallen leaves, enhancing soil fertility gradually. In these ways, it serves as an important ecological component in the landscapes it inhabits.


Leaves
Stem

33. Botanical Name: *Cycus revoluta* Thunb.

(Syn : *Cycas aurea*)

Family : **Cycadaceae**

Vernacular Name : **Cycus**

Morphological characteristics :

This is a slowly growing, evergreen plant resembling a palm, with a vertical main stem typically between 0.5 and 2 metres high (occasionally reaching 8 metres in very old plants) and about 20–90 cm wide. It bears a crown of many large leaves, each measuring approximately 60–150 cm in length. Mature plants, particularly males, often develop one or more branches.

Flowering & Fruiting : Sept.-Oct.

Ecological Significance :

Cycas revoluta holds significant ecological value as a living relic of ancient flora, offering insights into plant evolution. As a drought-resistant species, it aids in soil stabilization and erosion control, particularly in degraded or arid landscapes. Additionally, its symbiotic relationship with nitrogen-fixing cyanobacteria enhances soil fertility, benefiting surrounding plant communities. Despite its slow growth, *C. revoluta* plays a role in maintaining biodiversity and ecosystem resilience in its native and cultivated ranges.


Leaf
Stem

34. Botanical Name : ***Dillenia indica* L.**

(Syn : *Dillenia speciosa*)

Family : **Dilleniaceae**

Vernacular Name : **Chalta**

Morphological characteristics :

Evergreen species. Leaves 15–30 × 5–12 cm, oblong, tapering to a point, margins toothed, with hairs along nerves underneath. Flowers solitary, hanging, 15–20 cm wide. Sepals thick and fleshy. Petals white in color. Stamens with bent tips. Fruits yellow-green, sepals enclosing them; carpels 14–20. Seeds kidney-shaped, black, with spiny edges.

Flowering : May-June, **Fruiting :** July-Feb.

Ecological Significance:

Dillenia indica, commonly known as elephant apple, holds significant ecological importance in its native habitats. The tree supplies essential resources to a variety of wildlife, as its large, fleshy fruits provide nourishment for birds, mammals, and even elephants, helping in seed dispersal. Its thick canopy offers shelter and shade for many organisms, while its blossoms attract pollinators such as bees and butterflies, promoting biodiversity. Furthermore, D. indica aids in soil stabilization through its extensive root network, reducing erosion in forest and riparian habitats. Found in tropical and subtropical areas, its presence strengthens ecosystem resilience, highlighting its ecological importance.


Leaves
Stem

35. Botanical Name : ***Shorea robusta* Gaertn.**

(Syn : *Vatica robusta*)

Family : **Dipterocarpaceae**

Vernacular Name : **Saal**

Morphology characteristic :

Resinous lofty trees. Stipules large, persistent or small and deciduous or inconspicuous. Leaves entire or repand. Axillary or terminal panicles. Calyx very short, segments ovate or lance-shaped, overlapping. Petals 5, twisted. Stamens 15 or more, anthers generally ovate or oblong with a pointed connective extension. Ovary 3-celled, each cell with 2 ovules, style pointed, stigma entire or 3-lobed. Capsule indehiscent, single-seeded, tightly enclosed by the expanding calyx bases.

Flowering & Fruiting : March - June

Ecological Significance :

Shorea robusta (sal tree) is a vital species in the tropical dry deciduous forests of the Indian subcontinent, essential for sustaining ecological balance. Its thick canopy moderates local climate by providing shade and lowering soil temperatures, aiding moisture retention and benefiting understory vegetation. The tree's fallen leaves improve soil fertility by adding organic matter and enhancing nutrient cycling. It serves as a habitat and food source for numerous animals, including insects, birds, and mammals, thereby supporting overall biodiversity. Moreover, *Shorea robusta* helps stabilize soil with its widespread roots, reducing erosion and aiding forest regeneration.


Leaf

36. Botanical Name : ***Elaeocarpus angustifolius* Bl.**
(Syn : *Ayparia crenata*)
Family : **Elaeocarpaceae**
Vernacular Name : **Rudraksh**

Morphology characteristic :

The Tree is a rapidly growing, large, spreading, unique, rainforest species, reaching 35 m in height. It originates from Australia. Alternately arranged oblong-elliptical leaves, 10–18 cm long, with shallow, toothed edges. Leaves are dark green on the upper side. Flowers are bell-shaped, greenish or white, with 5 fringed petals, appearing in many racemes along branches from leaf scars. The white summer flowers are succeeded by metallic blue fruits about 3 cm across, each containing a hard, pitted core. Indigenous Australians used the fruit stones for making necklaces. They also prepared an edible paste from ripe fruits by mashing them in a bark trough with water.

Flowering : April- June, **Fruiting :** July – Sept.

Ecological Significance :

Elaeocarpus angustifolius holds significant ecological value as a keystone species in its native habitats, including rainforests of Australia and Southeast Asia. It provides critical food resources for various fauna, particularly birds and bats, which feed on its fleshy fruits, aiding in seed dispersal and forest regeneration. The tree also supports biodiversity by offering habitat and shelter for numerous insects, birds, and small mammals. Additionally, its dense foliage contributes to carbon sequestration, soil stabilization, and moisture retention, enhancing ecosystem resilience.


Leaf
Stem

37. Botanical Name : ***Jatropha curcas* L.**

(Syn : *Manihot curcas*)

Family : **Euphorbiaceae**

Vernacular Name : **Safed arand, Ratanjot**

Morphological characteristics :

This is a perennial toxic shrub or small size tree growing up to 5 m. Native to Central America, it now occurs across tropical and subtropical regions, mainly in Asia and Africa. Often used as a living fence, it has large, green to pale-green leaves (8–15 cm), broadly ovate, heart-shaped, and shallowly three-lobed, with 5–15 cm petioles. Inflorescences develop in leaf axils, with greenish-yellow flowers, female flowers slightly larger. Fruits are globose, yellowish-green, 3–4 cm in size. Seeds of Jatropha curcas can be processed into biodiesel for diesel engines without modification.

Flowering & Fruiting : Aug. - Jan.

Ecological Significance :

Jatropha curcas is ecologically significant due to its ability to grow in arid and marginal lands, where few other crops can thrive. Its widespread root network helps control soil erosion and enhances land restoration by improving soil texture and increasing organic matter. The species tolerates drought and thrives in infertile, degraded lands, making it valuable for reviving ecological stability in dry regions. Moreover, Jatropha enhances biodiversity by providing shelter to insects and small fauna, while its blossoms attract pollinators. Its application as a biofuel source further aids in cutting fossil fuel dependency and decreasing carbon emissions.


Leaves
Branch

38. Botanical Name : ***Ricinus communis* L.**

(Syn : *Ricinus africanus*)

Family : **Euphorbiaceae**

Vernacular Name : **Arandi, castor**

Morphological characteristics :

Evergreen small trees or tall shrubs with soft wood and a bluish hue, growing up to 4 meters tall. Leaves alternate, 20–40 cm wide, divided into 6–13 lobes; lobes ovate-lanceolate, tapering, and irregularly toothed; petioles bearing 1–2 glands near the tip. Inflorescences terminal, pyramidal, and opposite to leaves. Male flowers with ovate-lanceolate, unequal tepals about 5 mm long, bearing glands. Stamens numerous. Female tepals 8–10 mm long, soon falling; styles three, divided into two. Fruits capsules 1.5–2 cm, spiny, with three two-valved segments; seeds oblong, glossy, and smooth.

Flowering & Fruiting : Sept. - May

Ecological Significance :

Ricinus communis (castor bean plant) plays an important ecological role in various environments due to its adaptability and resilience. It is often used in land reclamation and soil restoration projects because of its ability to grow in poor, degraded soils and tolerate drought conditions. The plant's extensive root system helps in reducing soil erosion, while its rapid growth provides quick vegetative cover in disturbed areas. Additionally, it supports certain insect populations, including pollinators, through its nectar-producing flowers. Although toxic to many animals, its presence in marginal lands contributes to stabilizing ecosystems where few other species can thrive, thereby enhancing overall ecological resilience.


Branch
Leaf
Fruit

39. Botanical Name : ***Albizia lebbek* (L.) Benth.**

(Syn : *Acacia lebbeck*)

Family: **Fabaceae**

Vernacular Name : **Kala Siris, Siris**

Morphological characteristics :

Tall deciduous trees with dark gray bark and young parts covered in fine hairs. Leaves are bipinnate, with the rachis bearing a prominent gland near the petiole base and another below the uppermost pinna; pinnae 2–4 pairs long. Leaflets 4–9 pairs, obliquely oblong with the midrib closer to the upper edge. Flowers sessile, solitary or in panicles, white and aromatic. Calyx bell-shaped, hairy. Corolla hairy externally. Pods pale straw-colored, containing 6–12 seeds.

Flowering & Fruiting : March-Oct.

Ecological Significance :

Albizia lebbeck, also called the siris or woman's tongue tree, holds considerable ecological importance in tropical and subtropical environments. Being a leguminous plant, it develops mutual associations with nitrogen-fixing microorganisms in its root nodules, enriching the soil with nitrogen and enhancing fertility for neighboring plants. Its wide crown provides shade and shelter to numerous birds, insects, and small mammals, thereby promoting local biodiversity. The tree's deep root system strengthens soil stability and helps reduce erosion, particularly in degraded or hilly terrain. The fallen leaves and organic residues of *A. lebbeck* break down to improve soil composition and nutrient availability. Furthermore, it serves as a natural air cleanser by capturing carbon dioxide and trapping pollutants, making it valuable in both rural and urban settings. These traits collectively sustain ecological harmony and environmental health.


Fruit
Leaf

40. Botanical Name : ***Albizia odoratissima*** **(L.) Benth**

(Syn : *Acacia odoratissima*)

Family : **Fabaceae**

Vernacular Name : **Chichwa, Siris**

Morphological characteristics :

This tree is tall, almost evergreen with greyish bark and brown hairy young parts. Leaves alternate and hairy; rachis bears a prominent dark gland close to the base and another between the uppermost pair of pinnae; pinnae 2–5 pairs; leaflets up to 24 pairs, elliptic or obliquely oblong, with midrib near the edge. Flowers pale yellow, stalkless, arranged singly or in branched heads. Calyx densely pubescent. Corolla covered with grey hairs outside. Pods, reddish-brown, 8-12-seeded.

Flowering & Fruiting : May-June.

Ecological Significance :

Albizia odoratissima, often referred to as black siris, holds an important ecological function within tropical and subtropical habitats. Being a leguminous species, it maintains a mutual association with nitrogen-fixing microorganisms in its root nodules, enriching the soil with nitrogen and boosting fertility for neighboring flora. This enhances soil productivity and encourages the establishment of diverse vegetation. Its thick canopy offers shelter and nesting sites for birds, insects, and small wildlife, thereby supporting biodiversity. The blossoms lure pollinators, promoting reproduction in nearby plants, while the tree also aids carbon sequestration, reducing climate change effects. Through these ecological functions, the species supports environmental sustainability and ecosystem resilience.

Branch

Stem

41. Botanical Name : ***Albizia procera*** **(Roxb.) Benth**

(Syn : *Acacia procera*)

Family : **Fabaceae**

Vernacular Name : **Safed Siris**

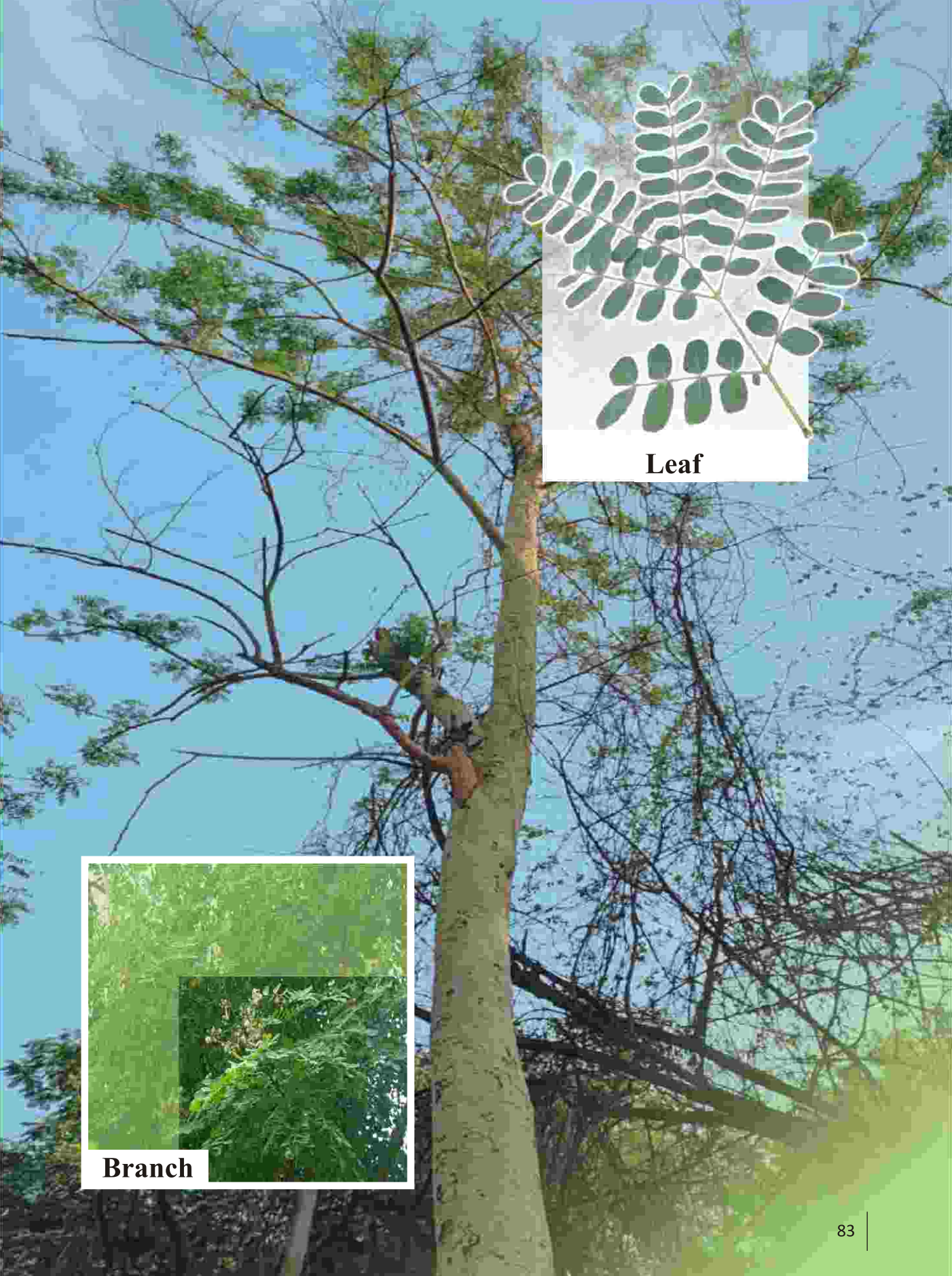
Morphological characteristics :

Tall deciduous trees having greenish-white to brown bark. Leaves are alternate and bipinnate, with the rachis bearing a prominent gland near its base. Pinnae occur in 2–6 pairs, each containing 4–16 pairs of obliquely oblong leaflets. Flower clusters are white, arranged in fascicles or in axillary and terminal panicles. The calyx is small and bell-shaped, while the corolla measures about twice its length. Pods are broad, short-stalked, and contain 8–12 seeds.

Flowering & Fruiting : Sept.- May

Ecological Significance :

Albizia procera, commonly known as white siris, plays an ecological role in various ecosystems. As a leguminous tree, it forms a symbiotic relationship with nitrogen-fixing bacteria in its root nodules, enriching the soil with nitrogen and improving fertility for surrounding vegetation. This natural soil enhancement supports plant diversity and agricultural productivity. Its wide canopy provides shelter and nesting sites for birds and other wildlife, contributing to habitat conservation. Additionally, it supports pollinators and other beneficial insects, which are vital for ecosystem functioning. Through these ecological services, *Albizia procera* contributes to soil restoration, biodiversity, and overall ecosystem resilience.


Leaf
Branch

42. Botanical Name : ***Bauhinia racemosa*** **Lamk.**

(Syn : *Pauletia racemosa*)

Family : **Fabaceae**

Vernacular Name : **Kathool, Phalesa**

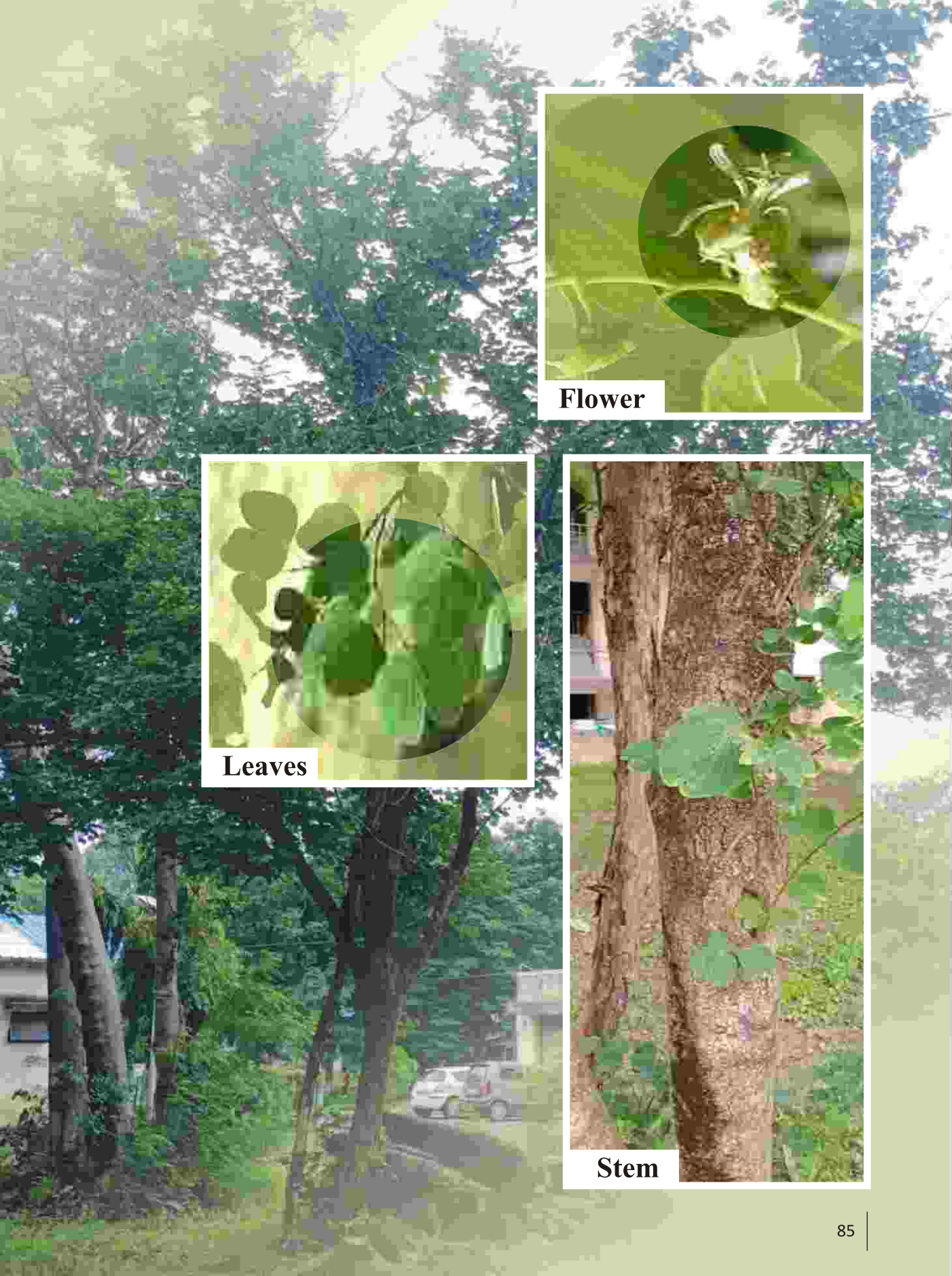
Morphological characteristics :

The small trees with a spreading crown; bark dark grey to black, marked with vertical fissures. Leaves wider than long, divided up to halfway into two lobes, smooth on the upper surface and hairy beneath, generally heart-shaped at the base. Flowers white, borne in terminal or leaf-opposed simple racemes. Calyx tubular, spathe-like, reflexed. Petals about 1 cm long, oblanceolate, pointed. Stamens ten, fertile, filaments hairy at base. Ovary pubescent, stigma sessile. Pods 10–25 cm long, curved; seeds 12–20, oblong, flattened, black.

Flowering & Fruiting : April-Aug.

Ecological Significance :

Bauhinia racemosa, a small deciduous tree native to South and Southeast Asia, plays an important role in maintaining ecological balance. It supports local biodiversity by providing shelter and food for various insects, birds, and small mammals. The tree's flowers attract pollinators such as bees and butterflies, contributing to the pollination of surrounding plant species and promoting ecological connectivity. Its leaves and other organic matter, when shed, decompose and enrich the soil with nutrients, enhancing soil fertility and microbial activity. *Bauhinia racemosa* is also known for its drought tolerance and ability to grow in poor soils, making it valuable for reforestation and land reclamation efforts in degraded areas.



Flower

Leaves

Stem

43. Botanical Name : ***Bauhinia variegata* L**
(Syn : *Perlebia variegata*)**.**
Family : **Fabaceae**
Vernacular Name : **Dhondi, Kachnar**

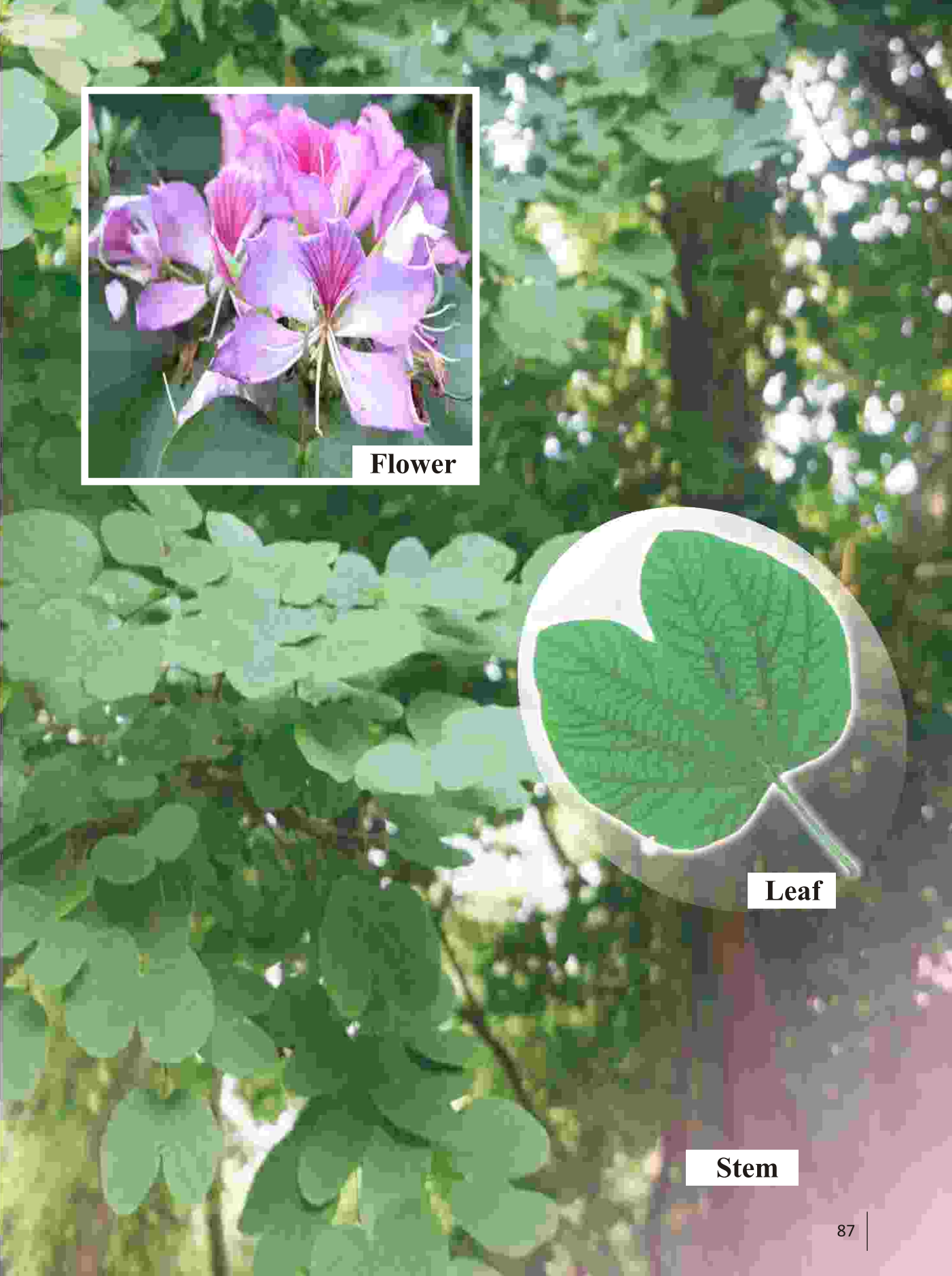
Morphological characteristics :

Small to medium-sized trees bearing hairy twigs. Leaves nearly as wide as long, divided one-fourth to one-third of their length, 9–15 nerved, lobes rounded, base heart-shaped. Flowers arranged in loose corymbose racemes, arising from leafless axils or at the ends of lateral shoots; bracts and bracteoles triangular. Calyx hairy, spathe-like, five-toothed at tip. Petals obovate-oblong with claws, upper petal deeper in color with purple veins. Five fertile stamens, no staminodes. Ovary hairy. Pods flattened, smooth; seeds 10–15.

Flowering & Fruiting : Oct.-April

Ecological Significance :

Bauhinia variegata holds significant ecological importance. Its colorful blossoms draw numerous pollinators such as bees and butterflies, maintaining pollination cycles vital for ecosystem diversity. The species provides nourishment and habitat for many insects, birds, and smaller wildlife. Being a legume, Bauhinia variegata can convert atmospheric nitrogen into usable forms through root nodules, thus enriching soil fertility and supporting nearby plants. Additionally, its fallen foliage decomposes naturally, adding organic matter to the soil and improving its texture and nutrient balance. Additionally, the tree helps in preventing soil erosion with its widespread root system, especially on slopes and degraded lands. Through these ecological functions, Bauhinia variegata supports environmental sustainability and habitat stability.


