Kerala Forest Research Institute

KFRI

The Kerala Forest Research Institute

The Kerala Forest Research Institute (KFRI), established in 1975 by the Government of Kerala as an autonomous Institute under its Science and Technology Department, is an organization dedicated to research in tropical forestry and biodiversity. Since its establishment, the Institute has made valuable contributions to tropical forestry, which have made the Institute known worldwide. In India, KFRI is cited as a model forestry research institution. During 2003 when Kerala State Council for Science, Technology and Environment (KSCSTE) was constituted, KFRI was brought under the Council along with five other R&D Centres of Kerala.

Vision

The vision of KFRI is to become a centre of excellence in tropical forestry, to provide scientific backbone for effective conservation of forest ecosystem and sustainable utilization of natural resources for the benefit of the society.

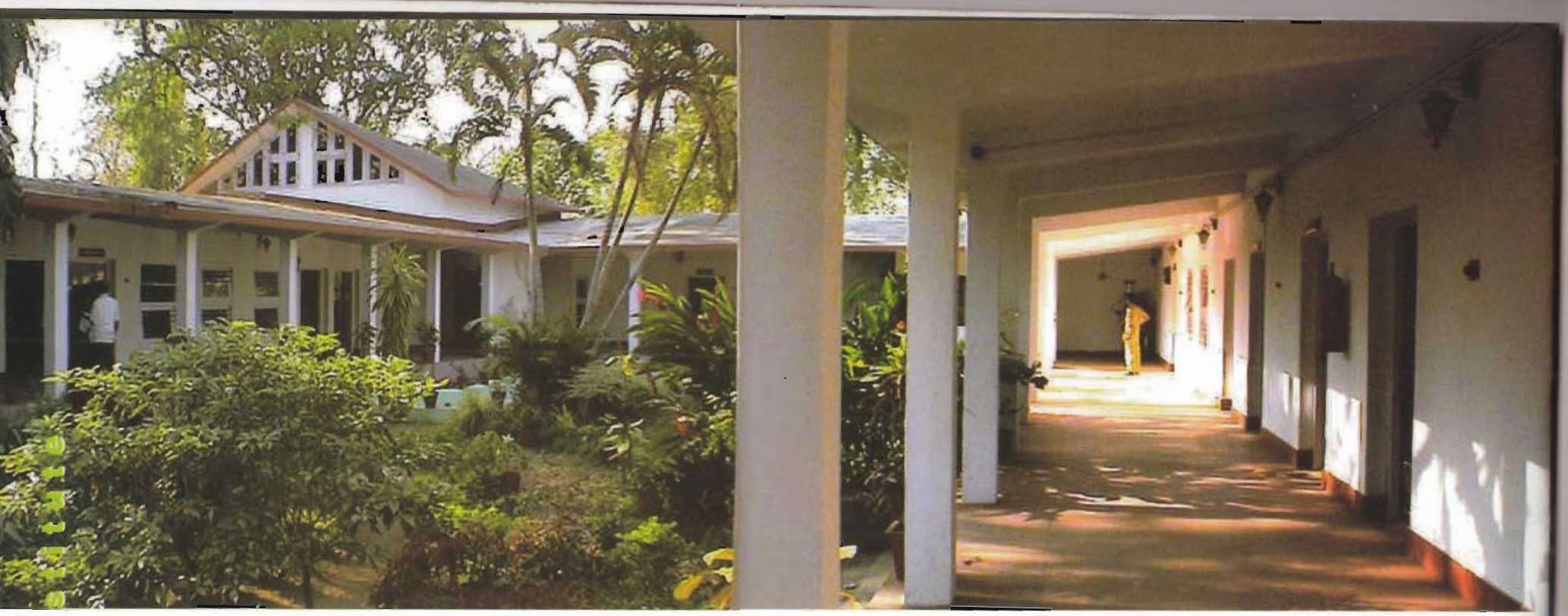
Our Mission

The mission is to provide technical support to facilitate scientific management and utilization of forests for social benefits. Accordingly, the Institute envisages to:

(i) Conduct inter/multidisciplinary research on priority areas of tropical forestry including wildlife management, socio-economics, indigenous knowledge, value addition of forest products, participatory forest management and livelihood improvement of forest dwellers by scientific management of forest resources,

(ii) Provide technical advice and solutions to practical problems related to forest conservation and sustainable utilization of forest resources, and

(iii) Disseminate knowledge and information on forest-related matters to end-users, farmers, general public and transfer of technology to stakeholders for social benefits.



