ABOUT ICFRE - IFGTB

ICFRE - Institute of Forest Genetics and Tree Breeding (ICFRE - IFGTB), Coimbatore is a National Research Institute under the Indian Council of Forestry Research and Education. ICFRE - IFGTB envisions a wood secure society. The Institute primarily aims to carry out research to improve productivity of forest tree species through conventional breeding programmes and biotechnological interventions. The major areas of research include tree improvement, breeding, planting stock improvement, marker assisted selection, genomics, clonal propagation, agroforestry systems, climate change research, integrated disease and pest management, seed handling and testing, eco restoration and conservation.

ABOUT EIACP

EIACP (erstwhile ENVIS) established by the Government of India, in 1982 has been on providing environmental information to decision makers, policy planners, scientists and engineers, research workers, etc. all over the country. It is a comprehensive decentralized information system on environment involving effective participation of institutions / organisations in the country actively engaged in work relating to different subject areas of environment. A large number of nodes, known as EIACP PC RP (erstwhile ENVIS Centres), have been established in the network to cover the broad subject areas of environment with a Focal Point in the Ministry of Environment, Forest and Climate Change.

INSTRUCTIONS TO CONTRIBUTORS

Dear Author/ Subscriber/ Contributor,

We invite contributions to the EIACP Newsletter issues! The EIACP Resource Partner at ICFRE-IFGTB focuses on Forest Genetic Resources and Tree Improvement. It aims to act as a window for quality scientific publications and a forum for presenting your thinking on the challenges in the fields of FGRs and tree improvement. The EIACP Newsletter, Van Vigyan, a quarterly publication, publishes original research articles, reviews, reports, research highlights, news-scan etc., related to the thematic area of the EIACP Resource Partner. Original research and review articles, notes, research and meeting reports are invited for the newsletter. Details of forthcoming conferences / seminars / symposia / trainings / workshops also will be considered for publication in the newsletter. Articles may be sent in Times New Roman (with font size 12) in double spacing with a maximum of 5-6 typed pages. Photographs/line drawings and graphs need to be of good quality with clarity for reproduction in the newsletter. Only electronic submission will be accepted.

Details may be sent to: ifgtb@envis.nic.in.

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Shree Kumaran Printers : 70920 92066

ISSN : 2394-7543

EIACP Newsletter
Forest Genetic Resources & Tree Improvement
VAN VIGYAN

ICFRE - INSTITUTE OF FOREST GENETICS AND TREE BREEDING
(Indian Council of Forestry Research and Education)

- Volume 9 Number 2
- A Quarterly Issue
- July to September

From the
Director's Desk

In this issue

Chloroxylon swietenia, popularly known as East Indian satinwood, a valuable timber species, is listed as a vulnerable species by the IUCN as per the assessment made during 1998, but demands, status updation. Its populations are declining due to overexploitation and habitat loss. Sustainable harvesting and conservation efforts are necessary to ensure the continued availability of this valuable timber species. This is a species of interest to the ICFRE- IFGTB, and we are making efforts to develop a tree improvement programme. This issue brings the readers details on various aspects of the species. It also highlights the EIACP's efforts in spreading the message of Mission LIFE to create measurable impacts.

Dr C. Kunhikannan
Director, ICFRE - IFGTB

Know Your Trees - *Chloroxylon swietenia* (Roxb.) DC.

Know Your Trees - *Chloroxylon swietenia* (Roxb.) DC.

Introduction

Chloroxylon swietenia DC. (family) is tropical aromatic tree of the deciduous forests. This species, commonly known as East Indian Satin, Wood, is considered 'Vulnerable' According to the IUCN Red List of Threatened Species mainly due to heavy demand and over exploitation. The common names are English: East Indian Satinwood, Indian satinwood tree, Satin Wood; Hindi: Bhera, Bhirra, Bhivia, Dhoura, Girya; Tamil: Mammarai, Porasu, PorinjaMaram, Purush, Vaaimaram; Kanada: Bittulla, Huragalu, Hurihuli, Masula, Urugali; Marathi: Behru, Bheria, Billu, Halda, Hulda; Malayalam: Purushu, Varimaram.