Flower
Leaf
Stem

44. Botanical Name : ***Butea monosperma*** **(Lamk.) Taub.**

(Syn : *Butea frondosa*)

Family : **Fabaceae**

Vernacular Name : **Dhak, Palas**

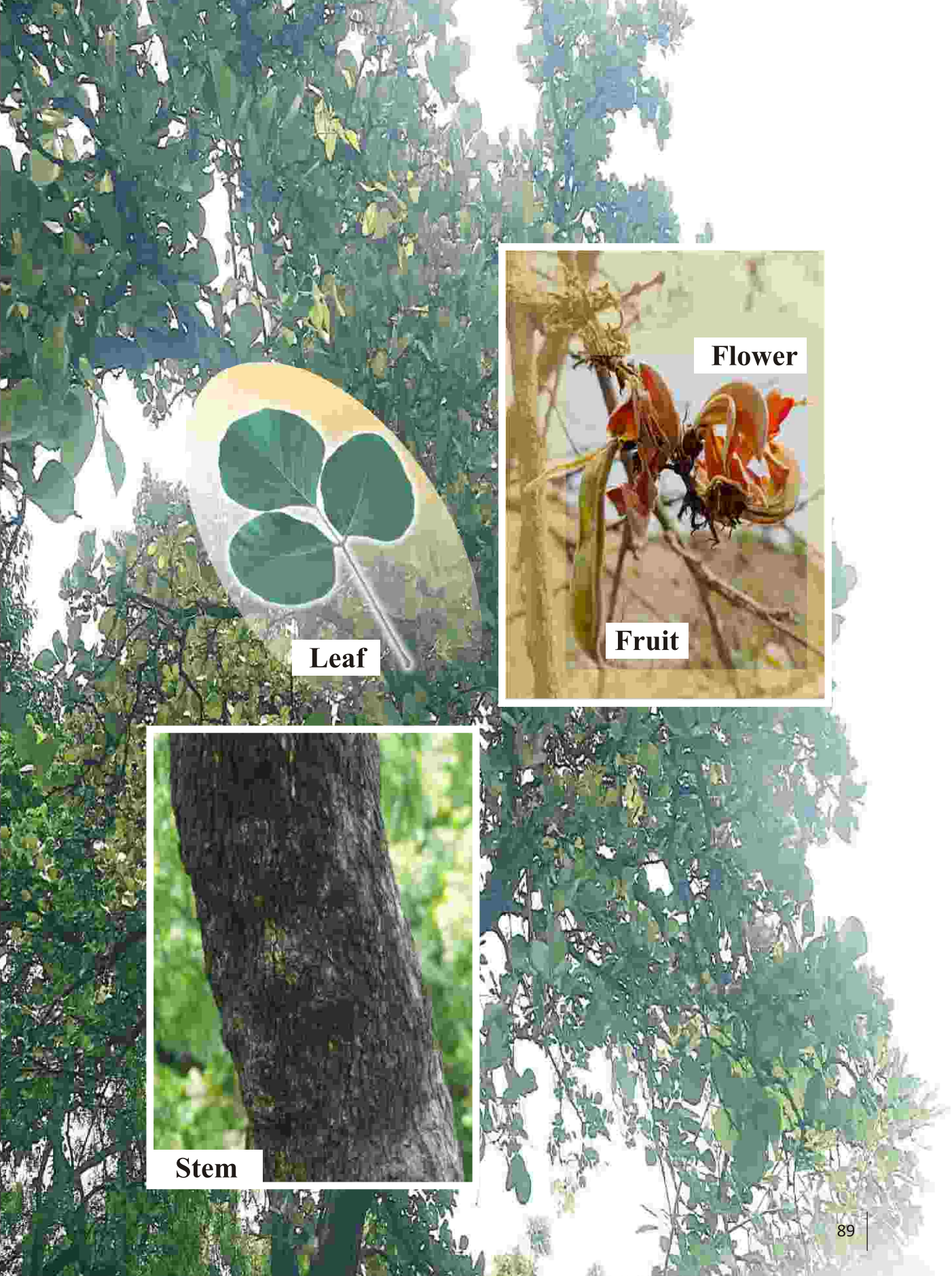
Morphological characteristics :

Medium-sized deciduous tree, reaching 10–15 m in height. Leaves are pinnately 3-foliolate; petioles 7–15 cm long; leaflets grey-tomentose on the underside, terminal leaflet ovate-rhomboid, 10–20 cm long, equally wide, apex rounded; lateral leaflets smaller and oblique. Flowers about 5 cm long, arranged in fascicles on 8–10 cm long racemes on leafless branches. Calyx black and velvety; five teeth, upper two fused, lower three deltoid. Corolla striking, flame to scarlet-orange, silky externally; standard 2.5–5 cm

Flowering & Fruiting : Jan.-May.

Ecological Significance :

Butea monosperma, plays a vital ecological role in its native habitats across the Indian subcontinent. The tree is an important source of nectar for pollinators such as bees, butterflies, and birds, especially during its flowering season when few other plants are in bloom. This makes it a key species in sustaining pollinator populations. Its vibrant flowers and foliage support various insects and serve as food for herbivores, thus contributing to the local food web. The tree also enhances soil fertility through nitrogen fixation and the shedding of organic matter, which decomposes and enriches the soil. Its extensive root system helps to control the soil erosion. Furthermore, it aids in the natural regeneration of degraded lands, making it valuable for ecological restoration efforts.


Leaf
Flower
Fruit
Stem

45. Botanical Name : ***Cassia fistula* L.**

(Syn : *Bactyrilobium fistula*)

Family : **Fabaceae**

Vernacular Name : **Amaltas, Dadrughna**

Morphological characteristics :

Medium-sized trees with a spreading canopy and 4–8 pairs of leaflets, closely veined, shapes ovate, ovate-lanceolate, or ovate-oblong, apex acuminate or acute, measuring 5–15 × 4–9 cm. Flowers yellow, 4–5 cm in diameter, arranged in pendulous lax racemes 20–40 cm long. Sepals 5, clearly distinct. Petals 5, obovate with short claws. Stamens 10, all fertile. Ovary slender, with appressed hairs, stigma punctiform. Pods 30–60 cm long, cylindrical, hanging, dark brown; seeds numerous.

Flowering & Fruiting : Sept.-Feb.

Ecological Significance :

Cassia fistula plays a significant role in maintaining ecological balance in its native and cultivated habitats. Its bright yellow flowers attract a different types of pollinators, such as bees and butterflies, which contribute to the pollination of surrounding plant species. The tree provides habitat and nesting sites for birds and insects, supporting local biodiversity. Its leaves and pods, when shed, decompose and enrich the soil with organic matter, improving soil fertility and structure. It is also known for its ability to thrive in poor soils and dry conditions, making it valuable for reforestation and land restoration efforts. Additionally, its root system helps prevent soil erosion, especially in degraded or sloped areas. Through these ecological contributions, it enhances the sustainability and resilience of the ecosystems it inhabits.


Flower
Leaves
Stem

46. Botanical Name : ***Dalbergia latifolia* Roxb.**

(Syn : *Amerimnon latifolium*)

Family : **Fabaceae**

Vernacular Name : **Sheesham**

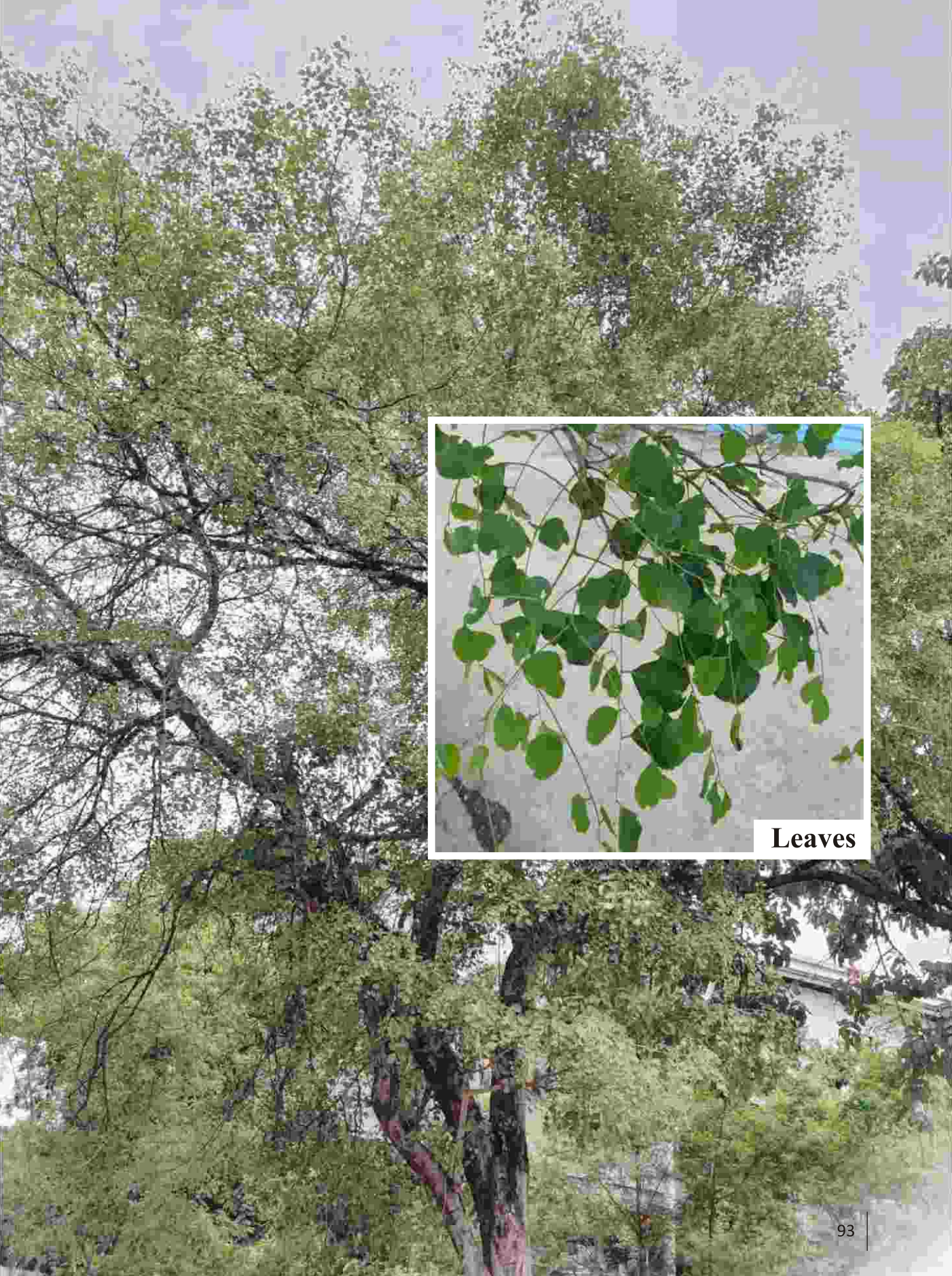
Morphological characteristics :

Large trees with glabrous branches. Leaves imparipinnate, leaflets 5-7, broadly elliptic-obovate or suborbicular. cuneate at base, emarginate at apex. Flowers in broad lax 5-10 cm long axillary panicles, branches of panicles sub-corymbose and shorter than the leaves. Calyx teeth obtuse, shorter than the tube. Corolla white, twice as long as calyx. Stamens 9, monadelphous. Pods oblong-lanceolate, 3.5-7.5 x 2 cm, shining brown, 1-4-seeded.

Flowering : Sept., **Fruiting :** Oct.- April

Ecological Significance :

Dalbergia latifolia, commonly known as Indian rosewood, holds significant ecological value as a keystone species in tropical and subtropical forests. It supports biodiversity by providing home and food for different types of fauna, including insects, birds and mammals. The tree improves soil fertility through nitrogen fixation, benefiting surrounding vegetation. Its canopy provides shade and controls the microclimate, while its deep root system aids in halting soil erosion. Furthermore, Dalbergia latifolia helps mitigate climate change by sequestering carbon. Its conservation is essential for preserving the stability of ecosystems and the health of forests because of overexploitation.



Leaves

47. Botanical Name : ***Dalbergia sissoo* Roxb.**

(Syn : *Amerimnon sissoo*)

Family : **Fabaceae**

Vernacular Name **: Sissoo**

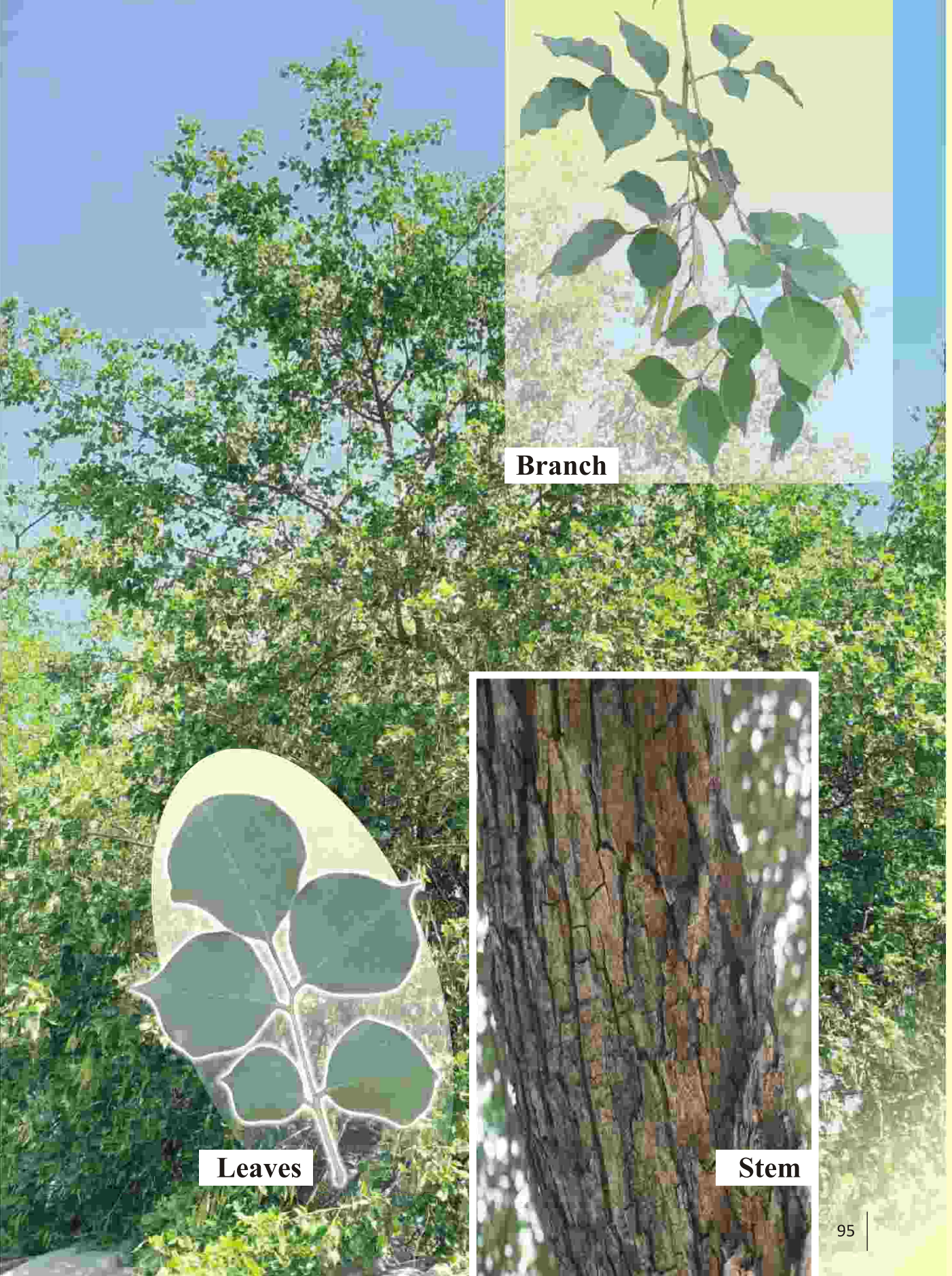
Morphological characteristics :

Large trees up to 25 meters tall, with pubescent young branches and rough, grey bark; the wood is brown and extremely hard. Imparipinnate leaves, 10–20 cm long; 3-5 alternating leaflets, 2.5–6 cm long, acuminate or long cuspidate, broadly oval or sub-orbicular. Small, subsessile flowers in dense panicled axillary racemes that are 5-8 cm long. The ciliate teeth are shorter than the tube, and the calyx is 4-5 mm long. Corolla: yellowish, standard, 8-10 mm long, long claw. Monadelphous stamens 9 with a divided sheath on top. Pods flat, strap-shaped, 3.5-10x 0.5-1.5cm, with cuneate base, 1-4-seeded.

Flowering : Feb-April, **Fruiting :** July-June

Ecological Significance :

Dalbergia sissoo, commonly known as sheesham or Indian rosewood, holds significant ecological value as a fast-growing, nitrogen-fixing tree that enhances soil fertility and prevents erosion. It provides habitat and food for various wildlife, including birds and insects, while its dense foliage offers shade and moderates microclimates. The species is drought-resistant and adaptable to degraded lands, making it useful in afforestation and agroforestry systems. Additionally, it contributes to sequestration of carbon, helping mitigate climate change. Deep root system of this tree stabilizes riverbanks and reduces water runoff, promoting groundwater recharge.


Branch
Leaves
Stem

48. Botanical Name : ***Delonix regia* (Bojer ex Hook.) Rafin.**

(Syn : *Caesalpinia regia*)

Family : **Fabaceae**

Vernacular Name : **Gulmohar**

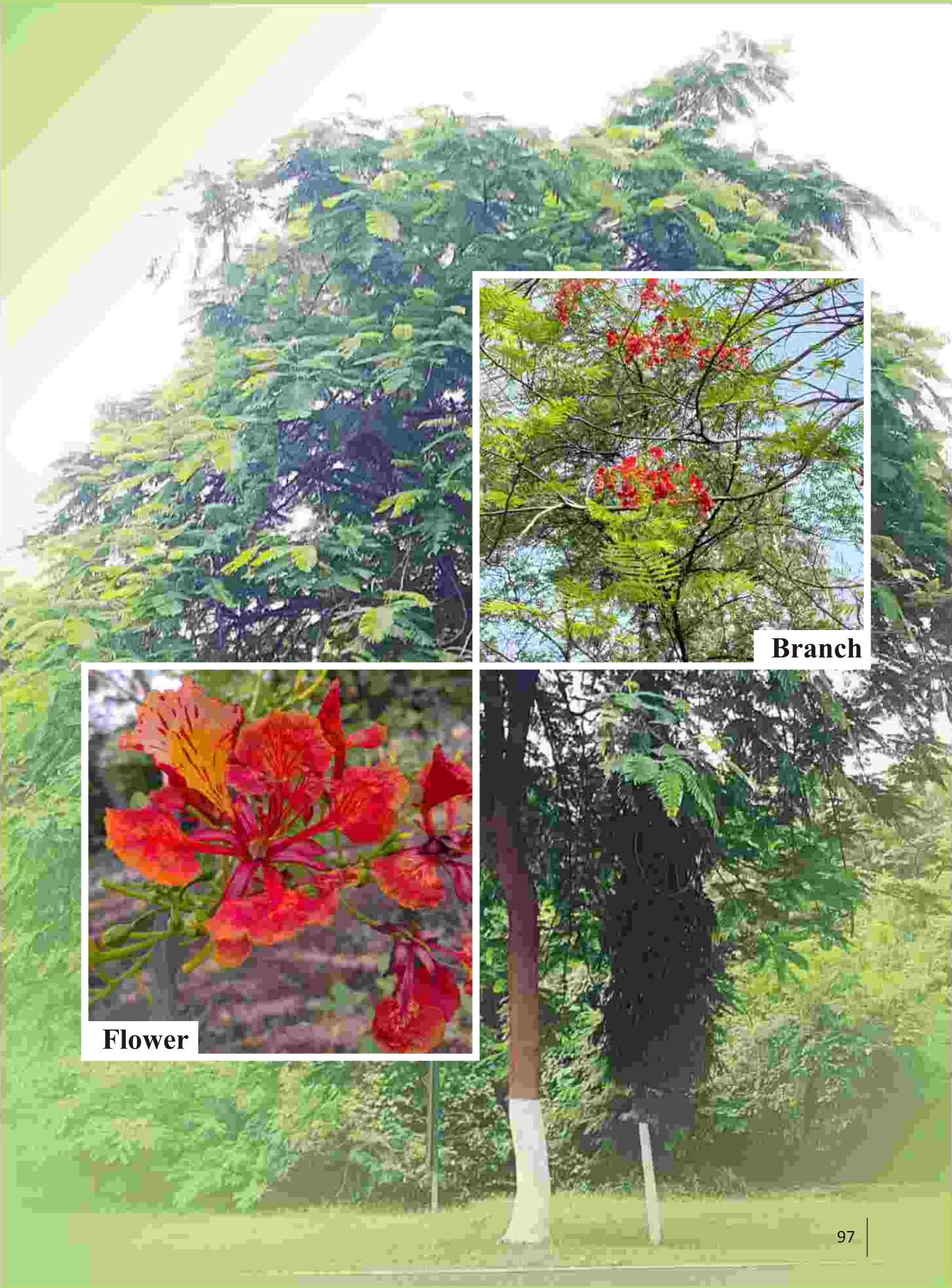
Morphological characteristics :

Trees with spreading crowns that are medium in size. The bipinnate, feathery leaves include pectinate stipules, 11–18 pairs of pinnae, and 20–30 pairs of oblong leaflets. Terminal or axillary flowers. racemes of corymbose. 5, subequal, valvate calyx lobes. Petals 5: crimson, yellow claw, white top petal with yellow and red streaks, imbricate. Much exerted stamens 10; villous filaments below. subsessile ovary. Seeds 20–40, oblong, speckled; pods long, flat, strap-shaped, woody.

Flowering & Fruiting : April -Aug

Ecological Significance :

Delonix regia is commonly known as the flame tree or royal poinciana, holds significant ecological value as a shade-providing tree in tropical and subtropical regions. Its broad canopy offers shelter and reduces soil erosion, while its flowers are nectar-rich and brightly coloured, which attract the pollinators such as bees, birds, and bats, enhancing biodiversity. The tree's leaf litter improves soil health by adding organic matter, and its deep root system aids in water infiltration. Additionally, *Delonix regia* is often used in urban landscaping and reforestation projects due to its drought tolerance and its ability to rejuvenate degraded soils, making it ecologically beneficial for ecosystem restoration and habitat support.



Branch

Flower

49. Botanical Name : ***Erythrina suberosa* Roxb.**

(Syn : *Corallodendron suberosa*)

Family : **Fabaceae**

Vernacular Name : **Gadhapalas, Handua, Panjra**

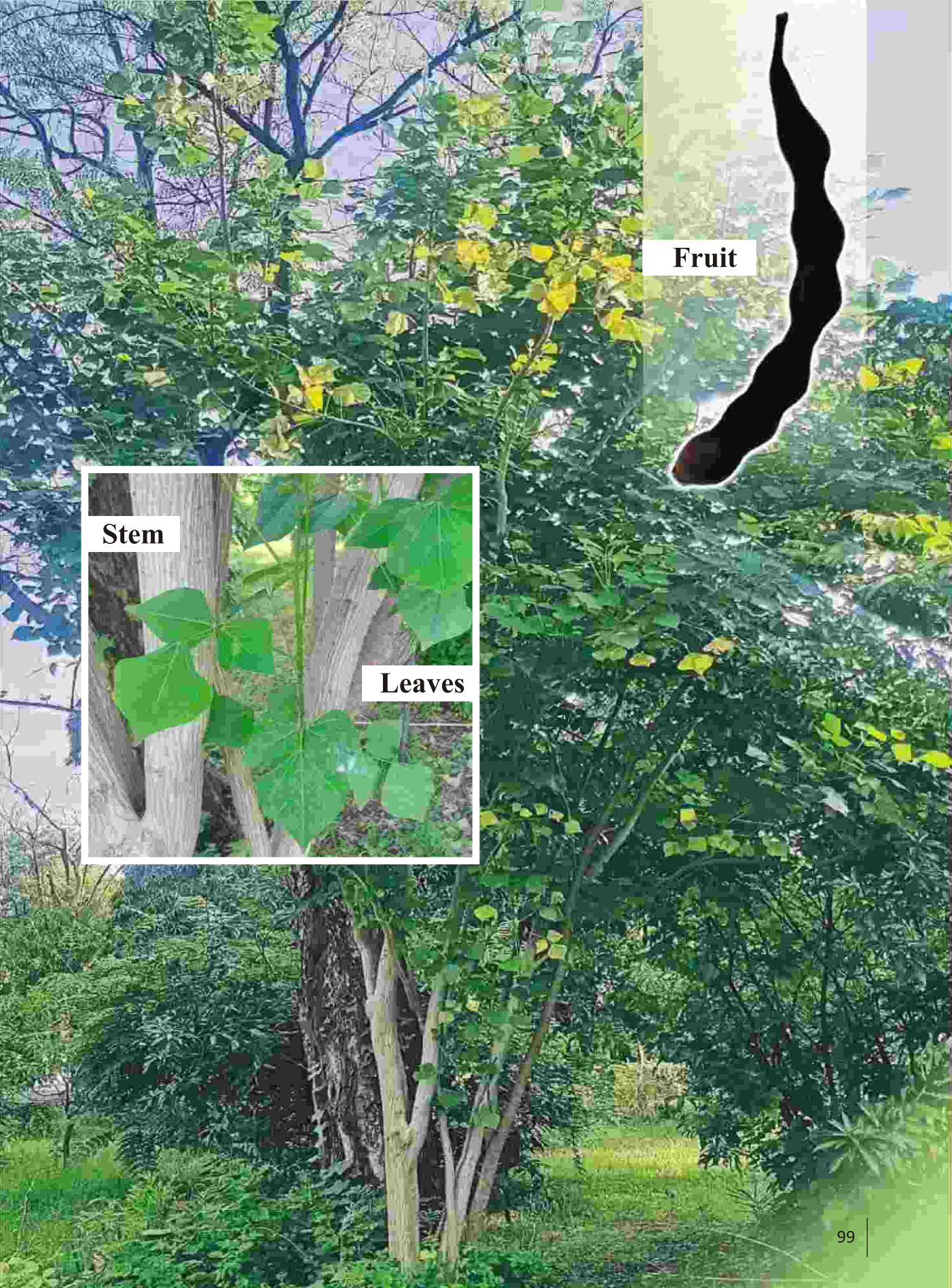
Morphological characteristics :

Medium-sized trees and armed with short sharp prickles. Bark thick, deeply longitudinally cracked, pale coloured, cracks laminate. Leaves 3-foliolate, greyish white tomentose covering, terminal leaflet broadly ovate-rhomboid; lateral ones obliquely deltoid. Racemes clustered at the ends of leafless branchlets. Flowers 4-5 cm long. Calyx bilabiate, pubescent. Corolla scarlet; wings rhomboid, cuneate; keel ovate, acute. Pods stipitate, torulose, 2-3 seeded.

Flowering & Fruiting : March-April

Ecological Significance :

Erythrina suberosa, commonly known as the Corky Coral Tree, holds significant ecological value in its native habitats. It plays a crucial role in nitrogen fixation, enriching soil fertility through symbiotic relationships with rhizobia bacteria. The tree offers shelter and food for different pollinators, due to its bright red flowers and nectar production. Its dense branching structure offers nesting sites for birds, while its leaves serve as forage for herbivores. Additionally, *E. suberosa* aids in preventing soil erosion, particularly in degraded or sloping landscapes, due to its robust root system. As a drought-resistant species, it contributes to ecosystem stability, supporting biodiversity and ecological balance.


Fruit
Stem
Leaves

50. Botanical Name : ***Leucaena leucocephala*** **(Lamk.) de Wit**

(Syn : *Acacia leucocephala*)

Family : **Fabaceae**

Vernacular Name : **Subabul**

Morphological characteristics :

Small trees or tall shrubs that reach a height of 6 meters. Bipinnate leaves, 10–20 cm long, with a soft bristle at the end; 4–8 pairs of pinnae, 5–10 cm long; 10–16 pairs of oblong, acute, sessile, 7–12 mm long, with a glaucous underside. White flowers with globose heads that are either single or three combined and measure around 2.5 cm in diameter. Calyx! villous and tubular-campanulate. Petals are pilose on the outside, valvate, spathulate, and about 1 cm long. Straight, strap-shaped pods with a sharp tip Many seeds.

Flowering & Fruiting : Aug.- Feb.