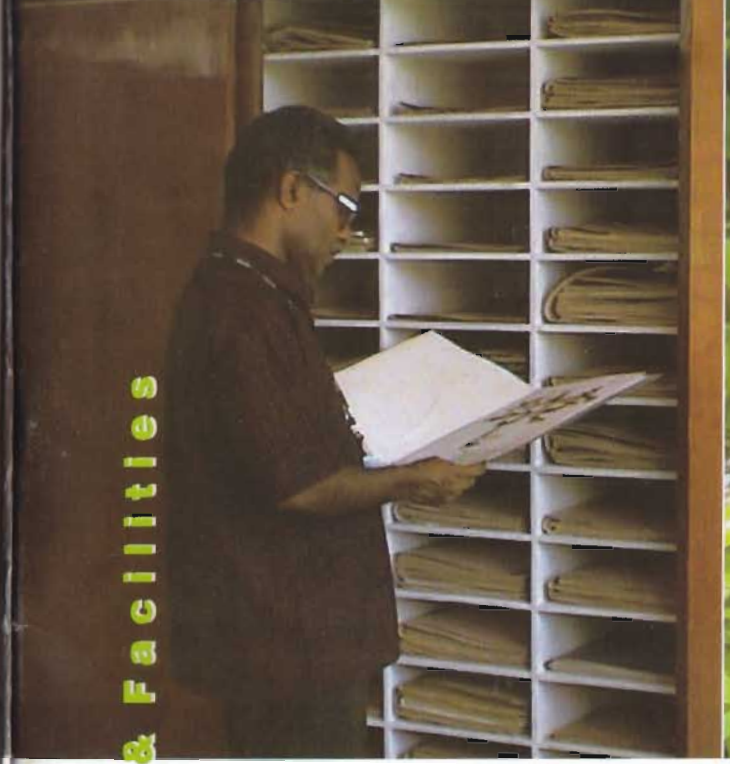
Organisation

The total staff strength of the Institute is 112 which includes 48 scientists, 56 administrative staff and 8 technical staff. In addition, 70 project personnel attached to various research projects provide the necessary research support.

The administration and management of KFRI are vested with the Management Committee (MC) chaired by the Institute's Director. The Committee approves and manages administrative and financial matters. Another vital body responsible for overseeing and guiding the formulation and implementation of various research programmes is the Research Council (RC) comprising eminent scientists of the Country in forestry research. Research Council also monitors the quality and content of research undertaken and provides guidance for improvement.

The Director is the Head of the institution. The administration and financial matters of the Institute are handled by Administration and Accounts sections respectively, which function under the control of a Registrar. Both the sections have a Deputy Registrar each who is responsible to the Registrar. The financial and expenditure matters of the Institute are scrutinized by an Internal Auditor.

The scientific manpower of KFRI is organized into nine Programme Divisions each comprising different Departments under them for the effective implementation of multidisciplinary research programmes in forestry and to disseminate the research findings to the stakeholders. Each Programme Division is headed by a Programme Coordinator and each Department, by a Head. The nine Programme Divisions are: 1. Sustainable Forest Management, 2. Forest Genetics and Biotechnology, 3. Forest Management Information System, 4. Forest Ecology and Biodiversity Conservation, 5. Wood Science and Technology, 6. Forestry and Human Dimensions, 7. Forest Health, 8. Extension and Training, and 9. Library and Information. Besides, there is a Central Instrumentation Unit as a common facility. A Research Monitoring and Evaluation (RME) Unit is also functioning to facilitate and monitor research in various Divisions.



Main Campus, Peechi

Attached to the different Programme Divisions in the main campus are the laboratories with modern equipment facilities. In addition, the following facilities are established in the main campus:

- a Herbarium comprising 15,000 specimens representing 3,500 species of flowering plants.
- an Insect Collection with about 3,500 specimens of insects and lower vertebrates.
- a Xylarium with wood samples of 567 timber species.
- a Palmetum having about 80 species of palms.
- a Canetum with about 30 species of rattans.
- a Medicinal Plant Garden with many indigenous medicinal plants
- a collection of indigenous fern and orchid species
- a Central Nursery for raising seedlings of forestry species
- a Butterfly Garden

For holding conferences, workshops and meetings, good conference facilities are available. In order to accommodate the visitors and trainees attending various training programmes a guest house and a Trainees' Hostel are established.

Sub-centre, Nilambur

The Sub-centre campus at Nilambur with facilities for laboratory work and field trials in a 43.36 ha area is about 140 km away from the main campus.

A Bambusetum with 21 species of bamboos and trial plots of several tree species are maintained at the Sub-centre.

The Teak Museum is located within the Sub-centre campus.

A Bioresource Nature Trail established adjacent to the Museum depicts various biological themes. A model butterfly garden is another attraction of the trail.