Taxonomic classification

Kingdom : Plantae

Phylum : Spermatophyta

Class : Dicotyledonae

Order : Sapindales

Family : Rutaceae

Genus : *Chloroxylon*

Species : *swietenia*

Distribution and habitat

C. swietenia is distributed in India, Sri Lanka and Madagascar (Asian Regional Workshop, 2013). In India, it is found in Andhra Pradesh; Karnataka; Kerala; Maharashtra; Odisha; Tamil Nadu. It can be found wild in dry deciduous forests up to an altitude of 1100 m. The tree grows well in areas where annual daytime temperatures are within the range 30 - 40°C, though it can tolerate 10 - 47°C and with an average annual rainfall of 1000 – 1500 mm, tolerating 750-1, 900 mm. It establishes in soils that are well-drained and prefers a pH of 6-7, tolerating 5-7.8. Established plants are drought tolerant. The tree has shown good growth in Nigeria. It coppices well and is susceptible to fire damage.

Botanical description

Multi-purpose deciduous tree, small to medium-sized growing up to 18 m tall. Bark dark-brown, fissured, rough, blaze yellow with pungent smell; branchlets and rachis pubescent. Leaves are pinnate, alternate; rachis to 10 cm, slender, pubescent when young; leaflets 12-40, sub sessile, alternate; lamina 1-2 x 0.4-0.7 cm, oblong, base oblique, apex obtuse; margin entire, chartaceous, glands dotted, glabrous, dull bluish-green; midrib of leaflet near the lower margin, nerves obscure. Flowers are bisexual, pubescent, white, in axillary and terminal panicles; calyx short; lobes 5, 1-1.5 mm; petals 5, 4 x 2 mm, clawed, gland dotted on the outer surface; disc 10 lobed; stamens 10, free, inserted, between lobes; ovary immersed in disc, 3 lobed, 3-celled, ovules 4-8 in each cell. Fruit a capsule, 2.5 x 1 cm, loculicidal; seeds many, 15-18 mm long, flat, winged apically.

Reproductive biology and breeding system

The flowering period varies depending on the elevation. In Tamilnadu flowering appears in

March and completes in April. In some lower elevation, flowering starts in February and completes in March. During the flowering time *C. swietenia* produces fragrance and sugary content to attract pollinators. *C. swietenia* flowers are actinomorphic. The floral buds open by 06.00 h and complete at 08.00 h and anthesis is mostly between 10.30 h to 14.30 h. The tree takes around ten months to complete its cycle of flowering to fruiting (March to October). Flowers largely depend on bees and insects for pollination. Bee species like *Trigona* sp. and *Apis cerena* are found abundantly in the tree's canopy. Shrews and giant squirrels eat the freshly fallen seeds. Ayyanar *et al.,* (2021) reported that the cream-colored flowers of *C. swietenia* were attracted by 62 insect pollinators, including 8 species of each ant and bee, 14 types of beetles, 11 types of wasps, 9 types of butterflies and 12 species of other flies. Bees and ants are regular visitors for the entire flowering period and are recognized as effective pollinators. Similarly, butterflies and wasps act as effective pollinators but visits by these two insects were less compared to ants and bees.

Fruit collection and processing

Fruit ripening starts from May and ends during the last week of August. The ideal months to collect seeds are June-August. The mature unopened capsule can be collected from trees by climbing and picking individual fruits or lopping off branches using pruning poles. Collected seeds can be dried and stored containers.

Germination

Freshly collected seeds need to be soaked in cold water for 24 hrs to record better germination and survival. Pre-soaked seeds are sown in the sunken or raised mother beds. Reported seed viability is up to 6 months with 75-85 per cent of seed germination. Sprouting of seeds appears 10-15 days after sowing, healthy and vigorous seedlings need to picked up and transplanted into the poly bags.