Ecological Significance :

Leucaena leucocephala, commonly known as subabul or white leadtree, plays a vital ecological role in various ecosystems due to its fast growth, nitrogen-fixing ability and adaptability to poor soils. As a leguminous tree, it enriches soil fertility by forming symbiotic associations with rhizobia, thereby enhancing nitrogen availability for surrounding vegetation. Its wide root system and thick canopy help to improve soil structure and reduce soil erosion. The tree is useful for land reclamation and agroforestry systems because it can thrive in marginal or degraded areas and offers food and habitat for a diversity of species. However, its aggressive growth and potential invasiveness in non-native regions must be managed to prevent negative impacts on native biodiversity.

Branch

Fruit

Leaf

51. Botanical Name : ***Neltuma juliflora* (Sw.) Raf.**

(Syn : *Prosopis juliflora*)

Family : **Fabaceae**

Vernacular Name : **Vilayati Babul**

Morphological characteristics :

Large evergreen shrubs or small trees up to 5 m high; stipular spines straight, conical, solitary or paired, 3-9 mm long. Leaves bipinnate, 1-3 together; rachis 1-8 cm long, prolonged beyond the last pinnae as a soft bristle; pinnae 3-10 cm long; leaflets 10-25 pairs, 5- 17 x 2-3 mm, elliptic-oblong, often mucronate. Flowers greenish-white in axillary pedunculate 6-10 cm long spikes. Calyx campanulate, 5-toothed, ca 1 mm long. Petals free, tomentose on the inner surface. Pods compressed, straight or falcate, 10-20 x 1 cm, light yellow. Seeds 10-18.

Flowering & Fruiting : Feb.-Oct.

Ecological Significance :

Neltuma juliflora plays a complex ecological role, particularly where it is known for its drought resistance and ability to stabilize degraded soils. It contributes to soil improvement through nitrogen fixation and organic matter accumulation, supporting vegetation in otherwise inhospitable environments. The tree also offers habitat and food for various animal species and can reduce wind erosion due to its dense canopy. However, its aggressive growth often outcompetes native flora, leading to reduced biodiversity and changes in ecosystem structure. Despite these concerns, *N. juliflora* is valued in certain contexts for land rehabilitation and as a source of fuel, fodder, and timber.

Leaves

52. Botanical Name : ***Peltophorum pterocarpum* (DC.) Baker ex K.Heyne**

(Syn : *Caesalpinia arborea*)

Family : **Fabaceae**

Vernacular Name : **Copper Pod Tree**

Morphological characteristics :

Large beautiful evergreen trees with smooth grey bark; young branches reddish-brown, tomentose. Leaves bipinnate; rachis 15-30 cm long; pinnac 8-10 pairs; leaflets 10-15 pairs, 1.2-2 cm long, obliquely oblong, notched at the apex and unequal sided. Flowers yellow, in large erect terminal panicled racemes, rusty tomentose. Sepals coppery red, imbricate. Petals 5, roundish, wrinkled, with long ferruginous hairs on the back. Stamens 10, unequal, densely hairy at the base. Pods thin, 5-10 cm long. coppery red, flat, winged along both the sutures; seeds 1-3, brown.

Flowering & Fruiting : Aug -May.

Ecological Significance :

Peltophorum pterocarpum, commonly known as the copperpod or yellow flame tree, holds considerable ecological importance in tropical and subtropical ecosystems. It is a fast-growing, deciduous tree that provides vital shade and serves as a windbreak in urban and semi-urban landscapes. Its broad canopy supports microhabitats for birds, insects, and small mammals, while its bright yellow flowers attract pollinators like bees and butterflies, enhancing local biodiversity. The tree's extensive root system helps in preventing soil erosion, particularly in degraded or sloped areas. Additionally, *P. pterocarpum* contributes to soil fertility through nitrogen fixation and leaf litter decomposition, making it valuable for reforestation and ecological restoration projects.


Flower
Fruit
Leaf

53. Botanical Name : ***Pithecellobium dulce* (Roxb.) Benth.**

(Syn: *Albizia dulcis*)

Family : **Fabaceae**

Vernacular Name : **Jungli Jalebee, Sweet tamarind**

Morphological characteristics :

Medium-sized evergreen trees; branches greyish; stipular spines persistent. Pinnac 2, rachis 1-2.5 cm long; leaflets two on each pinna, obliquely elliptic, 2-4.5 x 1-2 cm. Flowers are greenish-white, arranged in clustered globose panicles. Calyx measures 1–1.5 mm in length, funnel-shaped, and covered with fine hairs. Corolla 3–4.5 mm long, with petals joined below the middle. Stamens united into a single bundle. Pods 10–12 cm long, swollen, spirally twisted, and softly hairy. Seeds 6–8 in number, black, enclosed within a white, fleshy, edible aril.

Flowering & Fruiting : Jan.-April

Ecological Significance :

Pithecellobium dulce, commonly known as Manila tamarind, plays a vital ecological role in tropical and subtropical ecosystems. As a nitrogen-fixing legume, it enhances soil fertility by improving nitrogen content, which benefits surrounding plant communities. Its thick canopy offers shelter and shade for many organisms, while its blossoms draw pollinators like bees and butterflies. Moreover, the juicy, sweet fruits serve as nourishment for birds, bats, and other animals, helping in the dispersal of seeds. The tree's adaptability to degraded or arid soils makes it valuable in reforestation and land reclamation efforts, helping to stabilize soil and combat erosion in ecologically sensitive areas.


Leaves
Fruit
Stem

54. Botanical Name : ***Pongamia pinnata* (L) Pierre**

(Syn : *Millettia pinnata*)

Family : **Fabaceae**

Vernacular Name : **Karanj, Kanji**

Morphological characteristics :

Medium-sized trees with smooth, spreading branches forming a dense canopy. Leaves are imparipinnate (7–25 cm), with 5–7 ovate-oblong leaflets (5–10 cm) rounded at the base and tapering to an acute tip. Flowers occur in short axillary racemes. Calyx brown and hairy; corolla white-pink (≈1.2 cm). Stamens monadelphous; ovary nearly stalkless with two ovules; pods woody, obliquely oblong, smooth, 4–5 cm long. Seeds 1-2, reniform, dirty white, with brown streaks.

Flowering : March - July, **Fruiting :** July **-** Feb**.**

Ecological Significance :

Pongamia pinnata is an ecologically significant leguminous tree known for its ability to grow in degraded soils as well as harsh environmental conditions. It plays a crucial role in soil fertility improvement through nitrogen fixation, thanks to its symbiotic relationship with rhizobial bacteria. The tree's deep root system controls soil erosion, stabilizes riverbanks, and improves water retention in arid regions. Additionally, it contributes to carbon sequestration, making it valuable in climate change mitigation. Its dense canopy supports ecosystem sustainability by providing habitat and shade for several organisms, while its capacity to grow on peripheral lands makes it ideal for reforestation and land reclamation efforts.

Leaf

Branch

55. Botanical Name : ***Pterocarpus santalinus* L.f.**

(Syn : *Lingoum santalinum*)

Family : **Fabaceae**

Vernacular Name : **Lal Chandan**

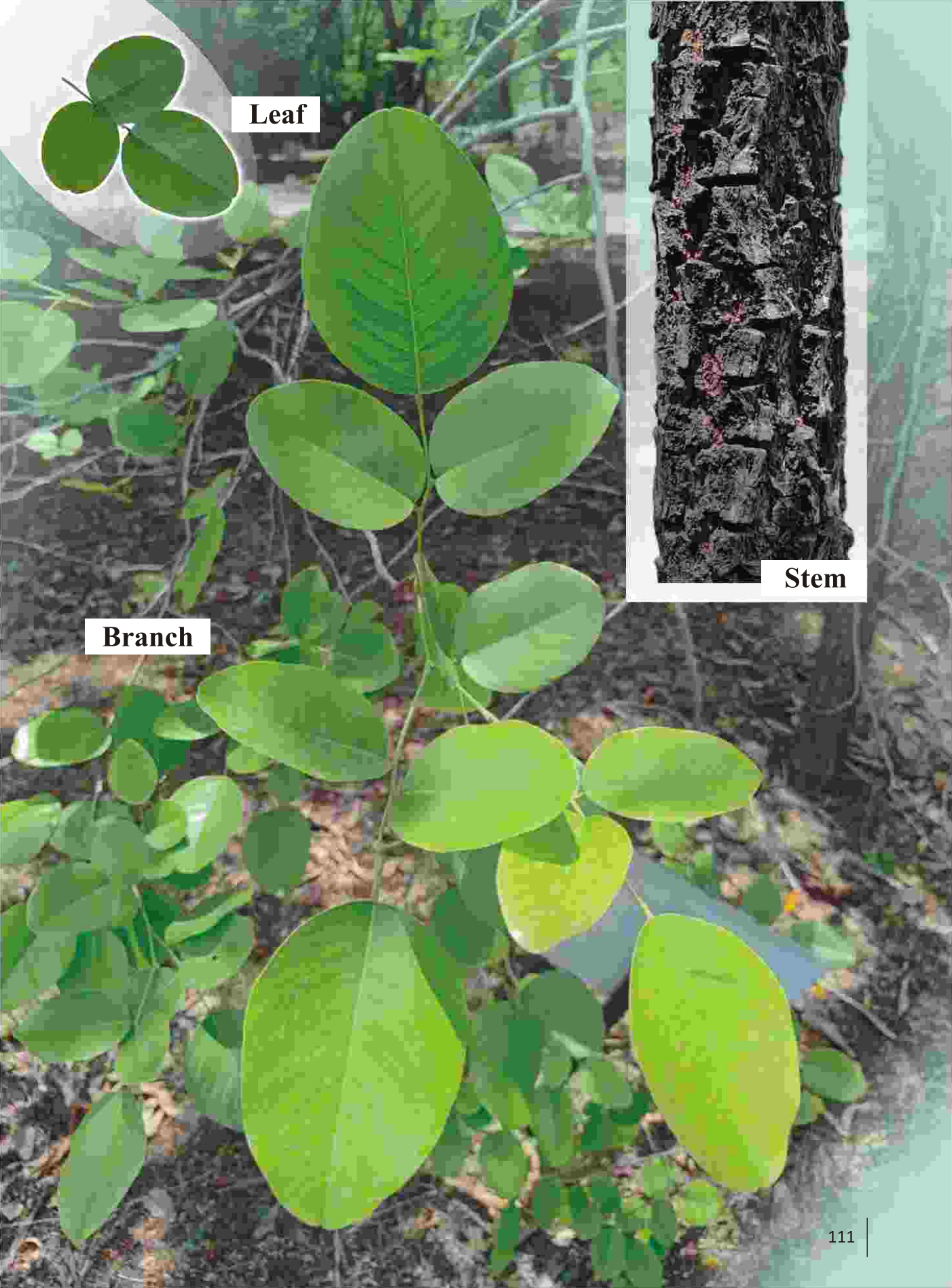
Morphological characteristics :

Red Sandalwood is a small to medium deciduous tree growing up to 11 m tall with a rounded crown. The bark is dark brown to blackish, deeply fissured, exuding deep red resin; heartwood is very hard and dark purplish. Leaves are imparipinnate, 10–18 cm long, with 3–5 broadly ovate, leathery leaflets having blunt or notched tips and pale, hairy undersides. Yellow flowers occur in small clusters on short racemes; calyx 5–6 mm with minute triangular lobes. Pods are round, 3.8–5 cm wide including the wing, narrowing to a curved stipe about 8 mm long, and covered with fine hairs. Seeds 1–2, reddish-brown, smooth, and 1–1.5 cm long.

Flowering : Dec.-April, **Fruiting :** March-June

Ecological Significance :

Pterocarpus santalinus (red sandalwood) holds ecological importance in the dry deciduous forests where it naturally occurs. It contributes to maintaining soil health through nitrogen fixation, enriching nutrient-poor soils and supporting the growth of surrounding vegetation. The tree's extensive root system stabilizes the soil and enhances water retention in dry regions. Its leaves offer shelter and nourishment to numerous insects and herbivores, and its existence fosters ecological harmony by sustaining biodiversity.. As a native species, it plays a role in sustaining the natural flora and fauna of its ecosystem, making it essential for forest regeneration and long-term environmental stability.


Leaf
Stem
Branch

56. Botanical Name : ***Samanea saman* (Jacq.) Merr.**

(Syn : *Albizia saman*)

Family : **Fabaceae**

Vernacular Name : **Rain tree**

Morphological characteristics :

Large evergreen trees, 20 m high with greyish bark. Leaves bipinnate; rachis 20-30 cm long; pinna 3-7 pairs; leaflets 3-8 pairs, obliquely oblong, obovate, or rhomboid, mid-vein central, terminal leaflets slightly larger. Flowers in long peduncled axillary heads, pink, pedicelled. Pods 10-25 cm long.

Flowering & Fruiting : March-April

Ecological Significance :

Samanea saman (rain tree) plays a significant ecological role due to its expansive canopy and nitrogen-fixing ability. Its wide, umbrella-shaped crown provides shade and microclimatic benefits, reducing soil temperature and moisture loss, which supports the growth of understory plants. The tree enriches the soil by fixing atmospheric nitrogen through its symbiotic relationship with root bacteria, enhancing soil fertility and benefiting nearby vegetation. Its flowers and pods serve as a food source for birds, bees, and other animals, promoting pollination and seed dispersal. Additionally, its deep roots help in preventing soil erosion, making it valuable for ecological restoration and land stabilization efforts.

Flowers

Leaves

57. Botanical Name : ***Saraca asoca* (Roxb.)Willd.**

(Syn: *Saraca indica*)

Family : **Fabaceae**

Vernacular Name : **Asoka tree**

Morphological characteristics :

Evergreen small trees reaching up to 10 m in height, with dark grey to black bark and reddish-brown timber. Leaves are paripinnate, around 30 cm long; stipules are intrapetiolar, fused, and papery. Each leaf bears 4–6 pairs of leaflets, measuring 10–25 × 3–6 cm, oblong-lanceolate, smooth, with 8–12 pairs of lateral veins. Flowers are bright orange to scarlet, about 2.5–3 cm across, arranged in dense corymbose panicles; pedicels 7–15 mm long; bracts ovate, 1–6 mm. Calyx is tubular, petaloid, yellowish-orange to scarlet, with four lobes 7–10 × 5–9 mm. Petals are absent. There are 6–8 stamens, prominently exserted; filaments slender, anthers purplish. Pods measure 10–25 × 3–5 cm, narrowing at both ends; seeds 4–8, ellipsoid to oblong.

Flowering : Dec.- May, **Fruiting :** June-July

Ecological Significance :

Saraca asoca (Ashoka tree) strengthens soil stability through its extensive root network, preventing erosion along riverbanks and slopes. Its vibrant, aromatic blossoms attract numerous pollinators, including bees and butterflies, thereby enhancing local biodiversity and aiding pollination. The thick canopy of the tree offers shade, shelter, and nesting habitats for various birds and small fauna. Through these ecological functions, *Saraca asoca* contributes to the vitality and diversity of forest ecosystems, supporting environmental balance and preserving natural ecosystem integrity.


Fruit
Leaf
Stem

58. Botanical Name : ***Senna siamea* (Lam.) Irwin et Barneby**

(Syn : *Cassia siamea*)

Family : **Fabaceae**

Vernacular Name : **Kassod tree, Siamese**

Morphological characteristics :

Medium-sized evergreen trees with dark brown to nearly black wood and hairy branches. Leaves lack glands; leaflets 4–16 pairs, oblong to ovate-oblong, with notched or pointed tips. Flowers are bright yellow, arranged in terminal clusters about 10 cm long; flower stalks 2–4 cm. Sepals elliptic to ovate, fringed with hairs. Petals broadly elliptic, ovate, or almost round, with the upper one clawed. Ten stamens, of unequal length. Pods are flat and strap-like, showing transverse grooves between the 20–30 enclosed seeds.

Flowering & Fruiting : Sept.-May

Ecological Significance :

Cassia siamea plays an important role in tropical and subtropical ecosystems. Being a leguminous species, it improves soil fertility by fixing nitrogen, thereby enriching the soil with vital nutrients and aiding the growth of neighboring plants. Its thick canopy provides shelter and shade for birds, insects, and small mammals, enhancing local biodiversity. The tree's extensive root network helps prevent soil erosion, stabilizing slopes and degraded areas. Furthermore, *Cassia siamea* can thrive in poor soils and withstand drought, making it ideal for reforestation and land restoration efforts. Its fallen leaves and organic debris contribute to better soil structure and water retention, benefiting the surrounding environment. Collectively, these functions help maintain ecosystem health and promote environmental sustainability.


Leaves
Stem

59. Botanical Name : ***Tamarindus indica* L.**

(Syn : *Tamarindus officinalis*)

Family : **Fabaceae**

Vernacular Name : **Amlika, Imli**

Morphology characteristic :

Large evergreen tree with a broad, spreading crown and deeply fissured, dark grey, rough bark. Leaves 5–15 cm long, paripinnate; stipules shed early, narrow-lanceolate; leaflets 10–20 pairs, opposite, linear-oblong, blunt, 12–18 × 4–5 mm. Flowers yellow, arranged in lax racemes of 10–15 blooms. Calyx about 12 mm long, turbinate, teeth lanceolate, lowest two fused. Petals three, 10–15 mm long, yellow with red streaks, lower two reduced to small scales. Stamens three fertile, remaining as setaceous staminodes. Ovary stalked, many-ovuled, fused to calyx tube; style filiform, stigma capitate. Pods linear, 5–20 cm, crustaceous pericarp, pulpy mesocarp; seeds 3–10, brown.

Flowering: May, **Fruiting :** Aug.

Ecological Significance :

Tamarindus indica (tamarind) holds ecological significance in tropical and subtropical zones, thriving as a tree tolerant to drought. It enhances soil quality by adding organic matter through decomposing leaf litter, promoting nutrient cycling. Its widespread roots help prevent soil erosion and stabilize the land, especially in degraded or arid regions. The tree offers shade and shelter for numerous animals, including birds and insects, while its flowers attract pollinators vital for local biodiversity. Furthermore, its fruits provide food for wildlife, facilitating seed dispersal and supporting ecosystem restoration and resilience.

Leaves

60. Botanical name : ***Vachellia leucophloea* (Roxb.) Maslin, Seigler & Ebinger**

(Syn : *Acacia leucophloea*)

Family : **Fabaceae**

Commen Name : **Reonja, Safed Kikar**

Morphological characteristics :

Medium-sized deciduous trees with yellowish bark; young shoots densely velvety; stipular spines either paired, straight, or missing. Leaves bipinnate; pinnae 5–15 pairs; leaflets 10–30 pairs, oblong-linear, smooth. Flowers arranged in terminal leafless panicles, forming heads; heads globular, pedunculate, white. Calyx bell-shaped. Corolla roughly hairy on the exterior. Pods linear, slightly curved, thick, and tomentose. Seeds 10–20.

Flowering & Fruiting : Nov.- March

Ecological Significance :

Acacia leucophloea, commonly known as white-barked acacia or reonja, plays a significant ecological role in arid and semi-arid regions. It is well-adapted to harsh climatic conditions and contributes to land restoration by stabilizing degraded soils and preventing erosion through its deep-rooted system. The tree enhances soil fertility by fixing atmospheric nitrogen in association with symbiotic bacteria in its root nodules, which benefits surrounding vegetation. Its canopy provides shade and microhabitats for a variety of birds, insects, and small mammals, thus supporting local biodiversity. Through these functions, it contributes to ecological stability and resilience in challenging environments.

Flowers

Leaves

61. Botanical name : ***Vachellia nilotica* (L.) P.J.H.Hurter & Mabb.**

(Syn : *Acacia nilotica*)

Family : **Fabaceae**

Commen Name : **Babul, Keekar**

Morphological characteristics :

Medium-sized trees with dark-grey to brown deeply fissured bark; stipular spines reaching 5 cm; smooth, pale surfaces. Leaves bipinnate, 5-10 cm long; pinnae 2-10 pairs, 1.8-5 cm long, leaflets 7-25 pairs, hairless. Flowers borne in axillary, peduncled, globular clusters, bright yellow. Calyx bell-shaped. Corolla about twice the calyx length. Pods 7-15 cm long, greyish downy, constricted between seeds; seeds 8-12.

Flowering & Fruiting : March-April

Ecological Significance :

Acacia nilotica plays an important ecological role in arid and semi-arid areas. It enhances soil fertility by fixing nitrogen, forming partnerships with nitrogen-fixing bacteria in its root nodules. This process enriches the soil, benefiting nearby vegetation. The tree offers habitat and food for diverse wildlife, including birds, insects, and herbivores. Its thick canopy provides shade, reducing soil temperature and limiting moisture loss, which is vital in dry regions. Fallen leaves and pods add organic matter, improving soil structure and nutrient levels. Furthermore, its extensive root system helps control soil erosion and stabilize degraded landscapes. Through these ecological functions, it supports biodiversity, improves soil quality, and promotes ecosystem sustainability under harsh conditions. The tree also produces gum arabic, which has various industrial and medicinal applications.


Fruit

62. Botanical Name : ***Tectona grandis* L. *f.***

(Syn : *Theka grandis*)

Family : **Lamiaceae**

Vernacular Name : **Sagon, Sagwain, Teak**

Morphological characteristics :

Trees, up to 20 m high; young parts tomentose; branches and branchlets stout, 4-angled. Leaves opposite. ovate-elliptic. 12-50 x 6-30 cm, drooping, entire or repand-denticulate, stellately tomentose beneath. Flowers in dichotomously branched. 20-40 cm long, tomentose panicles. Calyx light green, ca 4 mm long; teeth often reflexed, obtuse. Corolla white; lobes obovate-elliptic, erect or reflexed: tube broadly cylindrical. ca 2 mm long. Drupes enclosed in 4-angled, inflated calyx.

Flowering & Fruiting : Aug. - Dec.

Ecological Significance :

Tectona grandis (teak) plays a crucial ecological role in tropical forests by contributing to habitat structure and biodiversity. Its large, broad canopy offers shade and shelter for numerous plant and animal species, helping to create a microenvironment that supports understory growth. The tree's deep root system aids in soil stabilization and water regulation, reducing erosion and improving groundwater recharge. Additionally, teak forests contribute to carbon sequestration, mitigating climate change impacts. By supporting diverse wildlife and enhancing soil quality, *Tectona grandis* helps maintain the health and resilience of forest ecosystems.


Leaf
Fruit
Flower
Stem

63. Botanical Name : ***Camphora officinarum* Nees**

(Syn : *Cinnamomum camphora*)

Family : **Lauraceae**

Vernacular Name : **Kapoor, Camphar plant**

Morphological characteristics :

The Camphor Tree is a tall evergreen, growing 20–30 m. Its glossy, waxy leaves emit a camphor aroma when crushed, are 1–4 inches long, oval, alternately arranged, and have three yellowish veins. Leaf edges are wavy and curl upward. Young leaves are rusty burgundy, later dark green above and lighter below. New shoots from the grayish-brown, shallowly fissured trunk are smooth and green. Twigs may have a reddish tint when young. Small cream-colored flowers appear in spring on branched stalks, followed by round, pea-sized berries attached via cup-shaped green structures.

Flowering : March-June, **Fruiting :** Dec.-May

Ecological Significance :

The camphor tree holds an important ecological function in the areas it inhabits. Its thick foliage provides shelter and nesting spaces for birds and small animals, enhancing local biodiversity. The tree emits fragrant compounds that naturally repel insects, affecting nearby insect activity. Its blooms attract diverse pollinators, such as bees and butterflies, supporting pollination processes in the ecosystem. Additionally, the camphor tree improves air quality by taking in carbon dioxide and releasing oxygen, making it valuable in both urban and suburban environments.

Leaves

64. Botanical Name : ***Cinnamomum tamala*** **(Buch.-Ham.) Th. G. G. Nees**

(Syn : *Cinnamomum albiflorum*)

Family : **Lauraceae**

Vernacular Name : **Tez patta**

Morphological characteristics :

Trees, moderate-sized. Leaves variable, lanceolate or ovate-lanceolate, 10-15 x 3-6 cm, shortly or bluntly acuminate at apex, shining above. Flowers in 5-10 cm long panicles; peduncles ca 1.25 cm long. Perianth ca. 0.7 cm across; lobes truncate. Berries 1-1.25 cm long, born on enlarged, cupular perianth.

Flowering : March-May, **Fruiting :** June-Oct.

Ecological Significance :

Cinnamomum tamala, commonly known as Indian bay leaf, holds significant ecological importance as a native species in the Himalayan and subtropical regions. It contributes to biodiversity by providing habitat and food for various insects, birds, and mammals. The tree plays a role in soil conservation through its root system, preventing erosion in hilly terrains. Additionally, its leaves decompose into organic matter, enriching soil fertility. As an evergreen species, it aids in carbon sequestration, helping mitigate climate change. The plant also supports pollinators through its flowers, maintaining ecological balance in its native ecosystems. Its presence in forest understories promotes microhabitat diversity, fostering a healthy and resilient environment.

68. Botanical Name : ***Punica granatum* L.**

(Syn : *Granatum punicum*)

Family : **Lythraceae**

Vernacular Name : **Anar**

Morphological characteristics :

Shrubs or small twisted trees, reaching up to 5 m in height, branching from near the base; branches frequently ending in a spine. Leaves opposite, oblong-lanceolate, 1–9 x 0.5–2.5 cm. Flowers 1–5, located at the tips of branchlets. Calyx 2–3 cm long, red or pale yellow; segments erecto-patent or slightly recurved, thick, with a yellowish-green gland at the apex on the back, margins densely and shortly papillose, 7–12 mm long. Petals erecto-patent or spreading, apex rounded or very obtuse, 1.5 x 1–2 cm, flame red or white, turning brown on fading. Stamens 5–10 mm long. Style 8–12 mm. Berries 5–12 cm in diameter, colours variable; red, pink, or yellowish white.

Flowering : March - May, **Fruiting :** May - Jan

Ecological Significance :

Punica granatum (pomegranate) holds ecological significance as a drought-tolerant species that thrives in arid and semi-arid regions, contributing to sustainable land use in water-scarce environments. Its vibrant flowers attract a range of pollinators, including bees and butterflies, supporting local pollinator networks and biodiversity. The fruit, rich in nutrients, serves as a food source for birds, mammals, and insects, aiding in seed dispersal and ecosystem connectivity. Additionally, its adaptability to poor soils and resistance to pests make it valuable for ecological restoration and agroforestry systems, where it helps maintain soil structure and promotes habitat diversity.


Leaf
Branch
Fruit

65. Botanical Name : ***Persea americana* Mill.**

(Syn : *Laurus persea*)

Family : **Lauraceae**

Vernacular Name : **Avocado**

Morphological characteristics :

Avocado is a fast-growing arboreal species capable of attaining 80 ft under optimal conditions, though typically reaching 8–10 m in height. The tree exhibits dense foliage with a broadly spreading canopy. Leaves measure 7–41 cm in length and display variable forms, including elliptic, ovate, or lanceolate shapes. Juvenile foliage is reddish and pubescent, maturing to glabrous, leathery, dark green leaves. Flowers are yellow-green, 1–1.3 cm in diameter, arranged in multi-flowered inflorescences terminating in a shoot at the branch apex. The fruit is pyriform, 7–20 cm long, weighing 100 g–1 kg, and contains a single large seed measuring 5–6.4 cm.

Flowering & Fruiting : April-June

Ecological Significance :

Persea americana, commonly known as avocado, holds significant ecological importance in its native and cultivated habitats. As a perennial evergreen tree, it contributes to habitat stability by preventing soil erosion with its extensive root system and enriching soil organic matter through leaf litter. The tree supports local biodiversity, offering food and shelter to a range of organisms, including birds, insects, and mammals. Its flowers provide nectar for pollinators, especially bees, which are vital for ecosystem functioning. Moreover, avocados play a role in carbon sequestration, helping mitigate climate change impacts. In agroecosystems, the species can be integrated into sustainable farming practices, promoting biodiversity and enhancing ecosystem resilience.


Leaves
Stem
Fruit

67. Botanical Name : ***Lagerstroemia speciosa* (L.) Martyn**

(Syn : *Lagerstroemia munchausia*)

Family : **Lythraceae**

Vernacular Name : **Pride of India**

Morphological characteristics :

Trees. Leaves elliptic-oblong, 9.5 - 22x47 cm; petioles short. Panicles subcylindrical, 10-40 cm long. Flower buds 8-14 x 7-10 mm, generally grey. Calyx lobes thickened on the margins, spreading in fruit. Petals mauve-purple, limb suborbicular, undulate, ca 3 cm across; claw ca 3 mm long. Stamens all equal, shorter than style. Capsules woody, ellipsoid or subglobose, minutely apiculate.

Flowering & Fruiting : June-Jan.

Ecological Significance :

Lagerstroemia speciosa, plays a vital ecological role in tropical and subtropical ecosystems. Its vibrant flowers attract a variety of pollinators, including bees, butterflies, and other insects, thereby supporting local pollination networks. The tree provides shelter and food for birds and small mammals, especially through its fruit and foliage. Additionally, its dense canopy helps in moderating microclimates, reducing soil erosion, and enhancing soil fertility through leaf litter decomposition. Its presence in urban landscapes also contributes to air purification and aesthetic greenery, making it an important species for both natural and managed environments.

Leaves

66. Botanical Name : ***Couroupita guianensis* Aubl.**

(Syn : *Couratari pedicellaris*)

Family: **Lecythidaceae**

Vernacular Name : **Cannonball tree**

Morphological characteristics:

This tall, deciduous tropical tree, reaching up to 25 m, is native to the Amazon rainforest and commonly cultivated in the humid cities of South India. The simple leaves measure up to 15 cm in length and have serrated edges. Its waxy, fragrant flowers, ranging from pink to deep red and 7–12 cm wide, emerge directly from the trunk. Large, spherical, woody fruits develop on the trunk and main branches, resembling rusty cannonballs in clusters. Inside, the fruits contain small seeds embedded in a white, foul-smelling jelly, revealed when the top half of the fruit splits open like a lid.

Flowering & Fruiting: March-Sept.

Ecological Significance:

Couroupita guianensis, commonly known as the cannonball tree, holds significant ecological value in its native tropical ecosystems. It supports biodiversity by providing nectar and pollen to pollinators like bees and bats through its unique, fragrant flowers. The tree's large, woody fruits attract animals such as peccaries and agoutis, which aid in seed dispersal. Additionally, its dense canopy offers habitat and shelter for various birds, insects, and epiphytes, contributing to forest structure and ecological balance. The tree also plays a role in nutrient cycling, as decaying fruits and leaves enrich the soil, supporting understory plant growth. Its presence enhances ecosystem resilience and sustains wildlife interactions in rainforest habitats.


Branch
Leaf
Stem


Fruit
Leaves
Flowers

69. Botanical Name : ***Bombax ceiba* L.**

(Syn : *Bombax aculeatum*)

Family : **Malvaceae**

Vernacular Name : **Semal, Semar Kanda, Simal**

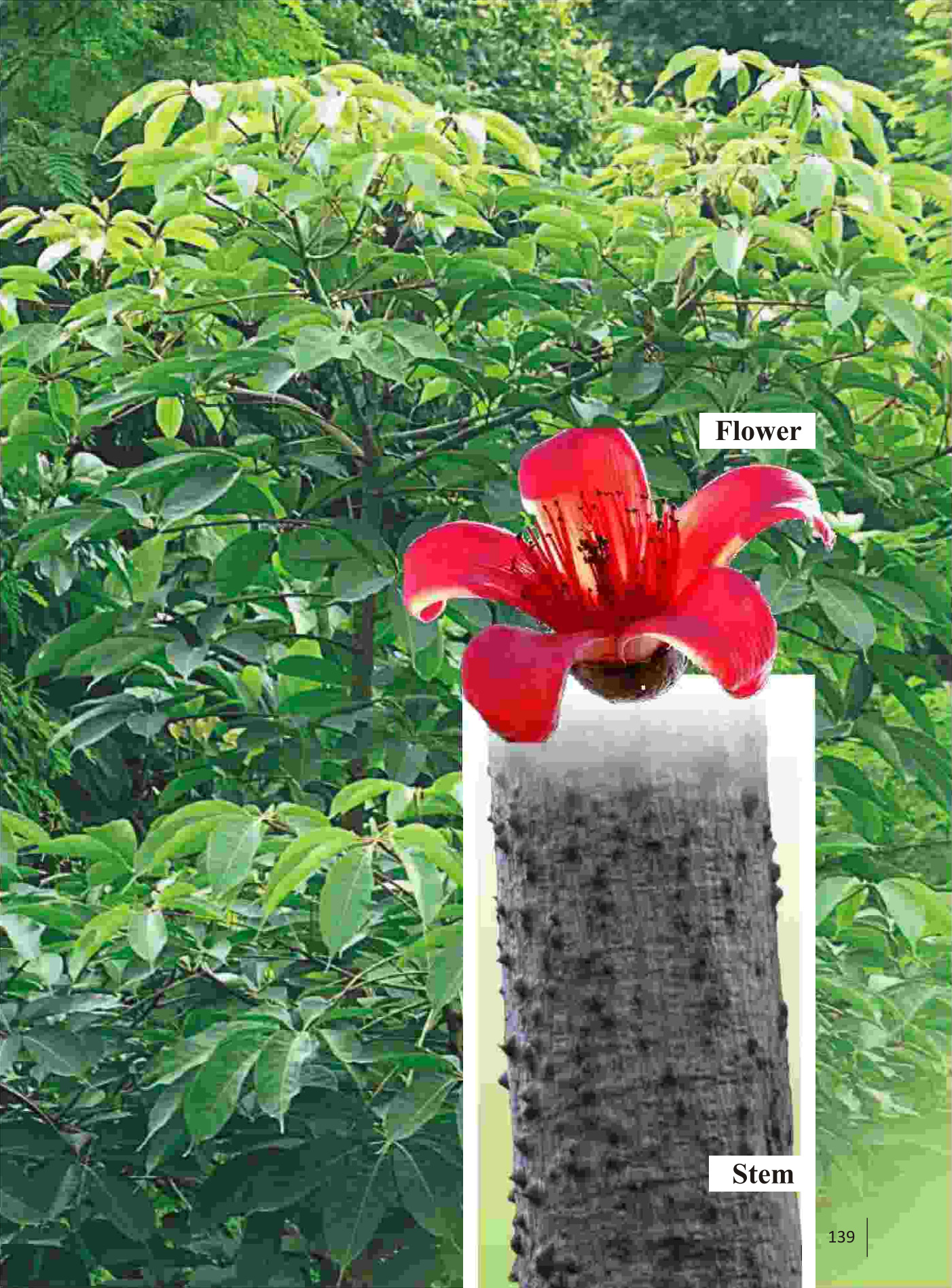
Morphological characteristics :

A large deciduous tree with young trunks and branches armed with bulbous prickles, grayish with a pinkish blaze. Leaves are compound, 3–7 leaflets, 7–18 cm long, entire, lanceolate, glabrous, pinnately veined, tapering to a point; petioles up to 20 cm; stipules small, triangular, caducous. Flowers are numerous, terminal, appearing before leaf flush. Calyx thick, 3-lobed, lobes rounded, silky inside, glabrous outside. Corolla bright red, petals elliptic-oblong, recurved. Stamens over 60 in 5 bundles of 9–12; filaments flattened, slightly pubescent, more than half petal length, fused at base. Ovary conical, glabrous; style slightly longer than stamens; 5 linear stigmas. Capsules 5-valved; seeds ovoid, cottony.

Flowering : Jan.-March, **Fruiting :** April-May.

Ecological Significance :

Bombax ceiba, commonly known as the red silk-cotton tree, plays a vital ecological role in tropical and subtropical ecosystems. Its large, showy flowers are rich in nectar and attract a wide range of pollinators, including bees, birds, and bats, supporting pollination and biodiversity. The tree provides nesting and roosting sites for various bird species, while its soft, fibrous fruit is a food source for wildlife. The fallen leaves and flowers decompose and contribute organic matter to the soil, enhancing its fertility and structure. *Bombax ceiba* also aids in soil stabilization with its extensive root system, helping to prevent erosion in vulnerable landscapes.


Flower
Stem

70. Botanical Name : ***Grewia tillifolia* Vahl**

(Syn : *Grewia arborea*)

Family : **Malvaceae**

Vernacular Name : **Dhaman**

Morphological characteristics :

Small trees, up to 10 m tall; young branches dark brown, faintly pubescent. Leaves ovate-orbicular or elliptic-ovate, 15 × 13.5 cm. crenate-serrate, acute or acuminate, cordate and unequal sided at base, 3 nerved from base; petioles up to 18 mm long; stipules falcately acuminate. Flowers yellow, in axillary groups of 3-flowered peduncles, cymes 7 cm long. Sepals elliptic-obovate or ovate, with incurved tips, ca 6 mm long, brown tomentose. Petals ca 7 mm long, hairy and glandular at base within. Drupes ca 1 cm across, bilobed, glabrous or sparingly pubescent.

Flowering & Fruiting : Feb.-June

Ecological Significance :

Grewia tiliaefolia is ecologically significant as a keystone species in tropical and subtropical ecosystems. It provides vital resources for wildlife, including edible fruits for birds and mammals, while its flowers attract pollinators like bees and butterflies, supporting biodiversity. The plant's dense foliage offers shelter and nesting sites for various species, and its deep root system helps prevent soil erosion, enhancing soil stability. Additionally, *G. tiliaefolia* thrives in degraded habitats, aiding in ecological restoration by improving soil fertility and facilitating secondary succession. Its adaptability to diverse environmental conditions makes it valuable for maintaining ecological balance in forest edges, grasslands, and disturbed landscapes.


Leaves
Stem

71. Botanical Name : ***Pterospermum acerifolium* (L.) Willd.**

(Syn : *Cavanilla acerifolia*)

Family : **Malvaceae**

Vernacular Name : **Muchkund, Kanak champa**

Morphological characteristics :

A tall tree reaching up to 30 m in height. Leaves oblong, ovate, obovate, orbicular, or rectangular, sometimes cordate and frequently peltate; margins wavy, coarsely toothed, or irregularly lobed; silvery to rusty hairy beneath, dark green and nearly smooth above, tomentose; stipules pinnately divided, falling off early. Flowers usually solitary, 10–15 cm in length and width, white and fragrant; pedicels present; bracts deeply divided. Sepals linear-lanceolate, fused at the base forming a short tube, about 1 cm wide, obtuse, rusty-hairy externally, thick and reflexed, deciduous. Petals linear-oblong or obovate, reflexed. Stamens 5–9 cm, staminodes equal to petals. Carpels 5; ovary pentagonal, tomentose. Capsule 5–10 cm, five-valved. Seeds compressed.

Flowering & Fruiting : Sept.-May

Ecological Significance :

Pterospermum acerifolium plays an important ecological role in tropical and subtropical regions where it is native. Its large, broad leaves contribute to the natural leaf litter, enriching the soil with organic matter and aiding in nutrient cycling. The tree offers shade and shelter for various understory plants and animals, creating a microhabitat that supports local biodiversity. Its fragrant flowers attract pollinators like bees and butterflies, promoting ecological interactions essential for reproduction and seed formation. Additionally, the tree's strong root system helps in preventing soil erosion, especially in urban and semi-urban landscapes where it is commonly planted for both ecological and ornamental benefits.


Flower
Leaf

72. Botanical Name : ***Sterculia foetida* L.**

(Syn : *Clompanus foetida*)

Family : **Malvaceae**

Vernacular Name : **Java Olive, Skunk Tree**

Morphological characteristics:

Java Olive is a tall, erect tree with smooth grey bark that has faint ridges and scattered brown spots. Its branches are arranged in whorls, generally spreading horizontally, while the numerous slender branchlets curve upward and cluster densely at the tips, carrying large, palm-like leaves. The flowers emerge from the knotted ends of aged, wrinkled branchlets just below the new foliage, forming drooping clusters that can extend up to a foot long. The reddish-green floral stalks branch repeatedly, each ending in a crimson-brown bloom. The sepals, resembling petals since true petals are absent, are about an inch wide, reflexed backward, and range in color from yellow to terracotta, deep red, and brown. The flowers are particularly noted for their strong, unpleasant odor.

Flowering & Fruiting: Feb.-Aug.

Ecological Significance:

Sterculia foetida plays an important ecological role in tropical and subtropical forest ecosystems. This fast-growing tree helps stabilize soils and prevent erosion, particularly in disturbed or degraded areas. Its broad canopy offers shade and habitat for various wildlife species, including birds and insects, supporting local biodiversity. The tree's flowers attract pollinators, contributing to the reproductive success of many forest plants. Additionally, its seeds and fruits serve as a food source for animals, facilitating seed dispersal and forest regeneration. By thriving in a range of soil conditions, *Sterculia foetida* aids in maintaining ecological balance and promoting habitat recovery.

Leaf

73. Botanical Name : ***Thespesia populnea*** **(L.) Sol. ex Corrêa**

(Syn : *Bupariti populnea*)

Family : **Malvaceae**

Vernacular Name : **Paras Pipal**

Morphology characteristic :

Medium-sized trees. Leaves deltoid-orbicular or ovate, cordate, acuminate, 8-22 cm long, entire. Flowers axillary, solitary, large and showy. Epicalyx lobes 3, oblong-lanceolate. Calyx coriaceous, cupular, with 5 distant teeth. Corolla campanulate, yellow with a purple centre, fading orange or pink-purple; petals obovate, 6-7 cm long, somewhat scaly and ciliate at base. Fruits subglobose, shortly beaked, usually indehiscent. Seeds 4 per cell, obovoid, 8-15 mm long.

Flowering : Sept.-Nov., **Fruiting :** Nov. Aug

Ecological Significance :

Thespesia populnea plays a crucial ecological role in coastal and tropical environments. It is well-adapted to saline and sandy soils, making it important for stabilizing shorelines and preventing coastal erosion. The tree provides habitat and food for a variety of wildlife, including insects and birds, contributing to local biodiversity. Its dense foliage offers shade and shelter, supporting microhabitats in harsh coastal conditions. Additionally, *Thespesia populnea* helps improve soil fertility through leaf litter decomposition, promoting healthier ecosystems in challenging environments.

Fruit

Stem

74. Botanical Name : ***Azadirachta indica* A. Juss**

(Syn : *Melia indica*)

Family : **Meliaceae**

Vernacular Name : **Neem**

Morphological characteristics :

The bark is tough, scaly or fissured, with a whitish-grey to reddish-brown hue. The sapwood appears greyish-white, while the heartwood is reddish when freshly cut and darkens to reddish-brown upon exposure. Leaves are pinnate with 5–13 serrated, obliquely lanceolate leaflets that are acuminate at the tip and cuneate at the base. Flowers are white, with a 5-lobed ovate calyx and oblanceolate petals. The staminal tube is expanded towards the top. Fruits are fleshy, one-seeded berries, green in the immature stage and turning yellow when ripe.

Flowering & Fruiting : April-June.

Ecological Significance :

Azadirachta indica, commonly known as neem, plays a crucial ecological role. Its extensive root network aids in controlling soil erosion and stabilizing barren land, making it beneficial for afforestation and ecological restoration efforts. Neem enhances soil quality by contributing organic matter through fallen leaves that decompose and nourish the soil. The species is highly tolerant to arid and extreme environments, thereby strengthening ecosystem sustainability. Its flowers attract pollinators, while its seeds and leaves are part of the food web. Moreover, the tree has natural pesticidal properties, which can reduce the need for chemical inputs in agriculture, promoting more sustainable and eco-friendly practices. Through these functions, *Azadirachta indica* significantly enhances environmental health and ecological stability.


Leaf
Stem

75. Botanical Name : ***Khaya senegalensis* (Desr.) A. Juss.**

(Syn : *Swietenia senegalensis*)

Family : **Meliaceae**

Vernacular Name : **African Mahogani**

Morphological characteristics :

African Mahogany is a grand, tall tree native to Africa. It grows up to around 100 feet high, featuring a broad, dense canopy and a sturdy trunk. The leaves are compound, consisting of 3–4 pairs of leaflets that turn pale glaucous green upon drying. Each leaflet is oblong to oblong-elliptic, typically more than twice as long as wide, and may be rounded, blunt, or occasionally pointed at the tip, measuring 6–12 cm in length and 2–5 cm in width. The flowers are tetramerous, with pale green sepals and cream-colored petals; the staminal tube appears cream with a pinkish hue toward the base. The fruit is capsule-like, usually four-valved, and measures about 4–6 cm in diameter.

Flowering : March-June, **Fruiting :** Oct.-Nov.

Ecological Significance :

Khaya senegalensis, commonly known as African mahogany, plays a vital ecological role in its native habitats across West and Central Africa. This deciduous tree contributes significantly to forest structure and biodiversity by providing shade, habitat, and food for a variety of organisms, including birds, insects, and mammals. Its deep root system helps stabilize soil and prevent erosion, especially in savanna and dry forest ecosystems. Additionally, the tree enhances soil fertility through leaf litter decomposition, supporting nutrient cycling. Its presence in agroforestry systems also promotes sustainable land use by offering timber, shade for crops, and shelter for livestock, thereby integrating ecological stability with human livelihoods.


Leaf

76. Botanical Name : ***Melia azedarach* L.**

(Syn : *Azedara speciosa*)

Family : **Meliaceae**

Vernacular Name : **Bakan**

Morphological characteristics :

Trees of medium height. Leaves bi- or tri-pinnate; leaflets ovate-lanceolate, oblanceolate, or elliptic-lanceolate, with acuminate tips, cuneate and often oblique bases, and margins ranging from serrate to entire. Flowers about 15 mm in diameter, purple in color. Calyx very small. Petals white, roughly 7 mm long, reflexed. Staminal tube purple. Drupes fleshy, yellow when ripe, 1-seeded.

Flowering & Fruiting : March-July

Ecological Significance :

Melia azedarach, commonly known as chinaberry, plays a significant ecological role in various ecosystems due to its adaptability and fast growth. It is frequently planted in reforestation and afforestation efforts, particularly in degraded or dry regions, where it aids in preventing soil erosion and enhancing soil fertility via decomposing leaves. The tree supports many bird species that consume its fruit, boosting local biodiversity. Its thick canopy provides shade and moderates the microclimate, while serving as a wind barrier in agroforestry setups. Despite its ecological benefits, care must be taken in non-native regions where it can become invasive, outcompeting indigenous vegetation and altering habitat structure.


Fruits
Leaf

77. Botanical Name : ***Soymida febrifuga* (Roxb.) A. Juss.**

(Syn : *Swietenia febrifuga*)

Family : **Meliaceae**

Vernacular Name : **Rohan**

Morphological characteristics :

Large trees; leaves gathered at branch tips, paripinnate, reaching 40 cm; rachis and midrib reddish; 3–6 pairs of obliquely elliptic leaflets, 5–10 cm; flowers in large terminal panicles, white, measuring approximately 8 mm.

Flowering & Fruiting : March-April

Ecological Significance :

Soymida febrifuga is an important tree species in tropical forests, contributing significantly to ecosystem stability and diversity. It enhances soil fertility by contributing organic material through fallen leaves, which boosts nutrient recycling. The tree provides shelter and nourishment for numerous wildlife species, including birds and insects, promoting local biodiversity. Its widespread roots help control soil erosion, especially on slopes and degraded areas. Moreover, being a native species, it is vital for preserving the stability and resilience of forest ecosystems, supporting overall environmental well-being.


Fruit
Stem
Leaf

78. Botanical Name : ***Swietenia mahagoni* Jacq.**

(Syn : *Cedrela mahagoni*)

Family : **Meliaceae**

Vernacular Name : **Mahogony**

Morphological characteristics :

Evergreen trees with dense branching. Leaves are pari-pinnate with 3–4 pairs of leaflets that are obliquely ovate or lanceolate, entire, and smooth. Flowers appear greenish-yellow in axillary clusters. Sepals are five and minute; petals also five. Stamens ten in number. Ovary positioned on a scarlet disc, with a short style and umbrella-shaped stigma. Fruits are large, ovoid, and hard-woody, containing winged seeds.

Flowering & Fruiting : April-May

Ecological Significance :

Swietenia mahagoni (West Indian mahogany) is an ecologically important tree native to Caribbean coastal forests, where it helps maintain ecosystem stability. Its large canopy offers shade that moderates microclimates and protects understory plants, while its deep root system aids in soil stabilization and reduces erosion. The tree provides habitat and food sources for a variety of wildlife, including birds and insects, supporting local biodiversity. Additionally, as a long-lived hardwood species, it contributes to carbon sequestration, playing a role in mitigating climate change impacts within its native range.


Leaf

79. Botanical Name : ***Artocarpus heterophyllus* Lam.**

(Syn : *Artocarpus integrifolius*)

Family : **Moraceae**

Vernacular Name : **Kathahal, Jackfruit, Fannas**

Morphological characteristics :

The tree is tall and elegant, reaching 30–70 ft in height, with evergreen, alternate, shiny, and slightly leathery leaves that are oval in mature trees and may appear oblong or lobed in young shoots. All parts exude a milky, sticky latex. Short, thick flowering branches arise from the trunk, major limbs, or occasionally from the soil-covered base of very old trees. The minute male blossoms appear in oblong clusters about 2–4 in long, while the female inflorescences are rounded or elliptical. Flowers are arranged in cylindrical heads, with young ones enclosed in a leathery, deciduous sheath. Male heads are club-shaped or oval, and the perianth is divided into two lobes. The outer surface of the compound fruit is green or yellow when ripe, covered with hard, conical projections attached to a thick, rubbery, pale yellow or whitish rind.

Flowering & Fruiting : Nov.- June.

Ecological Significance :

Artocarpus heterophyllus, commonly known as jackfruit, plays a significant ecological role in tropical ecosystems. The tree provides a habitat and food source for numerous species, including birds, bats, insects, and small mammals, which feed on its large, nutrient-rich fruits. Its flowers attract various pollinators, contributing to the stability of local pollination networks. The tree's dense foliage helps in reducing carbon dioxide levels and improving air quality, while also offering shade and shelter in forested and agroforestry systems.


Leaf
Fruit
Branch

80. Botanical Name : ***Ficus arnottiana* (Miq.) Miq.**

(Syn : *Ficus courtallensis*)

Family : **Moraceae**

Vernacular Name : **Paras-pipal**

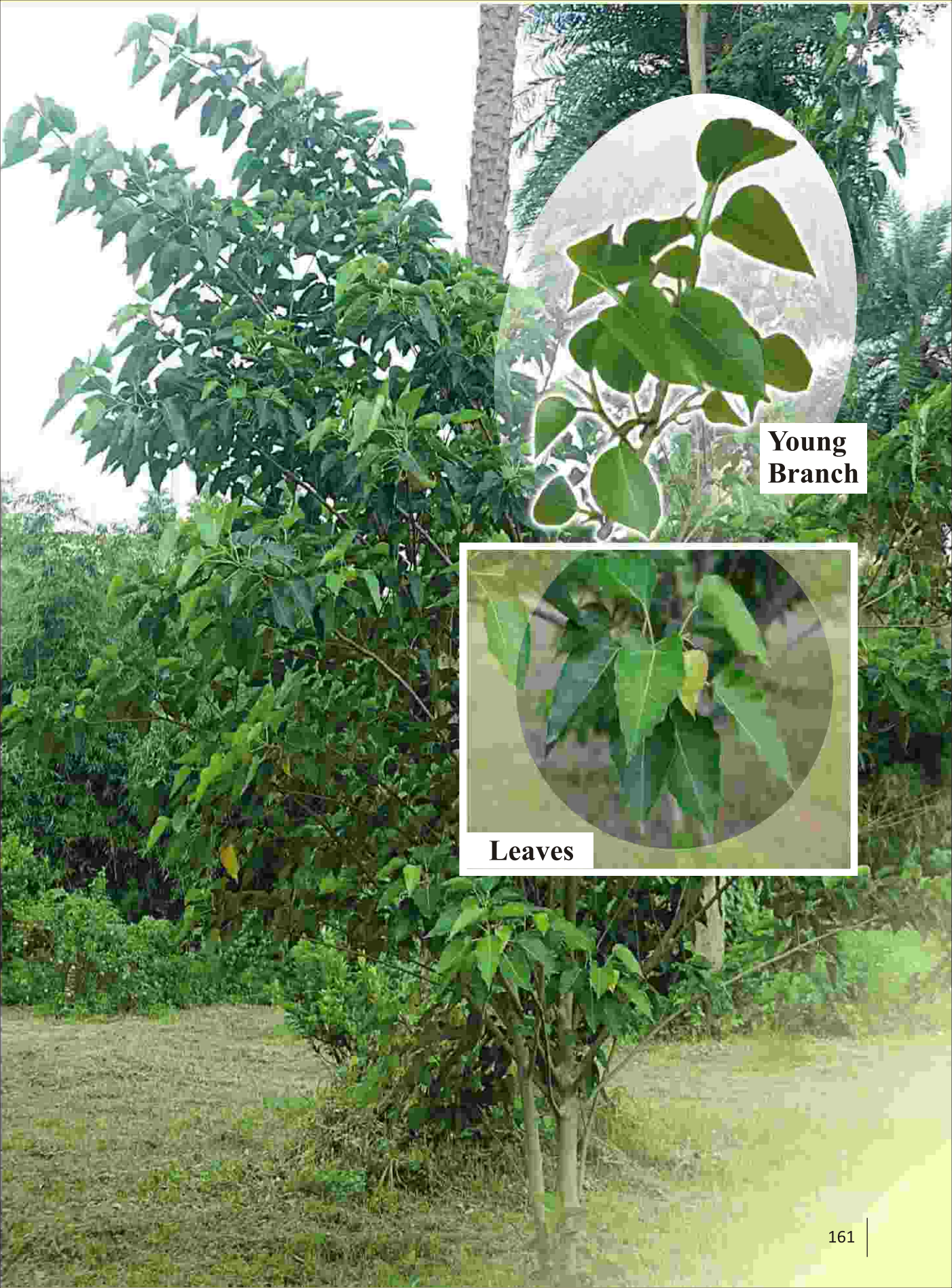
Morphological characteristics :

Trees, height up to 18 meter. Leaves alternate, broadly ovate, caudate-acuminate at apex, cordate at base, entire, subcoriaceous, glabrous, stipulate, long petiolate. Receptacles in axillary pairs or clustered on tubercles, sessile or subsessile, globose, red to purple, glabrous; basal bracts 3. Male flowers sessile, few near the ostiole of receptacle. Stamen one. Female and gall flowers sessile or pedicellate. Achenes smooth.

Flowering & Fruiting : Feb. - April

Ecological Significance :

Ficus arnottiana, a species of fig native to India, holds significant ecological importance as a keystone species in tropical and subtropical ecosystems. It provides critical habitat and food resources for a variety of wildlife, including birds, bats, and insects, through its figs, which are a year-round food source. The tree supports biodiversity by fostering mutualistic relationships with specific pollinator wasps, ensuring both the plant's reproduction and the wasp's lifecycle. Additionally, its dense canopy offers shade, stabilizes soil, and aids in water retention, contributing to ecosystem health. As a pioneer species, it aids in forest regeneration by facilitating the growth of other plants beneath its cover, making it vital for maintaining ecological balance.