Insect pests and diseases

In India *C. swietenia* is an alternative food-plant for the caterpillars of *Papilio demoleus*, a pest of Citrus spp. The healthy leaves are infested by leaf-eating caterpillars and the matured capsule is heavily attacked by seed-eating borers. The

Know Your Trees - *Chloroxylon swietenia* (Roxb.) DC.

No. of seeds per kg.	Germination percentage	Period of Germination in days	No. of seedlings per Kg. of seed
1344 to 3111	41 to 73	10 to 17	28,710 to 56,387

young seedlings are attracted by grasshoppers and semi-loopers.

Planting techniques

C. swietenia is not popular us in plantations. Since, it's growth rate is slow. After nurturing for 6 months in polybags, seedlings will be ready for field planting. Saplings (1 to 2 years old) could be planted in dry, harshly wastelands since this species is hardy and could establish well under rocky and poor soils with varied pH levels.

Agroforestry practices

C. swietenia leaves decomposes easily and can be planted in the boundaries of agricultural fields. *C. swietenia* rough bark supplies climbers like *Lagenaria siceraria, Trichosanthes cucumerina*, *Luffa acutangula*, *Momordica charantia* and *Lablab purpureus*. The fragrance and sugary content flowers of this tree, attracts the large number of pollinators to the field and produces the bitter honey. *C. swietenia* can be integrated with cash crops like *Curcuma longa, Zingiber officinale, Theobroma cocoa* and other crops like *Arachis hypogagea, Allium ceiba, Sesamum indicum*.

Tree improvement

Due to its manifold use, superior wood quality attributes and high international value, the species has been over-harvested from its natural habitats. Therefore, there is an urgent need to perform scientific interventions like a collection of germplasm from throughout species distribution, assessment of threat status, formation of effective conservation strategies, identification of seed zones, cytology, development and use of molecular markers, and designing of short-term and long-term breeding programmes.

Utilization

Uses of wood : Interior design, architectural inlay, furniture, decorative veneer, paneling, interior trim, cabinet work, boxes, crates, carvings, toys, musical instruments, fine cabinetwork, heavy construction, farming tools and as fuel wood. The wood is heavy, hard yellowish brown, satiny luster, durable, and resistant to termites with a density of 900–980 kg/m³ at 12% MC. Grain is usually interlocked or wavy, texture fine and even. The wood is also used as fuel wood.

Medicinal value : The crushed leaves are applied externally to treat wounds, snakebites and rheumatism. Paste of the leaves and roots is taken internally to treat headache. The root bark in milk is drunk to treat impotence. A bark extract is considered astringent and taken to treat fever, chest pain and in a mixture with other plants to treat asthma.

Environmental importance : Though the species is susceptible to fire damage it is suitable for afforestation programs of dry lands.

Ecological importance : In its natural habitat, it occurs in dry deciduous forest on poor, well-drained sandy or rocky soils, at low to medium altitudes. It occurs in regions with an annual rainfall of 750–1500 mm.

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Archana
ICFRE - Institute of Forest Genetics and Tree Breeding, Coimbatore

What is LiFE Mission?

Mission LiFE seeks to translate the vision of LiFE into measurable impact. It is designed with the objective to mobilise at least one billion Indians and other global citizens to take individual and collective action for protecting and conserving the environment in the period 2022–28. Within India, at least 80 percent of all villages and urban local bodies are aimed to become environment-friendly by 2028:

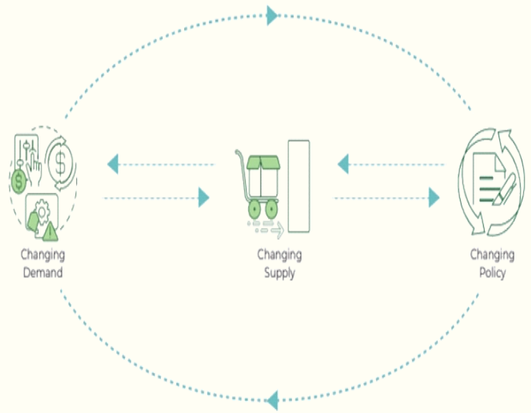
As a global programme, Mission LiFE envisions three core shifts in our collective approach towards sustainability