Young
Branch
Leaves

81. Botanical Name : ***Ficus auriculata* Lour.**

(Syn : *Tremotis cordata*)

Family : **Moraceae**

Vernacular Name : **Phagoora, Elephant Ear Fig**

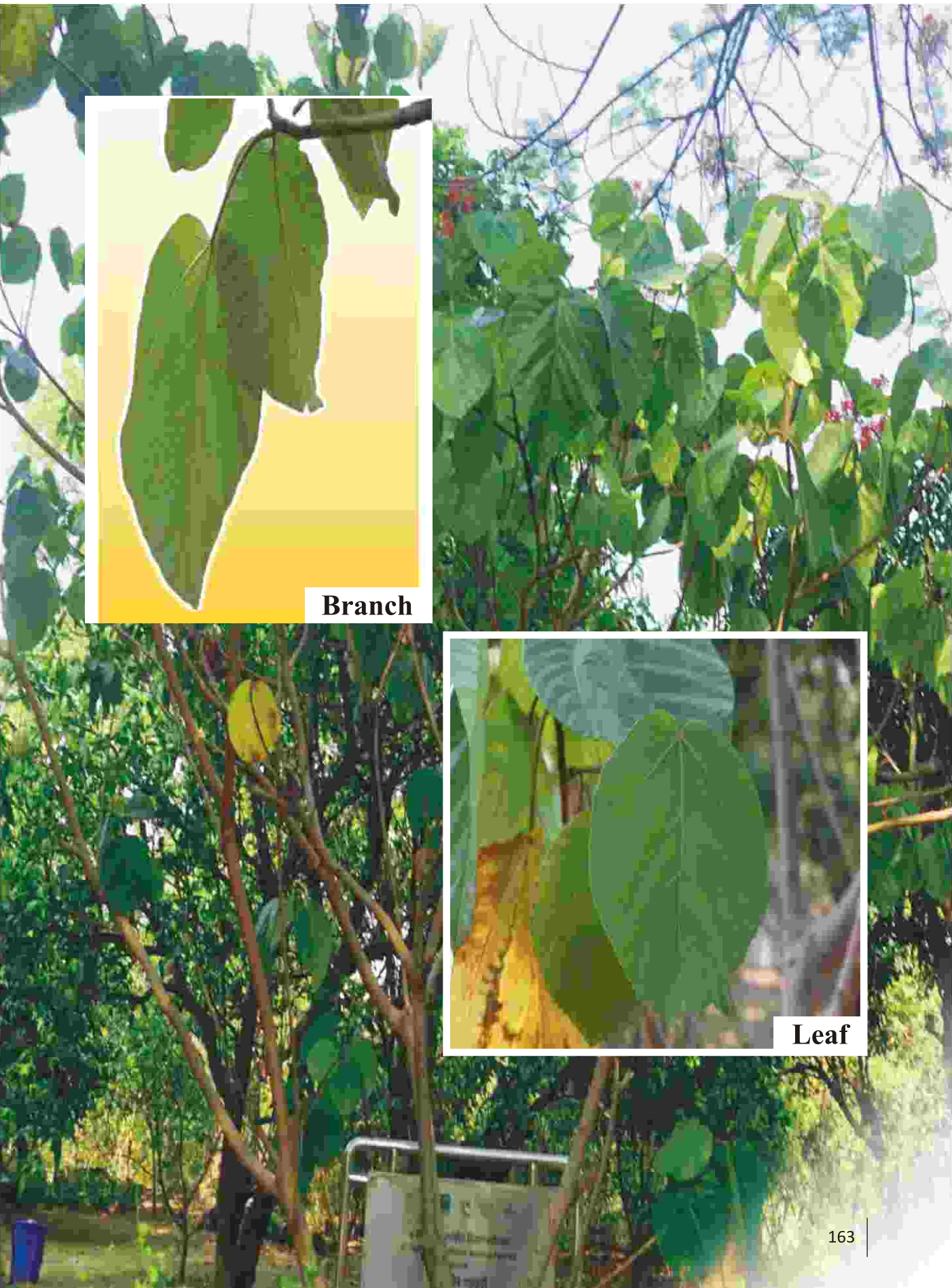
Morphological characteristics :

The young foliage emerges bright red and gradually transitions to green as it matures, reaching a maximum length of about 50 cm. The species grows as a medium-sized tree, typically 5–10 m tall, with a broad crown and a trunk diameter of 10–15 cm. The bark is smooth and gray. The branchlets bear sparse hairs, while the deciduous stipules are ovate-lanceolate, measuring 1–1.5 cm in length. Leaves are alternately positioned on petioles 4–6 cm long, and are obovate-elliptic to elliptic, 12–25 × 6–23 cm, papery in texture, finely tuberculate beneath, and glabrous above. The leaf base is shallowly cordate to broadly cuneate, with irregularly toothed margins. The figs develop in clusters on short branchlets of older stems. When ripe, they appear dark red, pear-shaped to spherical, marked with 4–6 longitudinal ridges and small tubercles, and measure 2–3.5 cm across, covered with soft hairs.

Flowering & Fruiting : Oct. - March

Ecological Significance :

Ficus auriculata holds significant ecological value as a keystone species in tropical and subtropical ecosystems. It supports biodiversity by producing large, nutrient-rich fruits year-round, which serve as a vital food source for birds, mammals, and insects, including frugivores like bats and primates. The tree also forms mutualistic relationships with specific pollinating wasps (*Ceratosolen emarginatus*), ensuring its reproduction while providing habitat for these insects.


Branch
Leaf

82. Botanical Name : ***Ficus benghalensis* L.**

(Syn : *Ficus banyana*)

Family : **Moraceae**

Vernacular Name : **Bad, Bar, Bargad, Bat**

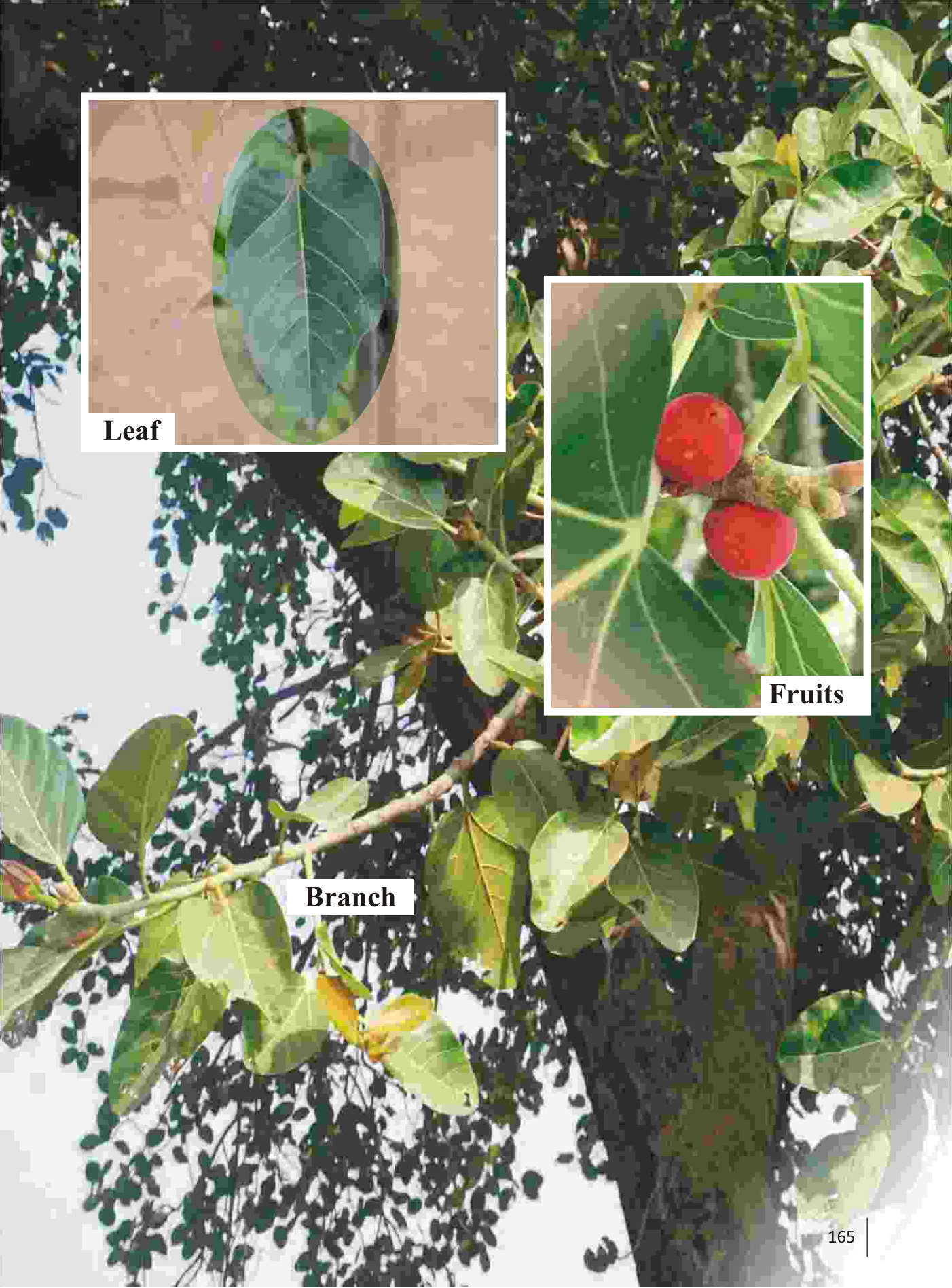
Morphological characteristics :

Evergreen trees reaching a height of 10–15 m, often developing aerial roots that form prop roots. Leaves are alternate, elliptic to ovate, measuring 10–20 × 6–12 cm, with a rounded base and blunt apex. The leaf surface is leathery, smooth above, and slightly hairy beneath, containing numerous cystoliths. Receptacles are axillary, usually in pairs, sessile, spherical, 1.5–2 cm in diameter, turning red when mature, and subtended by three basal bracts. Male flowers are abundant near the ostiole, each with three tepals and a single stamen. Female flowers are sessile, while gall flowers are pedicellate. The fruits (achenes) are globose to ellipsoid in shape.

Flowering & Fruiting : Throughout the year

Ecological Significance :

Ficus benghalensis (banyan tree), holds immense ecological significance as a keystone species in tropical and subtropical ecosystems. It provides critical habitat and food for a wide variety of birds, mammals, and insects through its abundant fig fruits and dense canopy. The tree's extensive aerial roots offer shelter and nesting sites, while its large canopy moderates microclimates, reducing soil erosion and maintaining soil moisture. Additionally, *Ficus benghalensis* supports pollinators like fig wasps, ensuring mutualistic reproduction, and its presence enhances biodiversity by fostering symbiotic relationships with numerous organisms. Its role in carbon sequestration and urban shade further underscores its ecological importance.


Leaf
Fruits
Branch

83. Botanical Name : ***Ficus benjamina* L.**

(Syn : *Ficus nitida*)

Family : **Moraceae**

Vernacular Name : **Pukar**

Morphological characteristics :

A tall tree reaching up to 30 m in height, initially epiphytic, with smooth bark and drooping branches that produce aerial roots capable of forming new trunks. Leaves are simple, alternate, and elliptical, measuring about 3–4 inches long, thick in texture, with an acuminate tip, 1 cm long petiole, and lanceolate stipules. The inflorescence is a hypanthodium. Figs occur axillary on leafy branches, either solitary or in pairs, red or yellow when ripe, globose, and either glabrous or slightly pubescent, with the base tapering into a stalk; involucral bracts are small, smooth, and persistent. Each fig contains male, gall, and female flowers. Male flowers are shortly pedicellate with a single stamen and a relatively long filament. Female flowers are sessile, have three short calyx lobes, and an enlarged stigma. The achenes are ovoid to reniform, smaller than the persistent style, forming the syconus fruit.

Flowering & Fruiting : Feb. - April

Ecological Significance :

Ficus benjamina, holds significant ecological importance as a keystone species in tropical and subtropical ecosystems. It provides critical habitat and food resources for a variety of wildlife, including birds, bats, and insects, through its dense foliage and fruit production. As a fig species, it engages in mutualistic relationships with specialized pollinating wasps, ensuring both plant reproduction and insect survival. Its extensive root system helps prevent soil erosion, while its canopy offers shade and moderates microclimates.

84. Botanical Name : ***Ficus hispida* L. f.**

(Syn : *Covellia hispida*)

Family : **Moraceae**

Vernacular Name :

Morphological characteristics :

Small hispid trees reaching 2–6 m in height. Leaves are opposite and decussate, ovate to oblong-elliptic, measuring 8–23 × 4–10 cm, with an abruptly pointed apex and a rounded or nearly flat base; margins entire or faintly toothed, thick and rough, with a hispid underside; petioles 2–4 cm long. Receptacles occur on leafless, pendulous twigs, clustered along the trunk and primary branches, and are depressed-globose, turning pale yellow when mature. Male flowers are arranged in two rows with a single stamen each. Female and gall flowers may be sessile or borne on short stalks. The achenes are flattened and lens-shaped.

Flowering & Fruiting : Jan. - June

Ecological Significance :

Ficus hispida, a dioecious fig species, holds significant ecological value as a keystone resource in tropical and subtropical ecosystems. It supports diverse wildlife by providing year-round fruit production, which is crucial for frugivorous birds, bats, and mammals, especially during food scarcity. As a pioneer species, it aids in forest regeneration by colonizing disturbed areas and improving soil fertility through leaf litter decomposition. Its mutualistic relationship with specific fig wasps (*Ceratosolen solmsi*) ensures pollination, maintaining biodiversity. Additionally, its dense foliage offers nesting and shelter for various organisms, while its extensive root system prevents soil erosion.


Fruits
Leaves

85. Botanical Name : ***Ficus krishnae* L.**
(Syn : *Ficus benghalensis* var. *krishnae*)
Family : **Moraceae**
Vernacular Name : **Krishna bat.**

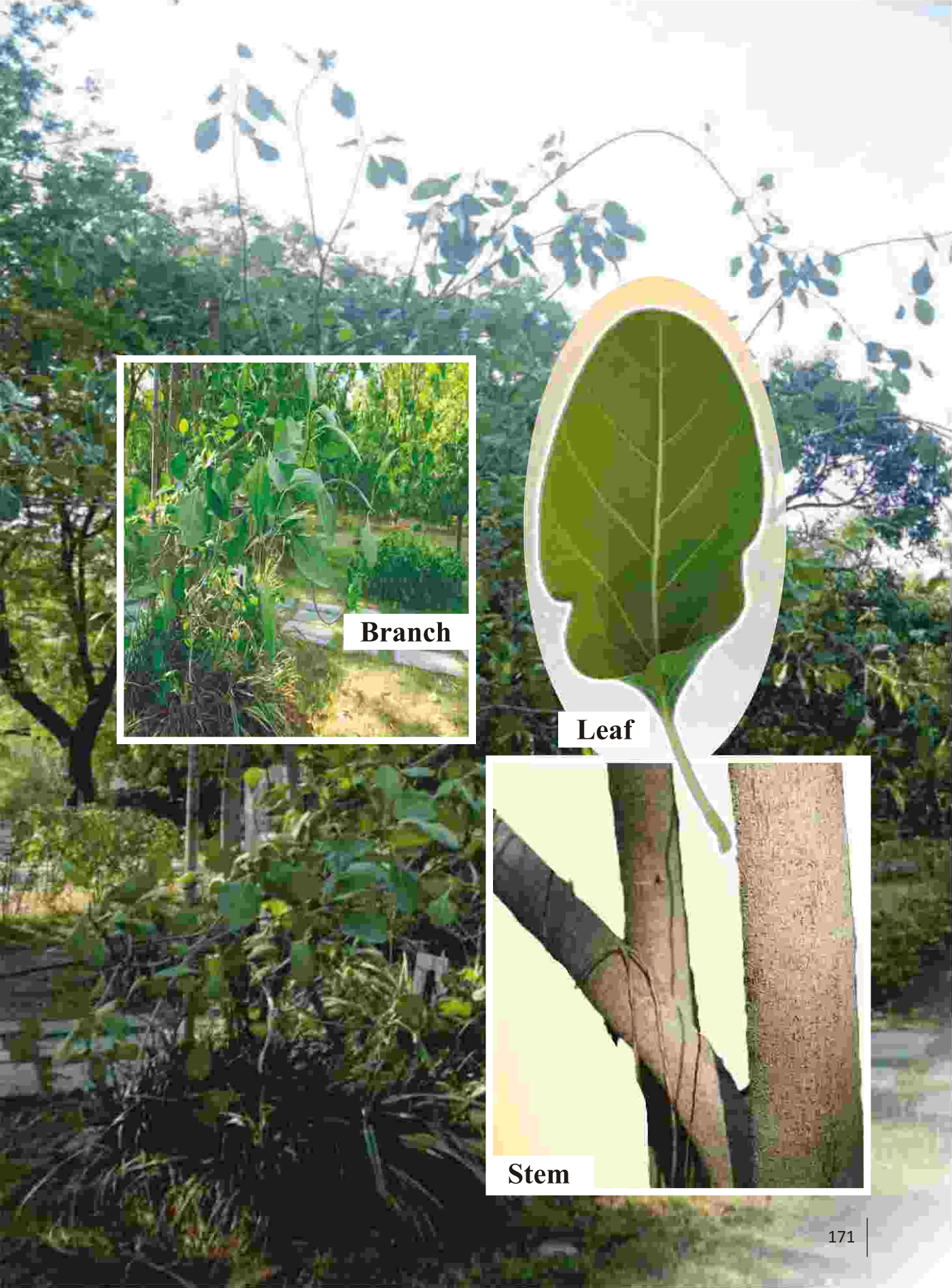
Morphological characteristics :

The Krishna but is a large, rapidly growing evergreen tree that can reach up to 30 meters in height, characterized by its wide-spreading branches and numerous aerial roots. The leaves are stalked, ovate, and heart-shaped with three prominent veins, and are velvety on both sides when young. A distinctive trait of this species is the pocket-like fold at the base of each leaf. The petiole bears a smooth, greasy gland at its apex and is slightly compressed and downy. The tree is also popularly known as the Krishna Butter Cup. According to Hindu mythology, Lord Krishna, who was fond of butter, once hid it in the folded leaf of this tree when caught by his mother, Yashoda. Since then, the leaves are believed to have retained their characteristic folded shape.

Flowering & Fruiting : Oct. - Jan.

Ecological Significance :

Ficus krishnae holds significant ecological value as a keystone species in its native habitats. It provides critical resources for various fauna, including birds, bats, and insects, through its fruits and floral structures. As a fig species, it engages in mutualistic relationships with specialized pollinating wasps, ensuring both plant reproduction and wasp survival. Its dense canopy offers shade and shelter, while its deep roots help prevent soil erosion. Additionally, it serves as a food plant for several butterfly larvae, supporting biodiversity. By sustaining diverse wildlife and maintaining ecosystem stability, it plays a vital role in tropical and subtropical forest ecosystems.


Branch
Leaf
Stem

86. Botanical Name : ***Ficus lyrata* Warb.**

(Syn : *Ficus pandurata*)

Family : **Moraceae**

Vernacular Name : **Fiddle Leaf Fig**

Morphological characteristics :

This is native to tropical regions of Africa, and is an evergreen species that can grow up to 40 feet tall in its natural habitat. It features large, glossy, fiddle- or guitar-shaped leaves reaching about 15 inches in length. This plant also adapts well as an indoor ornamental species when cultivated in pots. In open conditions, it can develop as a free-standing tree up to 12–15 meters in height. The leaves vary in form but typically have a wide upper portion and a narrow middle, giving them a fiddle-like appearance. They usually measure around 45 cm long and 30 cm wide, possessing a leathery texture with undulating edges. The tree produces small green figs approximately 2.5–3 cm in diameter.

Flowering & Fruiting : Feb. - April

Ecological Significance :

Ficus lyrata (fiddle-leaf fig), while more commonly recognized as an ornamental plant, shares ecological traits typical of the Ficus genus that contribute to ecosystem health in its native tropical West African range. It can provide food for a variety of frugivorous animals through its fig fruits, which support seed dispersal and sustain wildlife populations. Like other Ficus species, it may engage in mutualistic relationships with specific fig wasps, contributing to intricate pollination networks. Its broad leaves aid in microclimate regulation by offering shade and retaining humidity, while its presence supports the structural diversity of forest ecosystems.


Leaf

87. Botanical Name : ***Ficus racemosa***
(Syn : *Ficus glomerata*)
Family : **Moraceae**
Vernacular Name : **Wild Fig**

Morphological characteristics :

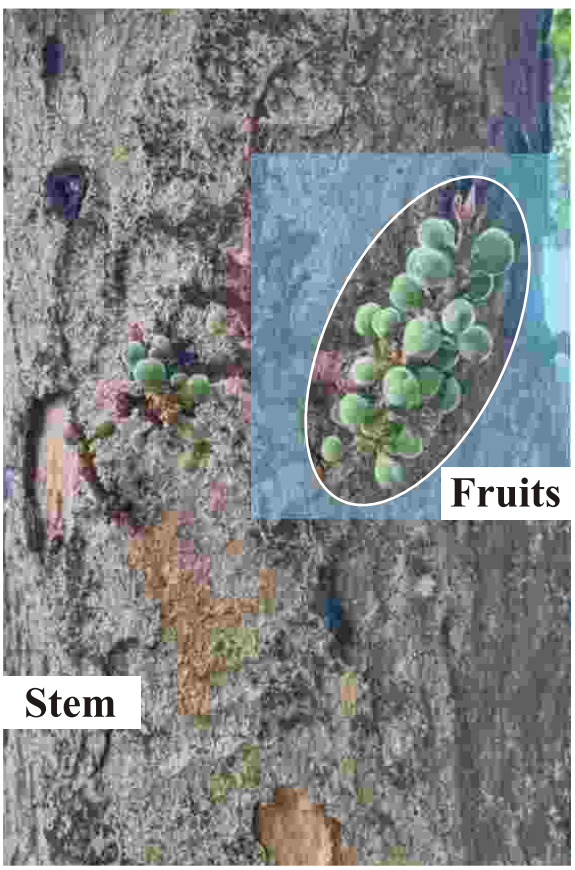
Tree reaching 6–10 m in height; young shoots covered with fine hairs. Leaves are alternate, ovate-oblong, 6–15 × 3–6 cm, with an obtuse or acute tip and a rounded to acute base; margins entire, texture somewhat leathery, surface smooth and hairless, with small stipules. Receptacles appear in clusters on the trunk or on leafless branches, stalked, nearly spherical to pear-shaped, about 2–3 cm wide, and vary in color from green to red. Male flowers are stalkless, arranged in 2–3 rings near the opening, bearing two stamens. Female flowers are either sessile or on short stalks, while gall flowers are long-stalked. Fruits (achenes) are flat and lens-shaped.

Flowering & Fruiting : Feb. - Sept.

Ecological Significance :

Ficus racemosa, holds significant ecological importance as a keystone species in tropical and subtropical ecosystems. It supports biodiversity by providing year-round food (figs) to a variety of birds, mammals, and insects, especially during fruiting seasons when other food sources are scarce. The tree also forms mutualistic relationships with specific pollinator wasps (*Ceratosolen fusciceps*), ensuring its reproduction while sustaining the wasp population. Additionally, its dense canopy offers shade and habitat for numerous organisms, while its roots help prevents soil erosion along riverbanks and wetlands. By sustaining diverse wildlife and maintaining ecosystem stability, *Ficus racemosa* plays a vital role in ecological balance.

Leaves



Fruits

Stem

88. Botanical Name : ***Ficus religiosa* L.**

(Syn : *Ficus caudata*)

Family : **Moraceae**

Vernacular Name : **Peepal, Pipar**

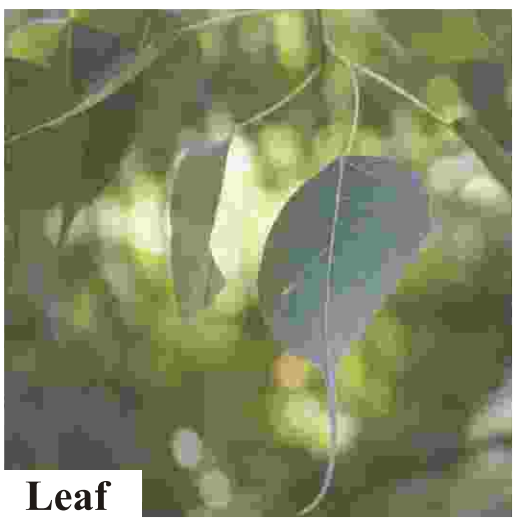
Morphological characteristics :

Deciduous trees reaching 10–20 m in height. Leaves are alternate, broadly ovate, measuring 8–16 × 6–13 cm, with a long acuminate tip (2–9 cm), a nearly truncate base, wavy margins, leathery texture, glossy surface, and smooth on both sides; petioles 4–8 cm in length. Receptacles occur in axillary pairs, sessile, almost spherical, about 1 cm in diameter, turning pinkish-purple when mature. Male flowers are few, sessile, and located near the ostiole, with two tepals and a single stamen. Female and gall flowers are sessile, bearing 3–4 tepals, and produce smooth achenes.

Flowering & Fruiting : Feb. - Sept.

Ecological Significance :

Ficus religiosa, holds significant ecological importance as a keystone species in tropical and subtropical ecosystems. It provides critical habitat and food for a variety of wildlife, including birds, bats, and insects, through its fruits and dense foliage. The tree supports biodiversity by fostering symbiotic relationships with pollinators like fig wasps, ensuring mutual survival. Additionally, it improves soil fertility through leaf litter decomposition and aids in carbon sequestration, mitigating climate change. Its extensive root system prevents soil erosion, while its shade helps maintain microclimatic conditions, benefiting surrounding flora and fauna. Due to its resilience and adaptability, it plays a vital role in ecological restoration and urban greening efforts.



Leaf

Branch

Stem

89. Botanical Name : ***Morus alba* L.**

(Syn : *Morus heterophylla*)

Family : **Moraceae**

Vernacular Name : **Sahtut, Mulberry**

Morphological characteristics :

Deciduous shrubs or small trees, either dioecious or monoecious, reaching 3–5 m in height. Leaves are ovate to lanceolate, measuring 5–11 × 3.5–9 cm, with an acute tip and a heart-shaped base; margins serrated or toothed, occasionally lobed; upper surface smooth, lower surface slightly hairy. Catkins drooping and green. Male catkins are long and slender, while female ones are short and oval, with stalks shorter than the spikes. Each flower has four tepals and free styles. The compound fruit turns purple to red on ripening and tastes sweet.

Flowering & Fruiting : Jan. - May

Ecological Significance :

Morus alba plays a vital ecological role in supporting biodiversity and ecosystem functions. As a fast-growing, hardy species, it helps in soil conservation by reducing erosion through its extensive root system. Its leaves serve as the primary food source for the silkworm (*Bombyx mori*), thus sustaining sericulture-based livelihoods. The tree offers shelter and food for various bird species, insects, and different types of mammals, enhancing local biodiversity. Moreover, *Morus alba* exhibits phytoremediation potential by absorbing heavy metals and pollutants, contributing to the restoration of degraded environments. Its adaptability to a range of climatic and soil conditions makes it valuable for afforestation and urban greening initiatives.


Branch
Flowers
Leaf

90. Botanical Name : ***Moringa oleifera*** Lamk.
(Syn : *Guilandina moringa*)
Family : **Moringaceae**
Vernacular Name : **Munga, Sahjan**

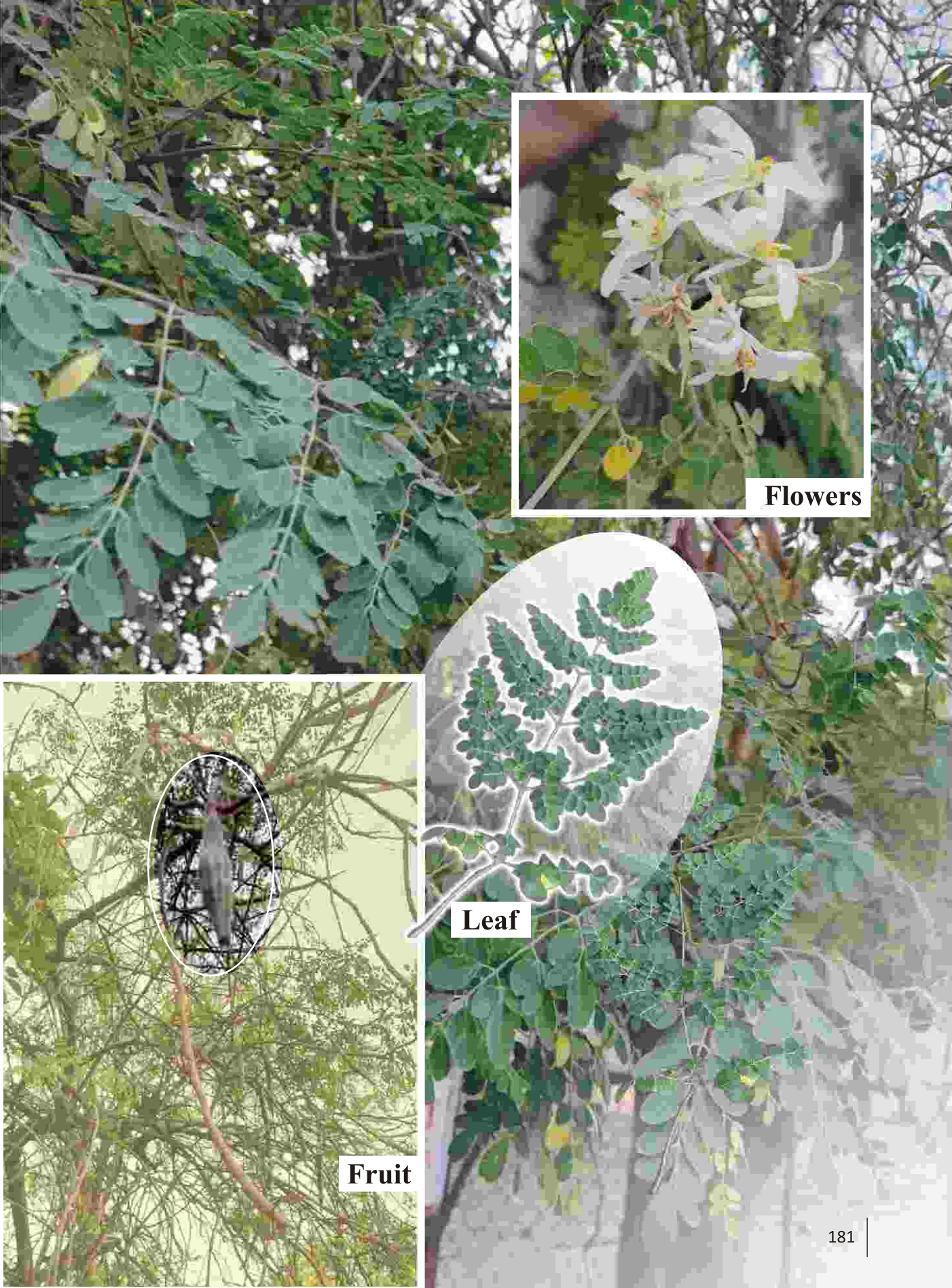
Morphological characteristics :

Trees reaching up to 7 m in height; young branches densely covered with hairs. Leaves extending to 50 cm in length; rachis thickened and jointed near the base; terminal leaflet obovate and slightly larger than the lateral ones; lateral leaflets elliptic with a rounded or slightly notched tip. Petiolules of lateral leaflets 1.5–2.5 mm long, while those of terminal leaflets measure 3–7 mm. Flowers white to pale yellow, arranged in large, softly hairy, spreading panicles. Calyx lobes 1.3–1.5 × 0.4 cm, narrow-lanceolate. Petals 1.5–2 × 0.7–1 cm, spoon-shaped, unequal in size. Stamens fertile, alternating with 5–7 sterile ones; filaments hairy at the base. Ovary oblong, covered with fine hairs. Pods pendulous, ribbed, somewhat three-angled, reaching up to 40 cm in length; seeds about 2.5 cm long, three-angled, and three-winged.

Flowering & Fruiting : Feb.-June

Ecological Significance :

Moringa oleifera holds considerable ecological significance due to its adaptability and role in supporting environmental sustainability. It thrives in arid and semi-arid regions, making it valuable for reforestation and combating desertification. Its deep root system helps prevent soil erosion and improves soil fertility by contributing organic matter and fixing nitrogen. The tree also serves as a natural water purifier, as its seeds can be used to remove contaminants from water sources.


Flowers
Leaf
Fruit

91. Botanical Name : ***Muntingia calabura* L.**

(Syn : *Muntingia rosea*)

Family : **Muntingiaceae**

Vernacular Name : **Singapore Cherry, Jamaica Cherry**

Morphological characteristics :

This species is a rapidly growing, slender tree that can reach a height of 25 to 40 feet, with branches spreading almost horizontally. Its leaves are evergreen, alternately arranged, lance-shaped or oval, tapering to a pointed tip and asymmetrical at the base. The blossoms, which appear for just one day, consist of five green sepals, five white petals, and numerous bright yellow stamens; the petals typically drop by afternoon. The flowers resemble those of a strawberry plant, giving rise to its common name, “Strawberry tree.” The tree produces plentiful round fruits, 1–1.25 cm in diameter, with smooth red or occasionally yellow skin, soft and juicy light-brown pulp, and a very sweet, musky, slightly fig-like taste, containing tiny yellowish seeds that are barely perceptible when eaten.

Flowering & Fruiting : April-June

Ecological Significance :

Muntingia calabura plays a vital ecological role in tropical and subtropical ecosystems. Its fast growth and adaptability to poor soils make it valuable for reforestation and soil stabilization in degraded landscapes. The tree produces small, sweet fruits that serve as a crucial food source for birds, bats, and small mammals, thereby supporting local biodiversity and aiding in seed dispersal. Additionally, its flowers provide nectar for pollinators such as bees and butterflies. By enhancing food availability and habitat structure, *M. calabura* contributes significantly to the ecological balance and resilience of disturbed and urban environments.


Flower
Branch
Leaf

92. Botanical Name : ***Eucalyptus maculata*** **Hook.**

(Syn : *Eucalyptus gigantea*)

Family : **Myrtaceae**

Vernacular Name : **Nilgiri**

Morphological characteristics :

Tall, elegant trees with smooth, glossy whitish to reddish-grey bark, often marked by remnants of older layers. Young seedlings bear coarse red-brown hairs. Branchlets are slightly angular. Leaves are alternate, narrow-lanceolate, sometimes curved, with closely spaced secondary veins that spread outward and a marginal vein near the edge; oil glands are faint. Flowers occur in short panicles, occasionally in pairs or threes, or appear solitary; pedicels are shorter than the calyx. The calyx-tube is small, with a double lid — the inner one thin and glossy, the outer one dome-shaped and pointed. Anthers are oval to club-shaped. Fruits are rounded or slightly club-like, with a narrow rim and divided into two to four valves.

Flowering & Fruiting : Almost throughout the year

Ecological Significance :

Eucalyptus maculata, commonly known as the spotted gum, holds significant ecological value in its native Australian habitats. As a dominant canopy tree, it provides critical habitat and food resources for diverse wildlife, including koalas, nectar-feeding birds, and insects. Its flowers support pollinators, while its hollows offer nesting sites for arboreal mammals and birds. The tree's dense foliage aids in soil stabilization, reducing erosion, and its deep root system improves water infiltration.


Leaves
Branch
Stem

93. Botanical Name : ***Melaleuca citrina*** **(Ciurtis) Dum.Cours.**

(Syn : *Callistemon lanceolatus*)

Family : **Myrtaceae**

Vernacular Name : **Weeping bottle brush**

Morphological characteristics :

Large shrubs or trees with slender, willow-like leaves and clusters of small, bright red or crimson flowers that are densely arranged and sessile in elongated spikes. The small, dry fruits persist for long periods, forming clusters along the branches below the terminal foliage. The hypanthium is globular or urn-shaped, with dry, deciduous sepals and soon-falling petals. Stamens are long, vividly colored, and free. The ovary is 3–4 chambered, with a pubescent apex forming a shallow depression around the style. Numerous ovules are borne on peltate placentae. The capsules split open at the top through loculicidal slits.

Flowering : March-July, **Fruiting :** May-August

Ecological Significance :

Callistemon lanceolatus, commonly known as bottlebrush, is ecologically significant due to its role in supporting pollinators and enhancing biodiversity. Its vibrant, nectar-rich flowers attract a wide range of pollinators, including bees, butterflies, and birds, particularly nectar-feeding species like sunbirds. This not only aids in the plant's reproduction but also strengthens pollination networks in the surrounding ecosystem. Additionally, It is well-adapted to various soil types and can tolerate drought, making it valuable for reforestation and landscaping in degraded or arid areas. Its ability to stabilize soil helps prevent erosion, while its leaf litter contributes to organic matter in the soil, enhancing fertility and structure.

Flowers

Stem

94. Botanical Name : ***Psidium guajava* L.**

(Syn : *Guajava pyrifera*)

Family : **Myrtaceae**

Vernacular Name : **Amrud, Jaam, Guava**

Morphological characteristics :

Small trees or large shrubs with greyish-black, rough bark that peels off irregularly along longitudinal fissures. Leaves are opposite, oblong to elliptic-oblong or obovate, leathery, entire, and softly hairy on the underside. Flowers are white or cream-colored, measuring about 2.5–4 cm in diameter. Fruits are berries, 6–10 cm across, globose, ovoid, or pear-shaped, fleshy, dark green when immature, turning sulphur-yellow or rosy-purple at maturity with white or rosy-purple pulp. Seeds are tiny, ellipsoid, smooth, hard, and pale brown. The species is cultivated for its edible fruits.

Flowering & Fruiting : mainly in rainy and cold seasons

Ecological Significance :

Psidium guajava (common guava) plays a vital ecological role in tropical and subtropical ecosystems. As a hardy, fast-growing species, it contributes to soil stabilization and land restoration, particularly in degraded or erosion-prone areas. Its dense canopy offers shelter and nesting sites for various bird species, while its fruits provide a rich food source for wildlife such as birds, bats, and insects, aiding in natural seed dispersal. Additionally, the tree supports pollinator populations through its abundant, nectar-rich flowers. Its ability to thrive in poor soils with minimal inputs makes it valuable for promoting biodiversity and ecological resilience in disturbed habitats.


Flower
Leaf
Stem

95. Botanical Name : ***Syzygium aromaticum*** **(L.) Merr. & Perr.**

(Syn : *Eugenia aromatica*)

Family : **Myrtaceae**

Vernacular Name : **Long**

Morphological characteristics :

Small-sized tree. Leaves are simple and arranged oppositely. The upper (adaxial) surface is leathery, glossy, and emits a pleasant aroma when crushed. Young leaves appear bright pink, later turning light green and lustrous. Each leaf measures about 10 cm in length and 5 cm in width, elliptic to oblong in shape, tapering narrowly at the base with an upward tip. The lower surface bears small black spots. Flowers are produced in terminal clusters. Buds begin green, gradually shifting to pink, red, or crimson, and finally turning vivid red upon full bloom. Each flower measures roughly 6 mm across. Flowering starts when the tree is 5–7 years old. Fruits are dark purple, oblong, around 2–2.5 cm long and 1.3 cm wide, containing a single seed.

Flowering & Fruiting : Sept. - Oct.

Ecological Significance :

Syzygium aromaticum plays a significant ecological role in its native tropical habitats. It contributes to forest diversity by providing dense canopy cover that supports various wildlife species, including birds and insects, which rely on its flowers and fruits for food. The tree's fragrant flowers attract important pollinators like bees, facilitating ecosystem pollination processes. Additionally, its presence helps maintain soil quality and moisture levels, promoting a balanced microclimate within the forest. By supporting pollinators and offering shelter, *Syzygium aromaticum* helps sustain the intricate ecological networks essential for tropical forest health.


Leaf

96. Botanical Name : ***Syzygium cumini* (L) Skeels**

(Syn : *Eugenia cumini*)

Family : **Myrtaceae**

Vernacular Name : **Jamun**

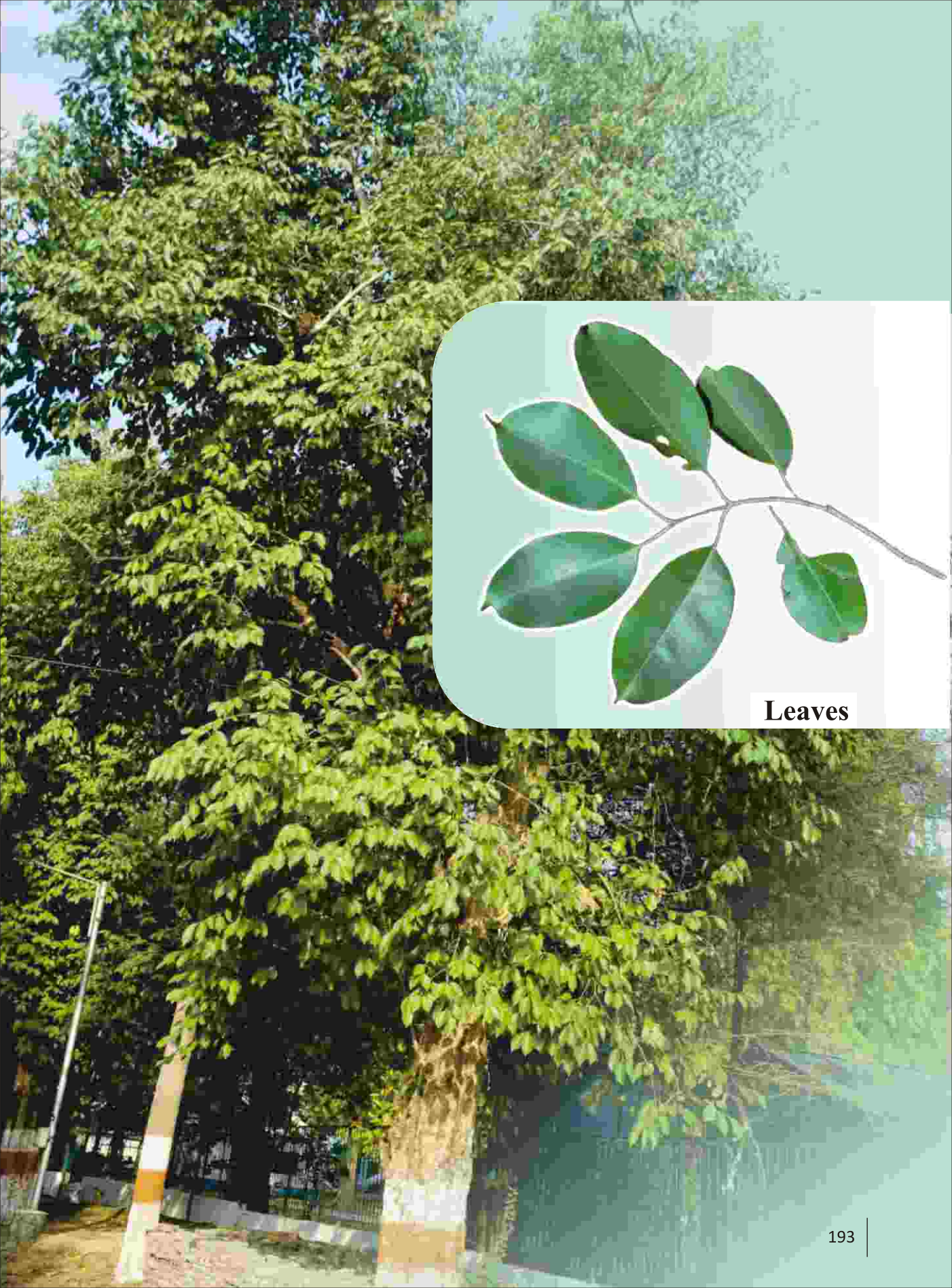
Morphological characteristics :

Large, smooth, evergreen trees with greyish-brown bark. Leaves are oblong to elliptic-oblong, 10–15 cm long, tapering or pointed, glossy, with many closely spaced lateral veins and distinct intermediate ones. Flowers are pale greenish-white, stalkless, generally borne in groups of three within branched trichotomous panicles having cylindrical stalks. Floral cup turbinate, 0.3–0.5 cm long; petals cap-like. Fruits are ellipsoid or elongated, often slightly curved; seeds usually single, with thick, rounded, fleshy cotyledons pressed together on the inner side.

Flowering : Feb.-May, **Fruiting :** June - Aug

Ecological Significance :

Syzygium cumini, widely known as jamun, holds significant ecological importance in tropical and subtropical ecosystems. Its thick foliage offers shade and habitat for various birds and insects, fostering a balanced and diverse environment. The nutritious fruits are consumed by birds, bats, and small mammals, aiding in natural seed dispersal and promoting forest renewal. Moreover, its deep-rooted system supports soil stability by minimizing erosion and enhancing soil quality. By adapting to different soil types and environmental conditions, *Syzygium cumini* plays a crucial role in sustaining ecosystem resilience and biodiversity.



Leaves

97. Botanical Name : ***Syzygium samarangense* (Bl.) Merr. & Perr.**

(Syn : *Syzygium samarangense* var. *parviflorum*)

Family : **Myrtaceae**

Vernacular Name : **Wax Apple, Wax Jambu, Water apple**

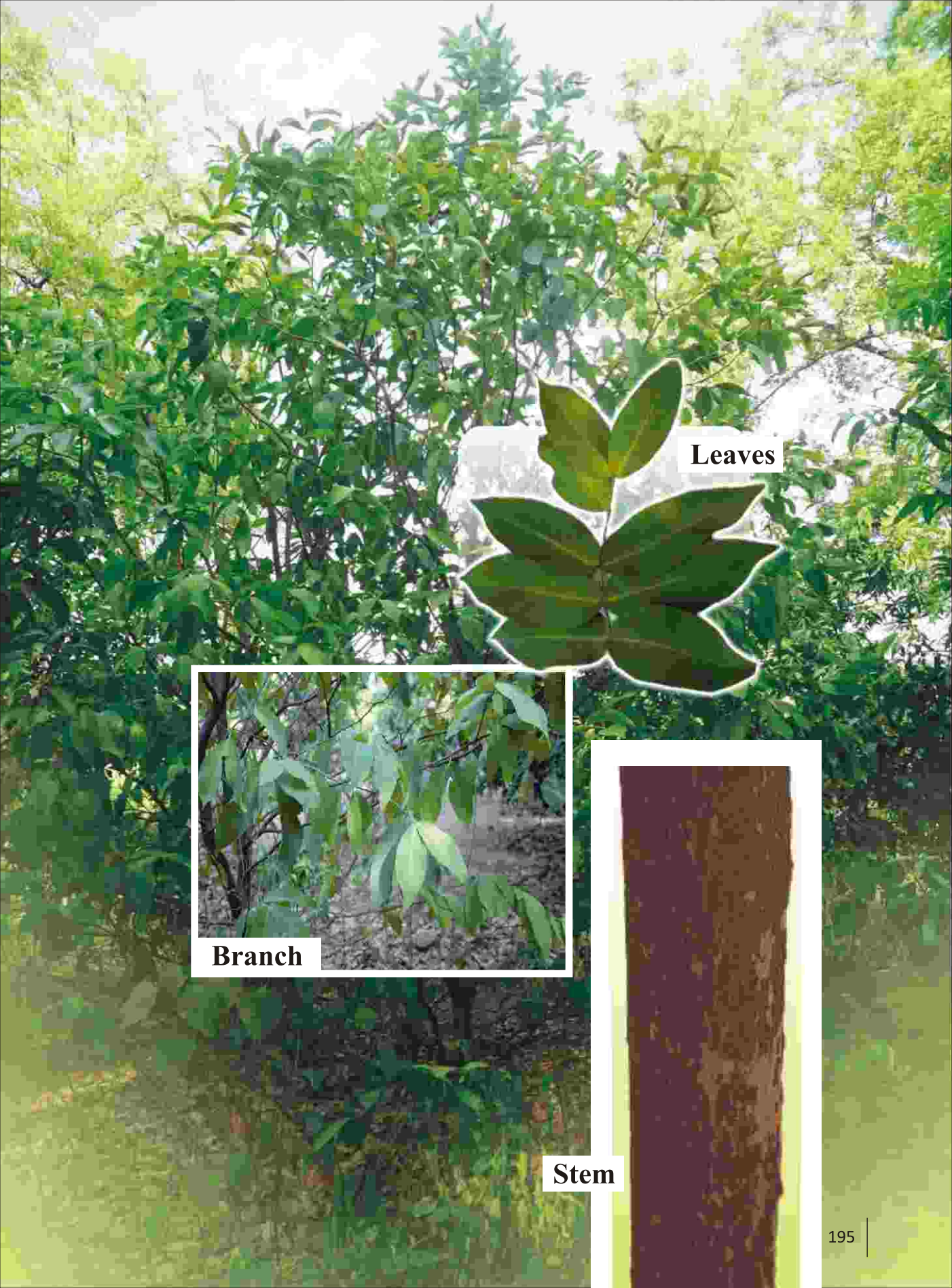
Morphological characteristics :

Wax Apple is a tropical species that can reach 12 m in height, maintaining evergreen foliage. Its leaves are nearly stalkless, elliptic-oblong, and either rounded or slightly heart-shaped at the base, displaying shades from yellowish to dark bluish-green. The flowers are white, consisting of four petals and numerous elongated stamens. Its fruit is an edible, bell-shaped berry, appearing in colors from white, pale green, green, red, purple, crimson, to deep purple or black. Flowers and fruits may emerge anywhere on the trunk or branches. Mature trees are prolific, producing abundant crops.

Flowering : Nov.-Dec., **Fruiting :** March-April

Ecological Significance :

Syzygium samarangense plays an important ecological role in tropical environments where it thrives. This fast-growing tree contributes to ecosystem health by providing food and habitat for a variety of wildlife, including birds, insects, and small mammals that feed on its fruits and flowers. Its dense foliage offers shelter and nesting sites, while its flowers attract pollinators such as bees, supporting pollination processes. Additionally, the tree helps improve soil quality and prevent erosion with its root system, making it valuable for stabilizing landscapes in humid tropical regions. Through these functions, *Syzygium samarangense* supports biodiversity and contributes to the overall resilience of its native ecosystems.


Leaves
Branch
Stem

98. Botanical Name : ***Nyctanthes arbor-tristis* L.**

(Syn: *Nyctanthes tristis*)

Family : **Oleaceae**

Vernacular Name : **Harshringar, Kharsi, Siharu**

Morphological characteristics :

Large shrubs or small trees, 2-4 m high; branches 4-angled Leaves; ovate or obovate, 7-16 x 3-8.5 cm, acute at apex, truncate at base, entire or coarsely dentate, coriaceous, covered with white stiff hairs beneath. Flowers in trichotomous cymes, fragrant, subsessile. Calyx-lobes 5, truncate. Corolla-lobes white, 5-7; tube orange, 7-10 mm long. Capsules suborbicular, ca 2 cm long.

Flowering & Fruiting : Sept.- Jan.

Ecological Significance :

Nyctanthes arbor-tristis plays a significant ecological role in its native habitats. It serves as a valuable nectar source for nocturnal pollinators like moths and early-morning foragers such as bees and butterflies, thus supporting pollinator biodiversity. The plant contributes to soil health through leaf litter decomposition, enriching the soil with organic matter. Additionally, its dense foliage provides shelter for various small fauna, while its tolerance to drought and ability to grow in marginal soils make it useful for afforestation and soil conservation efforts, particularly in degraded ecosystems.


Stem
Leaves

99. Botanical Name : ***Bridelia retusa* (L.) A.Juss.**

(Syn : *Clutia retusa*)

Family : **Phyllanthaceae**

Vernacular Name : **Khaja, Kasai**

Morphological characteristics :

Trees deciduous, 4–7 m tall, spiny in youth; bark grey. Leaves elliptic-oblong, 6–15 × 3–6 cm, apex blunt, base generally rounded, smooth and bright green on upper surface, glaucous with fine tomentum below; secondary veins 15–20 pairs. Flowers borne in axillary clusters or elongated axillary or terminal spikes, with male and female flowers mixed, greenish-yellow, sessile or shortly stalked. Male outer tepals deltoid-ovate, 2–3 mm long, fleshy; inner tepals obovate, short, greenish-white. Stamens fused at base. Female tepals spathulate. Drupes approximately 8 mm wide, purple-black, subtended by persistent calyx.

Flowering : Aug.-Dec., **Fruiting :** Aug.-Nov.

Ecological Significance :

Bridelia retusa, a deciduous tree native to South and Southeast Asia, plays an important ecological role in the regions where it grows. It provides shelter and food for a variety of wildlife, including birds, insects, and herbivorous mammals that feed on its leaves, fruits, and bark. The tree supports local pollinators through its small, nectar-producing flowers, contributing to the health of pollination networks. Its fruit aids in seed dispersal, as it is consumed by birds and animals, helping maintain plant diversity in natural forests.

Leaves

Fruits

100. Botanical Name : ***Phyllanthus acidus* (L.) Skeels**

(Syn : *Averrhoa acida*)

Family : **Phyllanthaceae**

Vernacular Name : Harfarauri, Star Gooseberry

Morphological characteristics :

Small trees, deciduous, reaching 4-6 m in height. Leaves compound, arranged distichously; leaflets elliptic to obovate, 5-7 × 2-3.5 cm, apex acute, base rounded. Flowers borne on leafless branchlets; pedicels up to 5 mm long. Male flowers abundant, about 4 mm wide. Tepals 4, ovate, unequal, approximately 2 mm long. Stamens 4, protruding; filaments curved backward; anthers oblong, around 0.5 mm long. Disk glands 4. Female flowers few, solitary. Ovary subglobose, 3-lobed; styles 3, bent backward, split into subulate arms. Drupes depressed globose, ca 1.5 cm across, 6-8-angled, juicy; endocarp hard.

Flowering & Fruiting : Oct. - April.

Ecological Significance :

Phyllanthus acidus, commonly known as the Otaheite gooseberry or star gooseberry, holds notable ecological significance due to its adaptability to diverse environmental conditions and its role in supporting local biodiversity. This deciduous tree thrives in tropical and subtropical regions, contributing to soil stabilization and improving microclimates through its canopy cover. Its fruits serve as a food source for various birds and small mammals, aiding in seed dispersal and maintaining ecological balance. Additionally, the plant exhibits tolerance to drought and poor soils, making it valuable in reforestation and agroforestry efforts, particularly in degraded landscapes where it can help restore ecological functions.


Flower
Leaves

101. Botanical Name : ***Phyllanthus emblica* L.**

(Syn : *Emblica officinalis*)

Family : **Phyllanthaceae**

Vernacular Name : **Aonla, Aonwala**

Morphological characteristics :

Trees, deciduous, up to 8 m high; bark grey, peeling off in irregular pieces. Leaves oblong, 8-14 x 2-3 mm, obtuse at apex, obliquely subcordate at base; stipules ovate, 1-1.5 mm long. Flowers in axillary clusters towards lower portion of branchlets, greenish yellow. Male tepals 6, oblong, 1-1.2 mm long, obtuse. Stamens 3; filaments connate. Female tepals 6, oblong, 1.2-1.5 mm long, obtuse, valvate. Styles connate at base, twice 2-fid. Drupes globose, 3-5 cm across, obscurely 6-lobed. Seeds ca 6 mm long, dark brown, 3-angled.

Flowering & Fruiting : March - Dec.