- Change in Demand (Phase I): Nudging individuals across the world to practice simple yet effective environment-friendly actions in their daily lives.
- Change in Supply (Phase II): Changes in large-scale individual demand are expected to gradually nudge industries and markets to respond and tailor supply and procurement as per the revised demands.
- Change in Policy (Phase III): By influencing the demand and supply dynamics of India and the world, the long-term vision of Mission LiFE is to trigger shifts in large-scale industrial and government policies that can support both sustainable consumption and production.
- The mission will be incubated, curated and piloted by NITI Aayog and subsequently implemented by the Union Ministry of Environment, Forest and Climate Change, in a non-linear and non-sequential manner. While a proceeding phase will organically feed into the next phase of Mission LiFE, all phases are equally simultaneous in nature.

Mission LiFE 2022-23

In 2022-23, Mission LiFE will focus on Phase I, Change in Demand, by nudging individuals, communities and institutions to practice simple environment-friendly actions (LiFE actions) in their daily lives. In view of Mission LiFE being launched in the 75th year of India's independence, a comprehensive and non-exhaustive list of 75 individual LiFE actions across 7 categories is identified such that most actions are:

- Specific and measurable
- Easy to practice by individuals, communities and institutions, with minimal supply-side dependencies
- Non-disruptive to ongoing economic activity, and, in fact, promoting economic activity in the foreseeable future



Mission LiFE

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Mission Life Themes

Energy Saved

1. Use LED bulbs/ tube -lights
2. Use public transport wherever possible
3. Take the stairs instead of an elevator wherever possible
4. Switch off vehicle engines at red lights and railway crossings
5. Use bicycles for local or short commute
6. Switch off irrigation pumps after use
7. Prefer CNG/ EV vehicle over petrol/ diesel vehicles
8. Use carpooling with friends & colleagues
9. Drive in the correct gear. Keep your foot off the clutch when not changing gears
10. Install a solar water or solar cooker heater on rooftops
11. Switch off appliances from plug points when not in use
12. Use biogas for cooking and electricity needs
13. Keep temperature of Air Conditioners to 24 degrees
14. Prefer pressure cookers over other cookware
15. Keep your electronic devices in energy -saving mode
16. Use smart switches for appliances which are used frequently
17. Install community earthen pots for cooling water
18. Defrost fridge or freezer regularly
19. Run outdoors instead of on a treadmill

Water Saved

20. Adopt cultivation of less water intensive crops like millets
21. Participate in recharge of rural water bodies through Amrit Sarovar Scheme
22. Practice crop diversification. Move from rice & wheat cultivation to pulse & oil seed cropping system.
23. Use efficient water saving technologies (like micro -irrigation, bunding, farm ponds, zero tillage, direct seeded rice, alternate wetting and drying and others)
24. Create rainwater harvesting infrastructure in home/ schools/ offices
25. Use drip irrigation systems created with waste materials, wherever possible
26. Reuse water from washed vegetables to water plants and other purpose
27. Pre-soak heavy pots and pans before washing them
28. Do not discard unused stored water every time there is fresh water coming in taps
29. Use buckets instead of hose pipes to water plants/ floors/ vehicles
30. Fix leaks in flushes, taps and water pipes
31. Use water-efficient fixtures for taps, and showerheads, and toilet flush units
32. Invest in a water meter for your house to measure water consumption regularly
33. Reuse water drained out from AC/RO for cleaning utensils, watering plants and others
34. Prefer a water purification system that wastes less water

Single Use Plastic Reduced

35. Use cloth bag for shopping instead of plastic bags
36. Carry your own water bottle wherever possible
37. Reuse glass containers/ packaging plastic items as storage boxes
38. Participate in and mobilize participation for clean-up drives of cities and water bodies
39. Prefer using non -plastic eco-friendly cutlery during gatherings and events
40. Turn off running taps when not in active use
41. Use menstrual cups instead of sanitary napkins
42. Use recycled plastic over virgin plastic, wherever possible
43. Use steel/ recyclable plastic lunch boxes and water bottles
44. Cut the packaging bags used for milk, buttermilk, etc. only partially to avoid plastic bits from mixing into biodegradable waste
45. Opt for bamboo toothbrushes and neem combs