Ecological Significance :

Phyllanthus emblica plays a vital ecological role in its native habitats across tropical and subtropical regions. As a hardy deciduous tree, it contributes significantly to forest structure and resilience, especially in degraded and dryland ecosystems. Its deep-rooted system aids in soil stabilization and prevents erosion, while its leaf litter enhances soil fertility by contributing organic matter. The tree supports diverse fauna, providing food and habitat to a variety of birds, insects, and mammals. Its fruits are a key seasonal resource for wildlife, promoting seed dispersal and ecological interactions within the ecosystem. Moreover, its tolerance to drought and adaptability to different soil types make it an important species for ecological restoration and afforestation programs.


Leaves

102. Botanical Name : ***Grevillea robusta* A. Cunn. ex R. Br.**
(Syn : *Hakea robusta*)
Family : **Proteaceae**
Vernacular Name : **Silver Oak**

Morphological characteristics :

Trees, up to 20 m high, bark greyish brown, furrowed. Leaves deltoid ovate to oblong-ovate, 13-24 cm long, pinnate; pinnae mostly 5-11 pairs, opposite or subopposite, deeply pinnatifid into lobes; lobes lanceolate or linear-oblong, 10-40 x 3-7 mm, acute at apex, entire or incised, glabrous above, densely brown tomentose beneath; petioles 2-6 cm long. Flowers in secund, many-flowered, pedunculate racemes, orange to golden-brown or golden-yellow. Perianth 9-12 mm long; lobes narrowly spathulate; tube not expanded at base. Disk annular. Follicles ovoid, compressed, ca 1.7 x 1 cm, blackish purple, glabrous, with hardened and persistent style at apex. Seeds elliptic, ca 16 x 8 mm.

Flowering : Feb.-May, **Fruiting :** Oct.-Nov.

Ecological Significance :

Grevillea robusta, commonly known as silk oak, is ecologically significant as a fast-growing, drought-resistant tree that provides habitat and food for various wildlife, including birds, insects, and nectar-feeding mammals. Its flowers are a rich nectar source, supporting pollinators such as bees and honeyeaters, while its dense foliage offers shelter and nesting sites. The tree also aids in soil improvement through leaf litter decomposition, enhancing nutrient cycling in degraded ecosystems. However, in non-native regions, it can become invasive, outcompeting local flora and altering ecosystem dynamics. Despite this, in its native Australian habitat and managed plantations, it plays a valuable role in agroforestry, erosion control, and biodiversity support.

103. Botanical Name : ***Putranjiva roxburghii* Wall.**

(Syn : *Drypetes roxburghii*)

Family : **Putranjivaceae**

Vernacular Name : **Putrajeeva**

Morphological characteristics :

Putranjiva is a well-known, medium-sized evergreen tree, reaching heights of up to 12 m. Its drooping branches are covered with dark grey bark marked by horizontal lenticels. The leaves are simple, alternately placed, dark green, glossy, elliptic-oblong, with sparsely toothed edges. Male flowers grow on short stalks in rounded clusters at the leaf axils, while female flowers appear 1–3 per axil. The fruits are ellipsoid or rounded drupes, white and velvety; each usually contains a single seed, with a pointed, rugose, very hard stone.

Flowering & Fruiting : March-August

Ecological Significance :

Putranjiva roxburghii plays a subtle yet valuable ecological role in tropical and subtropical regions. Its dense foliage provides shade and shelter for birds and small animals, contributing to habitat diversity in urban and forested landscapes. The tree's seeds are dispersed by birds and animals, aiding in natural regeneration and maintaining plant diversity. Its ability to withstand drought and pollution makes it useful in reforestation and urban greening efforts, particularly in degraded or stress-prone areas. Additionally, its evergreen nature supports year-round photosynthetic activity, which helps in carbon sequestration and improving local air quality.

Leaves

104. Botanical Name : ***Ziziphus mauritiana* Lamk.**

(Syn : *Ziziphus indica*)

Family : **Rhamnaceae**

Vernacular Name : **Ber, Indian jujube**

Morphological characteristics :

Moderate sized armed trees. Leaves elliptic-ovate or ovate, entire or crenate, rounded, glabrous above, tomentose beneath, shortly petiolate, 4-6 x 3-4 cm. Inflorescence an axillary fascicled cyme. Flowers minute, greenish yellow. Calyx 5-lobed, glabrous within. Petals 5, clawed. Disk 10- lobed. Ovary 2-celled. Drupe single-seeded, globose, red or orange when ripe, ca 1.5 cm diam.

Flowering : Sept.-Nov., **Fruiting :** Dec.-June

Ecological Significance :

Ziziphus mauritiana is an ecologically important species in arid and semi-arid zones. It helps control soil erosion with its widespread root network, stabilizing vulnerable soils. The tree offers habitat and nourishment for diverse wildlife, including birds and insects, via its flowers and nutrient-dense fruits. Its capacity to endure harsh, dry conditions sustains plant cover in degraded areas, aiding ecosystem recovery and biodiversity preservation. Moreover, as a drought-resistant species, it supports ecological stability in water-limited regions.

Leaves

Stem

105. Botanical Name : ***Adina cordifolia* (Roxb.) Hook.f. & Benth.**

(Syn : *Haldina cordifolia*)

Family : **Rubiaceae**

Vernacular Name : **Haldu**

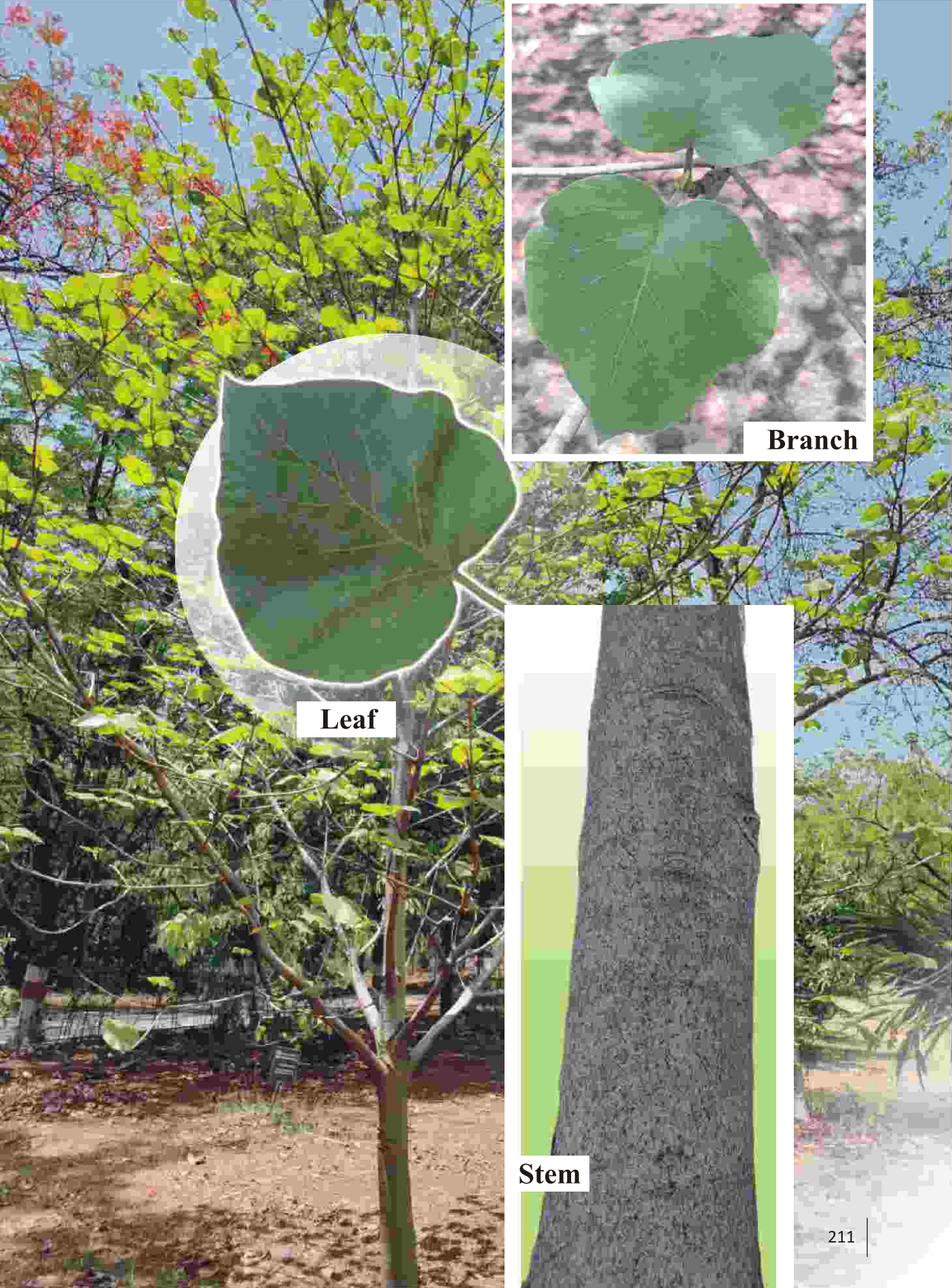
Morphological characteristics :

Trees, up to 20 m high; branches pubescent when young. Leaves orbicular, abruptly acuminate, cordate at base, glabrescent above, pubescent beneath, 14 x 12 cm; petioles up to 8 cm long; stipules deciduous. Flowers in globose heads of 2 cm diam., white or yellowish green. Heads 1 - 3-fascicled, lateral (axillary); peduncles up to 6 cm long. Calyx pubescent. Corolla brownish yellow. Capsule ca 4 mm long; seeds winged.

Flowering : June-July, **Fruiting :** Dec. - March

Ecological Significance :

Adina cordifolia is an ecologically significant species in tropical and subtropical forests. It provides habitat and food for various wildlife, including birds, insects, and mammals, through its flowers, fruits, and foliage. The tree's dense canopy offers shade, helping maintain soil moisture and microclimatic conditions, while its root system prevents soil erosion. Additionally, *Adina cordifolia* contributes to nutrient cycling by shedding leaves that decompose into organic matter, enriching forest soils. Its presence supports biodiversity and ecosystem stability, making it vital for forest regeneration and ecological balance.


Branch
Leaf
Stem

106. Botanical Name : ***Gardenia resinifera*** **Roth**

(Syn : *Genipa resinifera*)

Family : **Rubiaceae**

Vernacular Name : **Dikamali**

Morphological characteristics :

Shrubs small trees, up to 3 m high. Gum exuding from apical buds. Leaves elliptic-ovate, 5 17 x 38.5 cm, obtuse, main nerves 20-30 pairs; stipules ovate, connate. Flowers solitary, axillary, fragrant, white. Calyx ca 1.5 cm long, pubescent; lobes lanceolate, acuminate. Corolla-tube 5 cm long; lobes 5, oblong. Stamens 5, epipetalous. Style fusiform. Fruits oval or oblong. 2.5 x 1.5 cm with persistent calyx, brownish black, not ribbed; seeds flat, reddish.

Flowering & Fruiting : March - Nov.

Ecological Significance :

Gardenia resinifera, a tropical tree species, holds significant ecological value in its native habitats. It contributes to biodiversity by providing food and shelter for various insects, birds, and mammals through its flowers, fruits, and foliage. The tree plays a role in soil stabilization with its root system, preventing erosion in forest ecosystems. Additionally, it supports pollinators like bees and butterflies, enhancing cross-pollination in surrounding flora. Its presence in deciduous and semi-evergreen forests aids in nutrient cycling, while its resin has been observed to deter certain herbivores, influencing local ecological balances. The species also adapts to varying environmental conditions, making it ecologically resilient in shifting climates.


Leaf
Stem
Branch

107. Botanical Name : ***Mitragyna parvifolia* (Roxb.) Korth.**

(Syn : *Nauclea parvifolia*)

Family : **Rubiaceae**

Vernacular Name : **Kem, Mundi**

Morphological characteristics :

Shrubs or trees; branches cylindrical. Leaves opposite, pinnately veined, with petioles; stipules interpetiolar, large, falling early. Inflorescence a globular axillary or terminal pedunculate head; receptacle covered with hairs. Bracts 2, small, thin, deciduous; numerous bracteoles. Calyx-tube short, obconical, truncate or 5-toothed. Corolla funnel-shaped; tube elongated; lobes 5, valvate. Stamens 5, inserted at corolla throat; filaments short, thread-like; anthers oblong. Ovary 2-chambered; 2 ovules per chamber; style thread-like; stigma shaped like a mitre. Fruit a globular cluster of capsules, each with 2 follicular segments, many seeds; seeds flattened, winged.

Flowering & Fruiting : Sept. - Jan

Ecological Significance :

Mitragyna parvifolia is an ecologically significant tree species commonly found in dry deciduous forests of the Indian subcontinent. It plays a crucial role in maintaining forest structure and biodiversity by offering shade, habitat, and food for various insects, birds, and mammals. Its deep-rooted system aids in soil stabilization and water retention, helping to combat soil erosion and improve groundwater recharge. The tree's foliage contributes to nutrient cycling through leaf litter decomposition, enhancing soil fertility. Additionally, its resilience to drought conditions makes it an important species for forest regeneration and ecosystem restoration in arid and semi-arid regions.


Leaf
Flower

108. Botanical Name : ***Morinda citrifolia* L.**

(Syn : *Samama citrifolia*)

Family : **Rubiaceae**

Vernacular Name : **Noni**

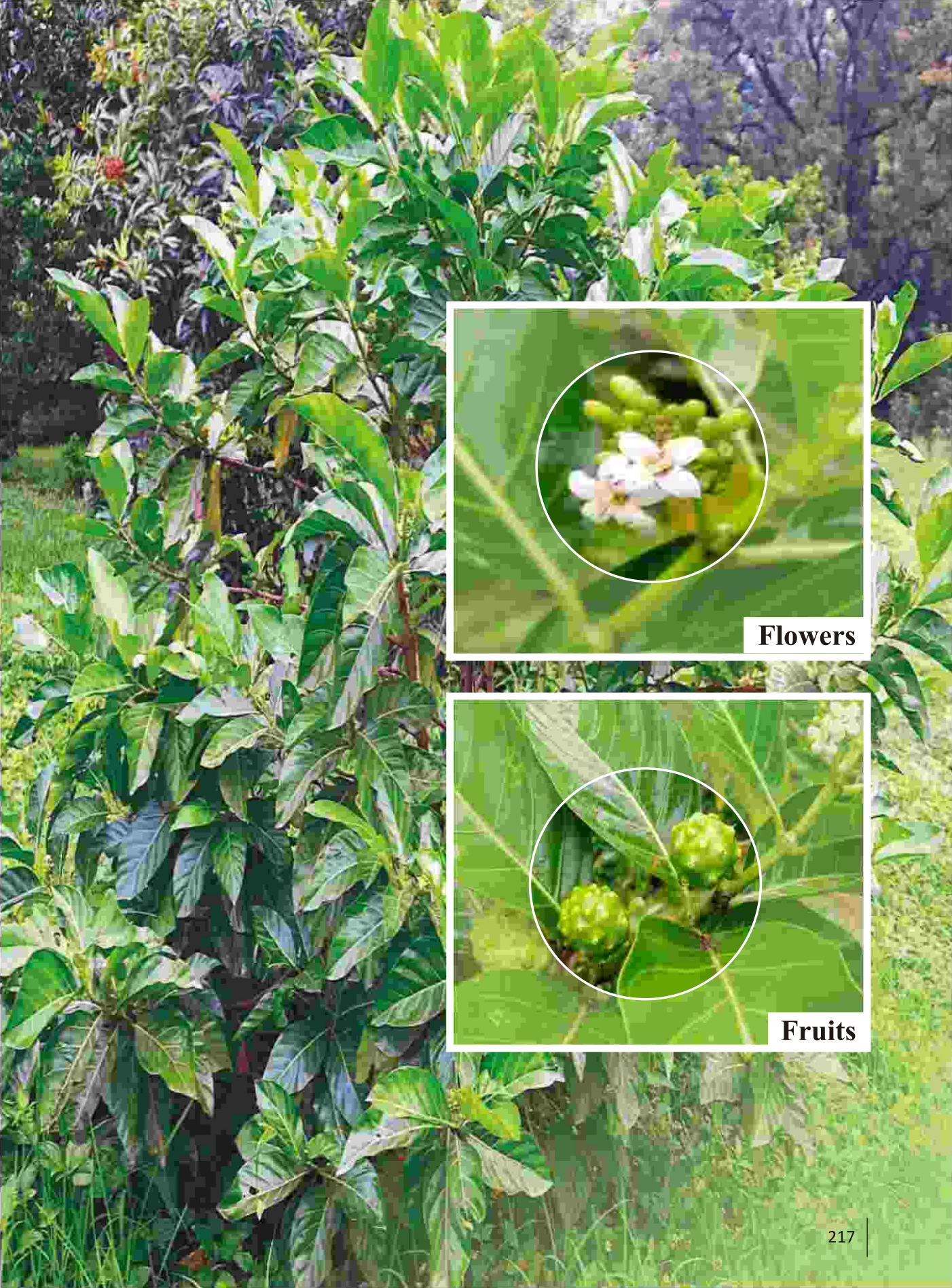
Morphological characteristics :

Morinda is a shrub or small tree that thrives on sandy or rocky coasts. Besides tolerating saline conditions, it can endure drought and grows in secondary soils. The plant may reach 9 m in height and has large, simple, dark green, glossy leaves with deep veins. It produces flowers and fruits throughout the year. The flowers are tiny and white. Its fruit is a multiple fruit with a strong odor during ripening, earning names like cheese fruit or vomit fruit. Oval in shape, it grows 4-7 cm long. Initially green, the fruit turns yellow and then nearly white when ripe. It contains numerous seeds and is sometimes referred to as starvation fruit.

Flowering & Fruiting : Throughout the year

Ecological Significance :

Morinda citrifolia, commonly known as noni, plays a vital ecological role in tropical and subtropical ecosystems. It thrives in a wide range of environmental conditions, including nutrient-poor soils, saline coastal regions, and volcanic terrains, making it an important pioneer species in disturbed habitats. Its ability to grow in degraded areas contributes to soil stabilization and ecosystem restoration. Additionally, *M. citrifolia* supports biodiversity by providing food and habitat for various insects, birds, and mammals. Its flowers attract pollinators such as bees, while its fruits are consumed by fruit-eating animals, aiding in seed dispersal and promoting forest regeneration.


Flowers
Fruits

109. Botanical Name : ***Morinda pubescens* Sm.**

(Syn : *Morinda aspera*)

Family : **Rubiaceae**

Vernacular Name : **Noni**

Morphological characteristics :

Small trees. Leaves elliptic to ovate, acuminate, with acute tips, densely tomentose beneath, measuring 8–20 × 4–11 cm; stipules ovate. Flowers white, pentamerous, arranged in terminal, axillary, or leaf-opposed pedunculate spherical clusters. Calyx 3 mm long, with a truncate margin. Corolla 15 mm long, smooth inside; lobes 5, oblong. Stamens 5. Fruits spherical, 2–3 cm in diameter; pyrenes hard; seeds oblong.

Flowering & Fruiting : March - Aug.

Ecological Significance :

Morinda pubescens, a species commonly found in tropical and subtropical regions, plays a vital ecological role in maintaining biodiversity and ecosystem stability. It often grows in degraded soils and dry regions, contributing to soil stabilization and preventing erosion through its root system. The plant supports various pollinators and serves as a habitat and food source for insects and small fauna, thus promoting ecological interactions. Its ability to thrive in arid and nutrient-poor environments makes it important for ecological restoration and reforestation efforts in vulnerable landscapes. Additionally, *M. pubescens* contributes to local nutrient cycling by shedding organic matter that enriches the soil.

Flowers

Branch

110. Botanical Name : ***Neolamarckia cadamba* (Roxb.) Bosser**

(Syn : *Anthocephalus cadamba*)

Family : **Rubiaceae**

Vernacular Name : **Kadam**

Morphological characteristics :

Large deciduous trees reaching up to 10 m in height. Leaves measure 12–25 × 5–10 cm, ovate to elliptic-oblong, leathery, with an acute tip, pubescent on the underside, and slightly heart-shaped at the base; stipules are lance-shaped and shed early. Inflorescence forms a single terminal head. Flowers are small, five-parted, orange, with calyx segments fused at the base. Calyx lobes are oblanceolate. Corolla is funnel-shaped, approximately 7 mm long. There are five stamens. Ovary is four-celled above, two-celled below; stigma is white. Pseudocarp is large, fleshy, about 5–6 cm in diameter; seeds are tiny and angular.

Flowering : May-July, **Fruiting :** Persisting till next year

Ecological Significance :

Neolamarckia cadamba, commonly known as kadamba, plays a vital ecological role in tropical and subtropical ecosystems. This fast-growing deciduous tree contributes significantly to reforestation and afforestation efforts due to its rapid biomass accumulation and adaptability to a wide range of soils. Its broad canopy provides shade and habitat for various bird and insect species, supporting biodiversity. The tree's leaf litter enhances soil fertility by improving organic matter content and promoting microbial activity. Additionally, it is known for its ability to sequester carbon, making it valuable in climate change mitigation strategies. Its presence in riparian zones also aids in controlling soil erosion and maintaining water quality.


Leaf
Flower

111. Botanical Name : ***Aegle marmelos* (L.) Correa**

(Syn : *Aegle tamilnadensis*)

Family : **Rutaceae**

Vernacular Name : **Bael**

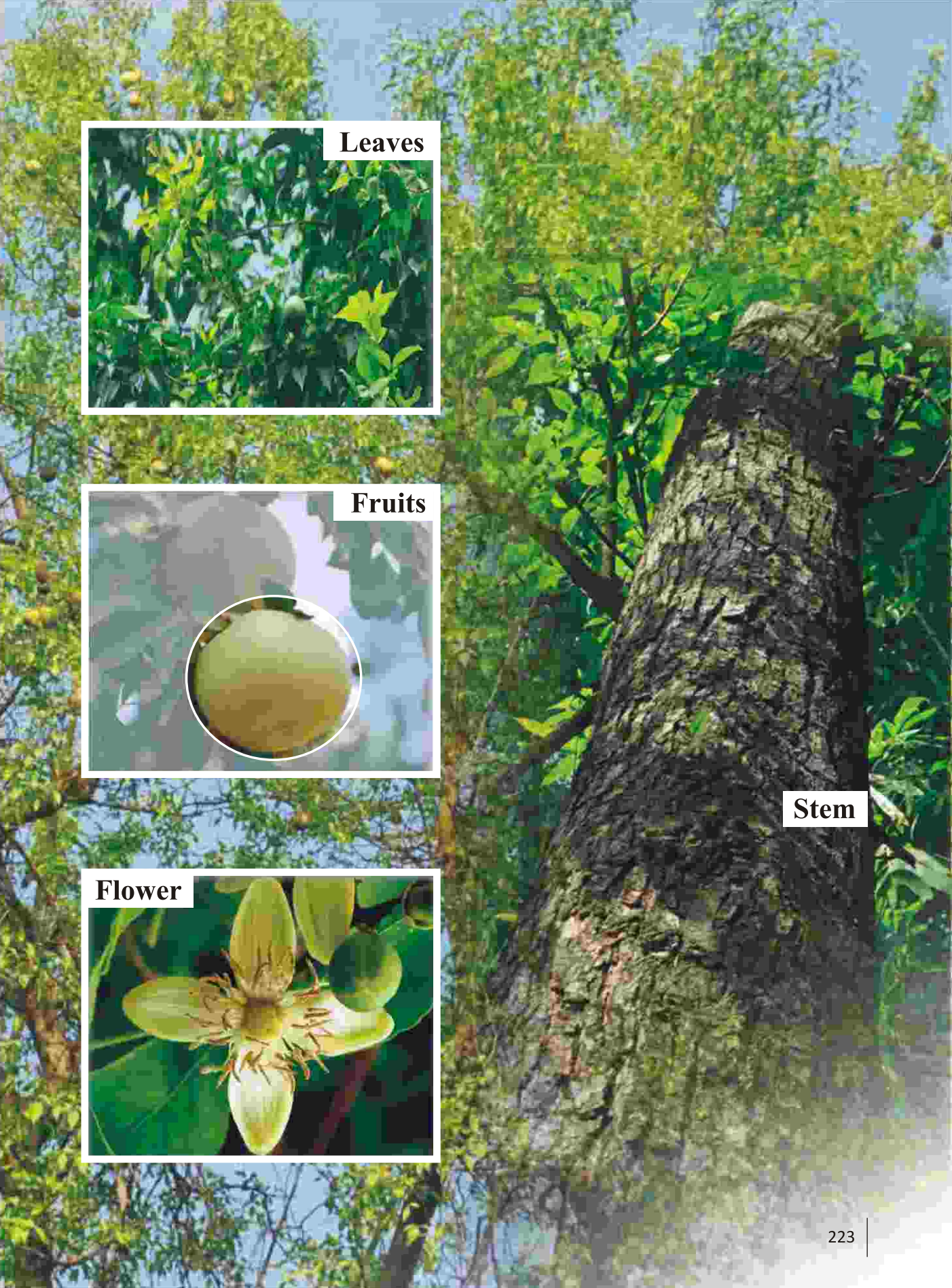
Morphological characteristics :

A medium-sized, deciduous tree with spiny branches. Leaflets typically three, ovate to lance-shaped, base rounded; lateral leaflets sessile, terminal leaflet stalked. Flowers are five-parted, greenish-white, pleasantly fragrant; peduncles present; pedicels auriculate, covered with fine hairs. Filaments clustered. Ovary smooth. Fruit a berry, globose, oblong, or pear-shaped; rind grey or yellow; pulp orange, sweet, and edible.

Flowering & Fruiting : April-Aug.

Ecological Significance :

Aegle marmelos plays a significant role in the ecology of dry and arid regions. This hardy tree supports biodiversity by offering food and shelter to various insects, birds, and animals. Its fragrant flowers attract pollinators such as bees and butterflies, contributing to the pollination of both wild and cultivated plants. The tree's fruits are consumed by wildlife, aiding in seed dispersal and promoting natural vegetation growth. Bael also enhances soil health through the decomposition of its leaves and organic matter, which enrich the soil with nutrients. Its deep-rooted system helps in conserving soil moisture and preventing erosion, making it valuable in restoring degraded landscapes. Through these ecological contributions, Bael supports ecosystem stability and resilience in challenging environments..


Leaves
Fruits
Stem
Flower

112. Botanical Name : ***Bergera koenigii* L.**

(Syn : *Murraya koenigii*)

Family : **Rutaceae**

Vernacular Name : **Curry leaf, Kathrim**

Morphological characteristics :

A deciduous shrub or small tree with a strong fragrance; bark brownish in color. Leaves up to 30 cm long; composed of 9–25 leaflets, typically oblique-ovate, obtuse, acuminate, with notched tips and crenulate edges. Flowers arranged in corymbs or panicles, white in color. Sepals acute. Petals linear to oblong, obtuse. Ovary two-celled; style cylindrical; stigma capitate and grooved. Fruits ovoid, about 8 cm diameter, rugose, black when mature; seeds enclosed in mucilage.

Flowering & Fruiting : Dec.-June

Ecological Significance :

Bergera koenigii, commonly known as curry leaf plant, plays an important ecological role in its native and cultivated habitats. It supports biodiversity by serving as a host plant for various insect species, including butterflies like *Papilio demoleus*, which lay their eggs on its leaves. The plant also contributes to soil health through leaf litter that enriches the soil with organic matter. Its aromatic compounds can have insect-repelling properties, aiding in natural pest control within ecosystems. Additionally, *B. koenigii* attracts pollinators such as bees and flies with its small, fragrant flowers, thus supporting pollination networks crucial for ecological balance.


Branch
Leaf

113. Botanical Name : ***Citrus aurantium* L.**

(Syn : *Citrus aurantium f. aurantium*)

Family : **Rutaceae**

Vernacular Name : **Mosami**

Morphological characteristics :

Small trees, seldom shrubs, with young shoots smooth, greenish-white. Leaves simple; leaflets 8–15 cm, elliptic or ovate, acute, obtuse, or tapering; petiole bare or winged; wings frequently obovate, almost as large as the leaf blade. Flowers bisexual, entirely white. Stamens number 20–30. Fruit globular, flattened, without nipple-like projections, orange; rind either loose or attached; pulp sweet, yellow, occasionally red.

Flowering & Fruiting : July-March

Ecological Significance :

Citrus aurantium (bitter orange) holds ecological significance as a versatile species that supports biodiversity and ecosystem stability. It provides habitat and food for various pollinators, including bees and butterflies, through its fragrant flowers, while its fruits serve as a food source for birds and small mammals. The tree also contributes to soil health by preventing erosion with its robust root system and enriching the soil through leaf litter decomposition. In some regions, it acts as a pioneer species, facilitating ecological succession in disturbed areas. Additionally, its cultivation in agroecosystems can promote sustainable land use by offering an alternative to more resource-intensive crops. However, in non-native regions, it may become invasive, outcompeting local flora and altering ecosystem dynamics. Thus, its ecological role varies depending on the context of its introduction and management.

Fruit

114. Botanical Name : ***Citrus sinensis* (L.) Osbeck**

(Syn : *Aurantium acre*)

Family : **Rutaceae**

Vernacular Name : **Santara, Orange**

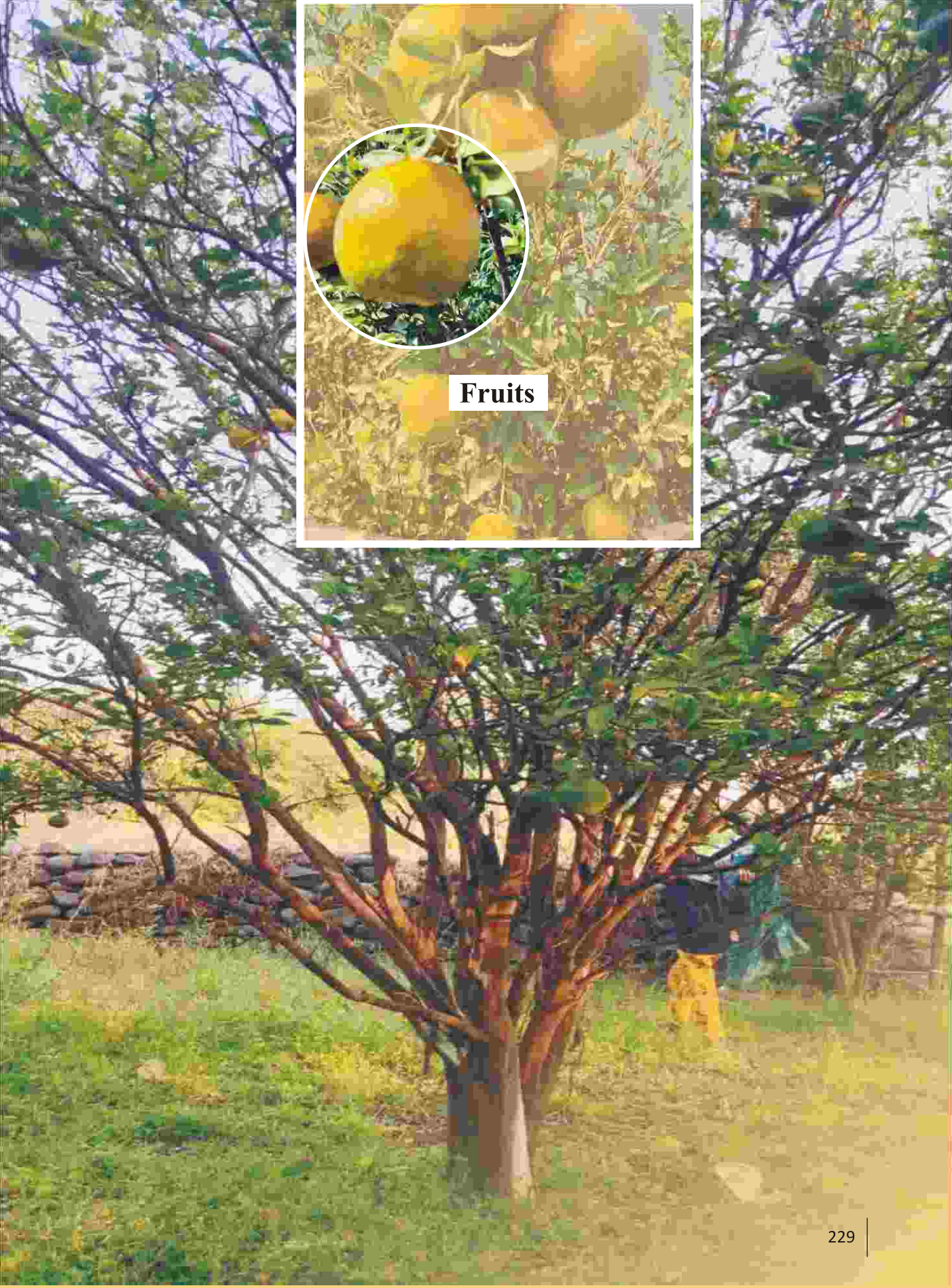
Morphological characteristics :

Citrus sinensis is a small evergreen shrub or tree, 6–13 m tall, with a conical canopy and mostly thorny branches. Young twigs are angled, frequently armed with prominent spines. Leaves are smooth, oval-shaped, 5–15 × 2–8 cm, dark green on top, glossy, and emit a scent reminiscent of the fruit; petiole is winged. Flowers are small, waxy, greenish-white, and fragrant; calyx broad and saucer-shaped, with five white elliptic petals, 1.3–2.2 cm long. Fruits are round, 4–12 cm, orange to yellowish-green, with a 6 mm thick leathery peel enclosing juicy segments, which may be seedless depending on the variety.

Flowering & Fruiting : Feb.-March

Ecological Significance :

Citrus sinensis, commonly known as the sweet orange, holds significant ecological value as it contributes to biodiversity, soil health, and carbon sequestration. Its flowering period provides nectar and pollen for pollinators such as bees, supporting local ecosystems. The tree's dense foliage offers habitat and shelter for various small animals and insects, while its fallen leaves enrich the soil through organic decomposition. Additionally, *C. sinensis* aids in reducing atmospheric carbon dioxide through photosynthesis, mitigating climate change effects. In agroecosystems, it promotes sustainable land use by preventing soil erosion and maintaining microclimatic conditions.


Fruits

115. Botanical Name : ***Santalum album* L.**

(Syn : *Santalum ellipticum*)

Family : **Santalaceae**

Vernacular Name : **Chandan, Indian sandalwood**

Morphological characteristics :

Trees, evergreen, 6-8 m hight, semiparasitic on roots. Leaves lanceolate or elliptic, 3-7x 1.5-3 cm, acute at apex, rounded at base, entire, subcoriaceous; petioles 1-1.5 cm long. Flowers in trichotomous panicles. small, 5-merous: panicles shorter than leaves. Perianth purplish brown inside; lobes obovate, minutely ciliate; tube campanulate. Disk of 5, fleshy, ovoid scales. Drupes globose, ca 1 cm across, black, annulate above.

Flowering & Fruiting : Aug. - Dec.

Ecological Significance :

Santalum album plays a unique ecological role as a partial root parasite, forming symbiotic associations with the roots of nearby plants to draw water and nutrients, which in turn influences plant community dynamics. This interaction can enhance nutrient cycling and promote the coexistence of diverse species in its native habitats. The tree supports pollinators such as bees with its fragrant flowers and contributes to forest structure by thriving in mixed-species woodlands. Its adaptability to dry, rocky soils also makes it valuable in land rehabilitation and afforestation efforts, helping restore ecological balance in degraded landscapes.

Leaves

Stem

116. Botanical Name : ***Sapindus emarginatus* Vahl.**

(Syn : *Sapindus laurifolius var. emarginatus*)

Family : **Sapindaceae**

Vernacular Name : **Ritha**

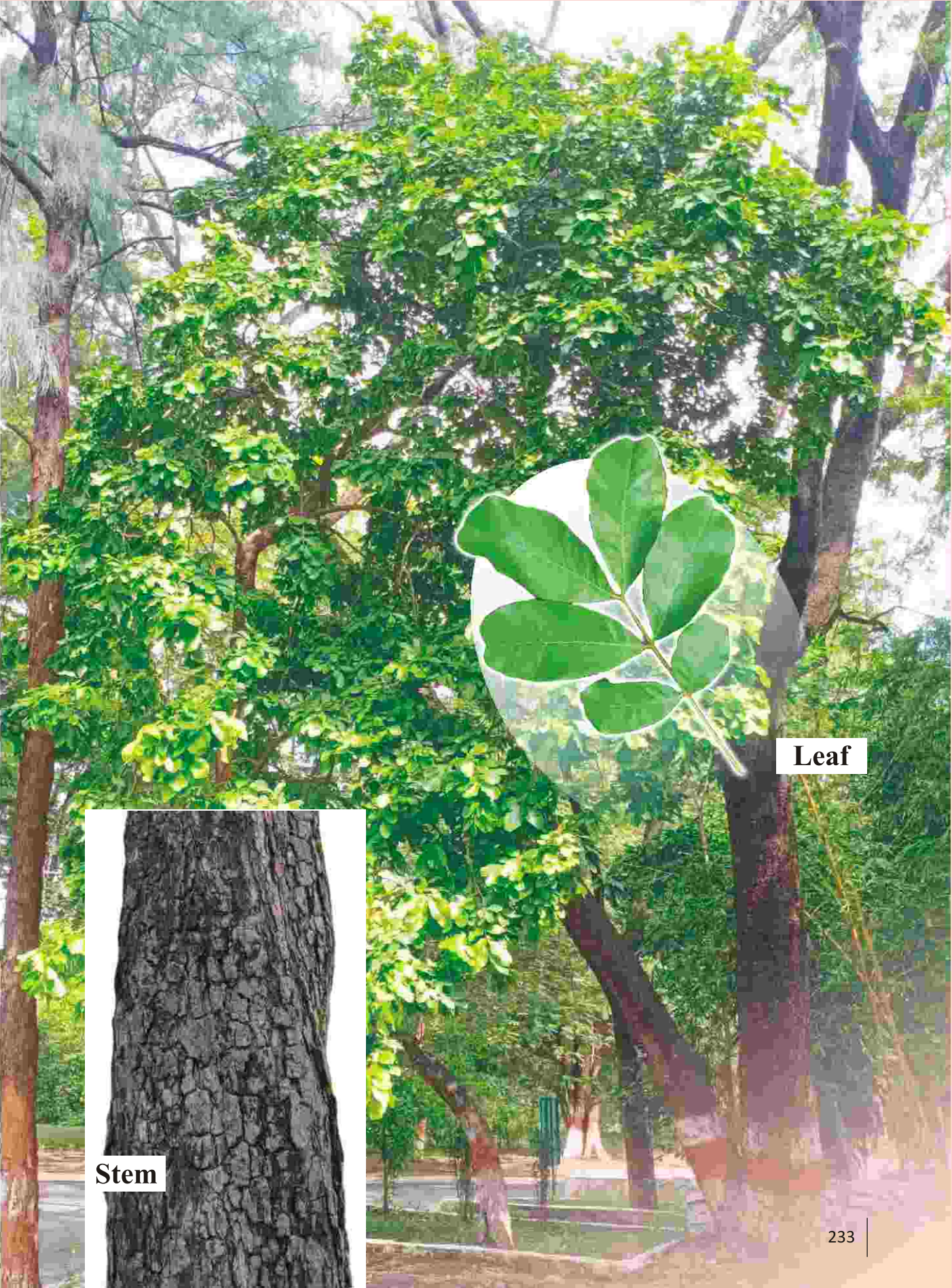
Morphological characteristics :

Trees reaching up to 12 m in height. Young shoots densely tomentose. Leaves compound, with opposite leaflets that are glabrous on the upper surface and tomentose beneath, oblong to elliptic-oblanceolate, apex obtuse to slightly notched. Petiolules covered with tomentum. Flowers white, arranged in terminal panicles up to 15 cm long, pubescent. Pedicels present. Sepals 3–3.5 mm long, ovate, apex obtuse. Petals lanceolate, clawed, margins ciliate with woolly scales near the claw. Disc 5-lobed, hirsute. Stamens 8, filaments with pistillode in male flowers. Ovary ovoid, 3-locular, densely ferrugineous-tomentose; stigma trifid; 8 staminodes in female flowers. Drupes 1–1.5 × 1.5 cm, yellowish-brown, 3-lobed, rusty-pubescent, becoming glabrescent; 1 or 2 cocci undeveloped. Seeds 5–7 mm in diameter.

Flowering & Fruiting : Oct.-Jan.

Ecological Significance :

Sapindus emarginatus, contributes significantly to its native ecosystems by supporting soil conservation and enhancing biodiversity. This species thrives in a range of habitats, helping to stabilize soils and prevent erosion, especially in degraded or dry areas. Its fruits serve as a food source for various birds and mammals, facilitating seed dispersal and promoting forest regeneration. Additionally, the tree provides habitat and shelter for numerous insects and small wildlife, playing a role in maintaining ecological balance. Its adaptability and resilience make it valuable for restoring disturbed landscapes and supporting sustainable ecosystem functions.


Leaf
Stem

117. Botanical Name : ***Schleichera oleosa* (Lour.) Oken**

(Syn : *Pistacia oleosa*)

Family : **Sapindaceae**

Vernacular Name : **Kosam**

Morphological characteristics :

Trees. Bark grey. Leaves bright red when young; leaflets 2-4 pairs, opposite or subopposite, elliptic or elliptic-obovate, glabrous, apex obtuse or mucronate, base truncate or tapering: petiolule. Flowers greenish-white, fascicled in interrupted up to 15 cm long racemes or panicles in the axils of fallen or young leaves near the apex of branches. Pedicels in fruits. Calyx-lobes 4-6, ovate-oblong, acute, valvate or somewhat imbricate. Petals absent. Stamens 5-8, exserted. Ovary 3-4 loculed, ovoid, pubsent, stigma 3-4 lobed lobes reflexed; pistillode present in male. Drupes, ovoid, style persistent, surface smooth or with blunt prickles. Seeds 1-2, brown, enclosed in pulpy aril.

Flowering & Fruiting : March-Aug.

Ecological Significance :

Schleichera oleosa plays an important ecological role in tropical and subtropical forests. It contributes to soil fertility by improving organic matter through leaf litter decomposition and supports nitrogen cycling. The tree provides habitat and nourishment for various insects, birds, and mammals, facilitating biodiversity within its ecosystem. Its dense canopy helps in reducing soil erosion and conserving moisture, while its flowers attract pollinators that aid in ecosystem functioning. Additionally, Kusum's adaptability to different soil types makes it valuable for reforestation and restoration projects, helping maintain ecological balance in degraded landscapes.

Leaf

118. Botanical Name : ***Madhuca indica* J.F.Gmel.**

(Syn : *Madhuca longifolia*)

Family : **Sapotaceae**

Vernacular Name : **Mahua**

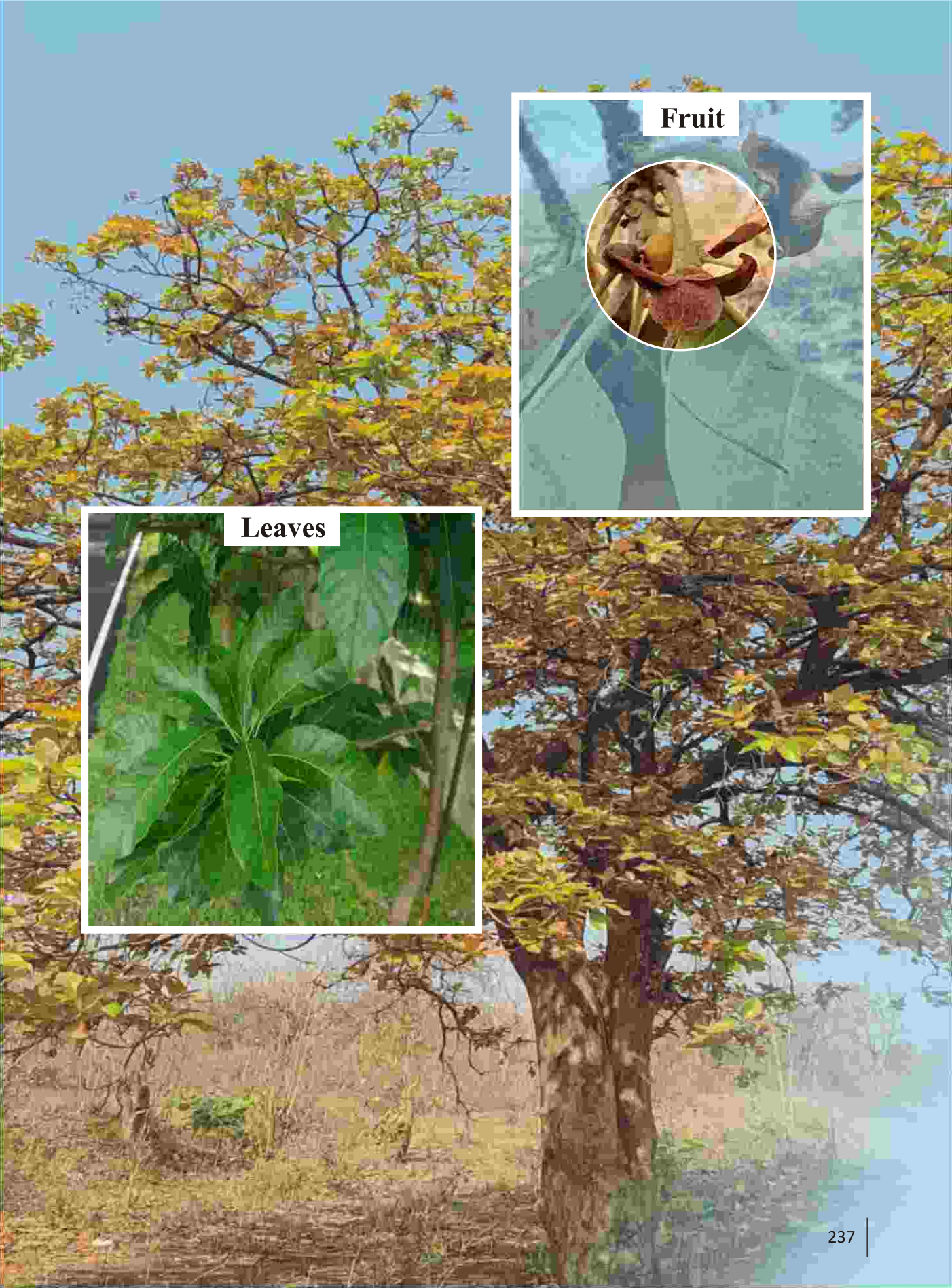
Morphological characteristics :

Deciduous trees reaching up to 18 m in height, with numerous spreading branches. Leaves elliptic, obovate, or broadly lance-shaped, measuring 7–22 × 4–11 cm, apex shortly pointed, base rounded or acute; young leaves thickly woolly, petioles 2.5–3 cm long; stipules subulate and densely hairy. Flowers arranged in dense clusters at branch tips; pedicels about 3 cm long, covered with rusty hairs. Calyx approximately 9 mm long, lobes rusty-hairy. Corolla cream-colored, over 1 cm long, usually 8–9 lobes, ovate or lanceolate; tube around 8 mm long, fleshy. Berries ovoid, 2.5–5 cm in length, greenish, containing 1–4 seeds.

Flowering & Fruiting : Jan. - June

Ecological Significance :

Madhuca indica holds considerable ecological significance in tropical dry deciduous forests of India. As a keystone species, it supports a wide range of biodiversity by providing food and habitat to numerous birds, mammals, and insects. Its flowers, rich in nectar, are a crucial seasonal resource for pollinators and frugivores, while its seeds and fruits are consumed by wildlife. The tree contributes to soil fertility through leaf litter decomposition and plays a role in preventing soil erosion due to its extensive root system. Additionally, *Madhuca indica* is known for its resilience to drought conditions, making it vital for sustaining green cover and ecological stability in arid and semi-arid landscapes.


Fruit
Leaves

119. Botanical Name : ***Manilkara zapota* (L.) P. Royen**

(Syn : *Achras zapota*)

Family : **Sapotaceae**

Vernacular Name : **Chikku**

Morphological characteristics :

Trees, 8-15 m high. Leaves crowded at the end of branches, oblong lanceolate or elliptic-oblong. 5-12 x 2-3 cm, acute at apex, entire, sometimes undulate, shining, glabrous. Flowers axillary, solitary; pedicels up to 2 cm long, rusty tomentose. Outer calyx-lobes ovate, ca 8 mm long, concave, thin, fleshy, pendulous. Corolla white, ca 0.7 cm across; lobes usually 16 in 2 series of 8 each, ca 4.5 mm long. Berries globose, 4-5 cm across, brown when ripe, 3-5-seeded. Seeds compressed, black.

Flowering & Fruiting : Nov. - March

Ecological Significance :

Manilkara zapota, commonly known as sapodilla, holds notable ecological significance in tropical and subtropical ecosystems. As an evergreen tree, it contributes to year-round canopy cover, which aids in reducing soil erosion and maintaining local microclimates. Its deep root system helps stabilize soil, making it valuable in preventing land degradation. The tree produces sweet, fleshy fruits that serve as a vital food source for various birds, bats, and small mammals, thereby supporting local wildlife and aiding in seed dispersal. Additionally, its dense foliage provides shelter and nesting sites for fauna, enhancing biodiversity in its native and introduced habitats. Through these roles, *Manilkara zapota* plays an integral part in sustaining ecological balance and promoting forest regeneration.


Branch
Fruits

120. Botanical Name : ***Mimusops elengi* L.**

(Syn : *Kaukenia elengi*)

Family : **Sapotaceae**

Vernacular Name : **Maulshri, Molsri**

Morphological characteristics :

Trees, evergreen, 12-15 m high; bark rough, dark grey. Leaves elliptic ovate or lanceolate, 4-12 x 3.5-5.5 cm, acute to shortly acuminate at apex, acute at base, subcoriaceous, exstipulate; petioles up to 4 cm long. Flowers axillary, solitary or in fascicles of 2-6, fragrant: pedicels 1.2-1.9 cm long, rusty tomentose. Calyx-lobes 8. Cerolla white, up to 1 cm across; lobes ca 24, in 3 series of 8 each, imbricate. Berries ovoid or ellipsoid, 3 x 2 cm, yellow when ripe, 1-seeded. Seeds brown, shining.

Flowering & Fruiting : Jan. - Sept

Ecological Significance :

Mimusops elengi, plays a vital ecological role in tropical and subtropical ecosystems. This evergreen tree provides year-round canopy cover, aiding in microclimate regulation and soil moisture retention. Its dense foliage helps reduce soil erosion, while the leaf litter contributes to nutrient cycling. The fragrant flowers attract pollinators like bees and butterflies, supporting local biodiversity. Additionally, its fleshy fruits serve as food for birds, bats, and other frugivores, aiding seed dispersal. The tree is often planted in urban and rural landscapes for shade and ornamental value, contributing to green cover and improving air quality.

Leaves

Stem

121. Botanical Name : ***Ailanthus excelsa* Roxb.**

(Syn : *Ailanthus wightii*)

Family : **Simaroubaceae**

Vernacular Name : **Maharukh, Mahaneem**

Morphological characteristics :

Tall trees. Leaves unequally or equally pinnate, younger tomentose, older glabrous, on long petioles, leaflets 8-14 pairs, alternate or subopposite, variable in shape, coarsely and irregularly denticulate. Flowers in branched panicle. Pedicel long, slender. Calyx lobes ovate-triangular. Petals ovate-lanceolate, glabrous. Fruit lanceolate, reddish brown; seed solitary in the samara.

Flowering & Fruiting : Jan.-March.

Ecological Significance :

Ailanthus excelsa, commonly known as the tree of heaven or Indian tree of heaven, plays an important ecological role in arid and semi-arid regions. Its fast growth and deep-rooted system make it valuable for soil stabilization and erosion control, especially on degraded or barren lands. The tree contributes to reforestation and land reclamation efforts by improving soil structure and increasing organic matter through leaf litter decomposition. It also provides shade and habitat for various insects, birds, and small animals, supporting local biodiversity. Additionally, Ailanthus excelsa shows resilience to drought and pollution, making it suitable for urban plantations and green belts. Its presence enhances microclimatic conditions and helps in restoring ecological balance in stressed environments.


Leaves
Flower
Stem

122. Botanical Name : ***Simarouba glauca* DC.**

(Syn : *Quassia glauca*)

Family : **Simaroubaceae**

Vernacular Name : **Paradise tree**

Morphological characteristics :

Paradise Tree is an evergreen tree of small to medium stature, reaching heights of up to 15 m, featuring a narrow crown, a strong root system, and a straight, cylindrical trunk that can measure at least 30 cm in diameter. Its leaves are alternately arranged and odd pinnate, bearing 10–20 leaflets. Each leaflet can grow up to 10 cm long, dark green on the upper side and lighter beneath, with smooth margins and rounded tips. Flowers appear at the ends of branches and in leaf axils, forming panicles. The calyx consists of five separate greenish sepals. Flowers possess five free yellowish-white overlapping petals. Male flowers contain 10 stamens but lack ovaries, whereas female flowers have 10 sterile stamens and five separate ovaries, each with a single locule and seed.

Flowering : Dec.-Feb., **Fruiting :** March-April

Ecological Significance :

Simarouba glauca contributes significantly to ecosystem health by thriving in diverse soil types and climatic conditions, which aids in reforestation and land rehabilitation efforts. Its fast growth and dense foliage help prevent soil erosion and improve soil fertility by adding organic matter through leaf litter. The tree provides habitat and food resources for various insects, birds, and small animals, supporting local biodiversity. Its flowers attract pollinators, promoting ecological interactions, while its resilience in degraded or marginal lands makes it valuable for restoring ecological balance and enhancing carbon sequestration in disturbed environments.


Branch
Leaf

123. Botanical Name : ***Holoptelea integrifolia* (Roxb.) Planch.**

(Syn : *Ulmus integrifolia*)

Family : **Ulmaceae**

Vernacular Name : **Chirol, Chilbil**

Morphological characteristics :

Trees, 10-15 m high. Leaves elliptic-ovate, 8-14 x 4-7.5 cm, acute at apex, rounded at base, entire, glabrous, shining, puberulous along the veins beneath; petioles 1-1.5 cm long. Flowers in fascicles, sessile; male and bisexual mixed. Tepals 4, free, pubescent. Stamens 7-8. Samara suborbicular, 2-2.5 cm across; wings membranous, reticulately veined. Seeds flat.

Flowering : Jan.-Feb., **Fruiting :** April-May

Ecological Significance :

Holoptelea integrifolia, commonly known as Indian Elm, holds notable ecological significance in tropical and subtropical forest ecosystems. As a fast-growing deciduous tree, it plays a key role in soil stabilization and erosion control, particularly in degraded and open forest areas. Its broad canopy offers shade and microhabitat for various understory plants and animals, while the shedding of its leaves contributes to nutrient cycling and organic matter buildup in the soil. The tree also supports local biodiversity by providing food and shelter to insects, birds, and small mammals. Additionally, its resilience to drought and ability to thrive in a variety of soil types make it valuable in reforestation and ecological restoration initiatives across India and Southeast Asia.

Leaves

Stem

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