E-waste Reduced

46. Include millets in diets through Anganwadi, Mid -Day meal and PD scheme
47. Compost food waste at home
48. Create kitchen gardens/ terrace gardens at homes/ schools/ offices
49. Prepare organic manure from cow dungs and apply to farms
50. Prefer locally available and seasonal foods
51. Use smaller plates for daily meals to save food wastage

Sustainable Food Systems Adopted

52. Contribute cattle waste, food waste, and agricultural waste to biogas plant (provided under GOBARDHAN)
53. Practice segregation of dry and wet waste at homes
54. Use agricultural residue, animal waste for composting, manuring and mulching
55. Recycle and reuse old newspapers, magazines
56. Feed unused and uncooked vegetables leftovers to cattle
57. Set printer default to double-side printing
58. Repair, reuse and recycle old furniture
59. Buy paper products made from recycled paper
60. Donate old clothes and books
61. Do not discard waste in water bodies and in public spaces
62. Do not let pets defecate in the public places

Waste Reduced

63. Encourage use of millets in food and indigenous herbs and medicinal plants for nutrition and well being
64. Prefer consuming natural or organic products
65. Start biodiversity conservation at community level
66. Plant medicinal plants such as neem, tulsi, giloy, mint, curry leaves, ashwagandha, curry leaves etc. within household premises
67. Practice natural or organic farming
68. Plant trees to reduce the impact of pollution
69. Avoid purchasing products/ souvenirs made from skin, tuskers and fur of wild animals
70. Create and volunteer at community food and cloth banks, and at animal shelters
71. Initiate and/or join green clubs in your residential area/ school/ office

Healthy Lifestyle Adopted

72. Repair and use electronic devices over discarding the devices
73. Discard gadgets in nearest e-recycling units
74. Use rechargeable lithium cells
75. Prefer cloud storage over a pen drive / hard drive

EIACP ACTIVITIES

Van Mahotsav 2022 Celebrations

As part of AzadiKa Amrit Mahotsav (AKAM) and Ek Bharat Shreshtha Bharat (EBSB), EIACP Resource Partner on Forest Genetic Resources and Tree Improvement at the ICFRE - Institute of Forest Genetics and Tree Breeding, Coimbatore celebrated Van Mahotsav 2022 by organizing a Tree Sapling Planting Programme on 05.07.2022. The main aim of this event was to create and spread awareness about the importance of tree planting and role of individuals in protecting the environment from degrading by planting indigenous trees. Director Dr C Kunhikannan, inaugurated the function and released an awareness poster for students. Saplings of indigenous medicinal and timber tree species like *Ficus racemosa* (Athi), *Pithecellobium dulce* (Kodukkaai), *Trewia nudiflora* (Atrupovarasu), *Albizia lebbeck* (Vagai), *Terminalia arjuna* (Neermaruthu) etc. were planted in the Botanical Garden by officers, staff members and final year UG students from Nirmala College for Women, Red Fields, Coimbatore, Dr. N.G.P Arts and Science College, Coimbatore and Hindusthan College of Arts & Science, Coimbatore. “Plant a tree sapling photography challenge” was also organized as part of Vana Mahotsav and people from different walks of life across India participated. E-certificates were awarded to all. Handouts of the awareness poster were disseminated to students and general public. Softcopy of the same was transmitted electronically among the different stakeholders.

International Day for the Conservation of Mangrove Ecosystem - 2022

As part of AzadiKa Amrit Mahotsav (AKAM) and Ek Bharat Shreshtha Bharat (EBSB), EIACP Resource Partner on Forest Genetic Resources and Tree Improvement at the ICFRE - Institute of Forest Genetics and Tree Breeding, Coimbatore organized an awareness campaign on 26.07.2022 to commemorate International Day for the Conservation of the Mangrove Ecosystem 2022. The main aim of this event was to raise awareness about the significance of mangrove ecosystems and to promote solutions for their sustainable management and conservation. As a part of this commemoration, a Mobile Photography Contest on the theme " Significance of Mangroves" was conducted from 10.07.2022 to 25.07.2022, in which people from different walks of life participated. E certificates were awarded to all of them. Copies of the awareness poster released during the occasion signifying the status, contributions and conservation of mangroves and handouts were distributed to students and the general public and also the softcopies were electronically transmitted to various stakeholders.

ENVIS Resource Partner on Forest Genetic Resources and Tree Improvement
Institute of Forest Genetics and Tree Breeding
Ministry of Environment, Forest and Climate Change (Indian Council of Forestry Research & Education)
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INTERNATIONAL DAY FOR THE CONSERVATION OF THE MANGROVE ECOSYSTEM - 2022

Mangroves are rare, spectacular and prolific ecosystems on the boundary between land and sea. These extra ordinary ecosystems contribute to the wellbeing, food security, and protection of coastal communities worldwide. They support a rich biodiversity and provide a valuable nursery habitat for fish and crustaceans. Mangroves also act as a form of natural coastal defence against storm surges, tsunamis, rising sea levels and erosion. Their soils are highly effective carbon sinks,sequestering vast amounts of carbon.

Mangrove Forest Cover Worldwide

As per Global Forest Resource Assessment, (FRA), world over, 113 countries have Mangrove forests covering an estimated 14.79 million hectares.

The largest Mangrove Forest area reported in:

Asia	5.55 million hectares
Africa	3.24 million hectares
North and Central America	2.57 million hectares
South America	2.13 million hectares
Oceania	1.30 million hectares

More than 40 percent of the total area of Mangroves was reported to be in just four countries:

Indonesia	19 percent of the total
Brazil	9 percent
Nigeria	7 percent
Mexico	6 percent

1. Sundarbans, West Bengal

Not many must be aware that the great Sundarbans in West Bengal are the largest mangrove regions in the world! A UNESCO World Heritage Site, Sundarbans is densely populated by mangroves and is home to the Royal Bengal Tigers. The forest is also home to more than 180 species of trees and plants.

2. Pichavaram Mangroves, Tamil Nadu

Counted among the largest mangrove forests in India, Pichavaram mangrove is situated close to Chidambaram in Tamil Nadu. The whole region is exquisitely scenic and houses a large number of Aquatic birds.

3. Godavari – Krishna Mangroves, Andhra Pradesh

Set in the eastern coast of India, the Godavari-Krishna mangroves lies in the deltas of the Godavari and Krishna rivers and extend from Odisha to Tamil Nadu. The forest is under protection for Calimere Wildlife and Pulicat Lake Bird Sanctuary and is home to some rare animal species and aquatic birds.

4. Bhitarkanika Mangroves, Odisha

The second largest mangrove forest in India is Bhitarkanika in Odisha. The forest is created by the two river deltas of River Brahmani and Baitarani. It is one of the most significant Ramsar wetlands in India.

5. Baratang Island Mangroves, Andamans

Another gorgeous swamp of mangroves is set on the Andaman's Baratang Island. It's a great place for wildlife explorers and birdwatchers, located just 150 km away from Port Blair.

POSTER NO.04/IFGTB ENVIS-JULY 2022

International Day for the Preservation of Ozone Layer 2022

As part of AzadiKa Amrit Mahotsav (AKAM) and Ek Bharat Shreshtha Bharat (EBSB), EIACP Resource Partner on Forest Genetic Resources and Tree Improvement at the ICFRE - Institute of Forest Genetics and Tree Breeding, Coimbatore organized an awareness campaign on 16.09.2022 to commemorate International Day for the Preservation of the Ozone Layer 2022. The main aim of this event was to raise awareness about the significance of ozone layer among students and general public. As a part of this commemoration, an online awareness quiz on ozone was conducted from 10.08.2022 to 15.09.2022, in which people from different walks of life participated. E certificates were awarded to all of them. Copies of the awareness poster released during the occasion signifying importance of conservation of ozone layer and their handouts were distributed to students and the general public and also the softcopies were electronically transmitted to various stakeholders. In addition and as a part of Ministry of Environment, Forest and Climate Change (MoEFCC) Reintroduction of Cheetah programme, various awareness activities/lectures on "Reintroduction of Cheetah" to school and college students in and around Coimbatore District. An overview on Action Plan for Introduction of Cheetah in India was also discussed. Hardcopy of the action plan and hand-outs highlighting the importance of cheetah and the role of individuals in reintroduction of cheetah and conserving wildlife were also distributed to the students and also given to libraries for wider dissemination.

ICFRE - IFGTB PRODUCTS

ICFRE - INSTITUTE OF FOREST GENETICS AND TREE BREEDING

(Indian Council of Forestry Research and Education)

(An autonomous body of Ministry of Environment Forest & Climate Change, Govt. of India)
P.B. No. 1061, R.S. Puram, Coimbatore - 641 002. Tamil Nadu, India

The following Services are provided at ICFRE - IFGTB for various stakeholders. Please contact us for details as below.

	Services	Cost per unit		Contact Number with Email ID
Clonal Seedling: For Sale & Booking				
1.	Clones of Casuarina Hybrids (CH-1, CH-2 & CH-5)	Rs. 4.50 per plant		**Smt. K. Shanthi, CTO,** Division of Plant Biotechnology, Phone : 0422 2484122 E-mail : shanthik@icfre.org
	Eucalyptus clones (EC-4, EC-6, EC-9 & EC-11)	Rs. 4.00 per plant		
2.	Tissue Culture Teak Plants Bomboo Plants	Rs. 55.00 per plant Rs. 25.00 per plant		**Dr Rekha R. Warrier,** Scientist - F & Head, Division of Chemistry & Bioprospecting Phone : 0422 2484167
3.	Windbreak Clones (WBC-1, WBC-2, WBC-3 & WBC-4)	Rs. 4 per plant		**Dr. C. Buvaneswaran,** Scientist - G, Sliviculture & Forest Management Division, Phone : 0422 2484198, 94422 45047 E-mail : buvanesc@icfre.org
4.	ArborEasy® DNA Isolation Kit **Pack Size**	**Price Rs.**	**Packaging & Transportation Rs.**	**Dr. Modhumita Dasgupta,** Scientist - G, Division of Plant Biotechnology Phone : 0422 2484115 E-mail : ghoshm@icfre.org gmodhumita@gmail.com
	10 Reactions	950.00	150.00	
	20 Reactions	1900.00	200.00	
	50 Reactions	4750.00	300.00	
5.	Soil Testing (pH, EC, OC, Micro and Macro Nutrients)	Rs. 4750.00		**Dr. A.C. Surya Prabha,** Scientist - D, Sliviculture & Forest Management Division, Phone : 0422 2484150 E-mail : acsuryaprabha@icfre.org
6.	Phytosanitary Certificate	Rs. 100.00 + Tax per application		**Dr. John Prasanth Jacob,** Scientist - G, Forest Protection Division, Phone : 0422 2484157 E-mail : jacob@icfre.org
Products of IFGTB: For Sale & Booking				
7.	Hy-Act (Natural and Seed Oil Based Biopesticide)	Rs. 80.00 per bottle		**Dr. N. Senthilkumar,** Scientist - F Division of Chemistry & Bioprospecting Phone : 0422 2484193 Mobile : 9629160703 E-mail : senthilnk@icfre.org (or) **Smt. R. Sumathi,** CTO Division of Chemistry & Bioprospecting, Phone : 0422 2484144 Mobile : 9942245542 E-mail : sumathir@icfre.org
	Tree PALH (Natural and Seed Oil Based Biopesticide)	Rs. 80.00 per bottle		
	Crawl clean (Plant Based Green Insecticide)	Rs. 25.00 per packet		
	Tree Rich Biobooster (Instant Organic potting mixture for home garden, terrace and kitchen garden)	Rs. 50.00 per packet		
	Tara Red Jam (with natural fruit colorant)	Rs. 60.00 per bottle		