Field Research Centre, Velupadam

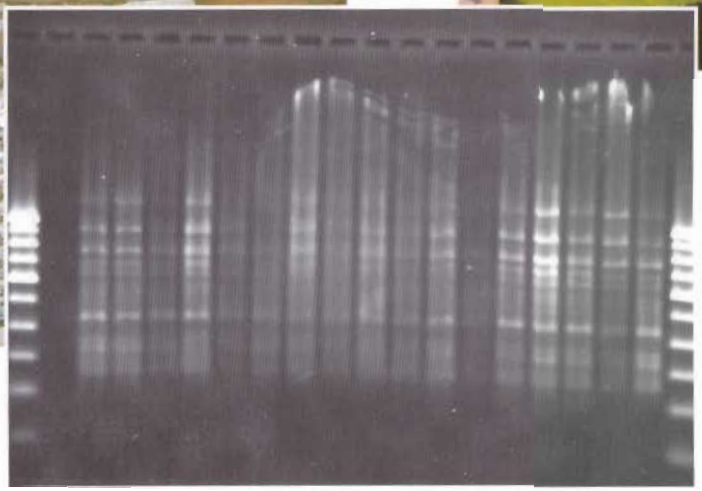
The Field Research Centre (FRC) at Velupadam in Thrissur District is spread over an area of 47.43 ha. It is 36 km away from the main campus at Peechi.

Mainly nursery and field trials are conducted at the FRC campus. A bambusetum, one of India's largest live collections of bamboos with 63 species, is the special attraction of Velupadam campus.

Sustainable Forest Management

The Division comprises Silviculture, Tree Physiology and Soil Science Departments.

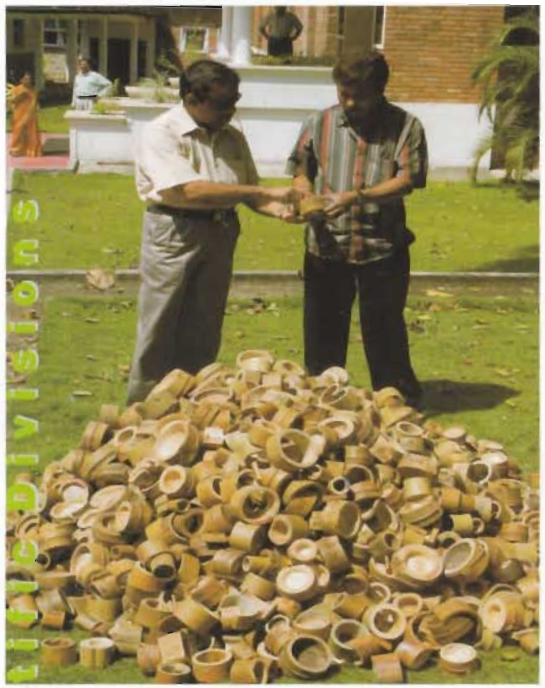
The thrust areas of research of the Division are: improved nursery and silvicultural practices, production of better clones and quality planting stock of plantation species and sustainable forest management. Besides, studies have also been undertaken on eco-restoration and afforestation of degraded sites, evaluation of factors affecting growth of trees, enhancement of plantation productivity, soil nutrient management for different forestry species, use of coir geotextiles for improving the soil, and environmental physiology, especially water use, photosynthesis and microclimate. Monitoring weather parameters has also been undertaken by the Division.



Forest Genetics and Biotechnology

Departments of Biotechnology and Genetics and Tree Breeding are the components of the Division.

Gentic improvement of teak, DNA fingerprinting, marker assisted selection, gene mapping and population genetics, assessment of genetic diversity of forest species, selection of plus clones and genetic improvement, studies on breeding systems and gene flow have been some aspects of research in the Division. Tissue culture of important forestry species and medicinal plants and low cost micropropagation technology are other activities undertaken in the Division.



Forest Management Information System

The Division aims to meet the information needs of the stakeholders of forestry sector using modern tools of statistics, GIS and remote sensing. Creation of a database on biophysical and socio-economic aspects pertaining to forests, forest sector analysis and projections, mapping forest cover and biodiversity and modeling the growth dynamics of plantations and natural forests are some of the major works carried out in the Division. The Division has also developed a growth simulator for teak plantations in Kerala. Ecological studies on the Shola forests of Kerala based on remote sensing data and simultaneous calibration of allometric relations in teak stands were achieved using multilevel models. Stand modeling, biodiversity mapping, ecosystem analysis, GIS, forest resource mapping, population analysis and organization of a data bank of forestry in Kerala are programmes in various stages of implementation.

Forest Ecology and Biodiversity Conservation

The Division includes Forest Botany, Forest Ecology, Non-Timber Forest Products and Wildlife Biology Departments.

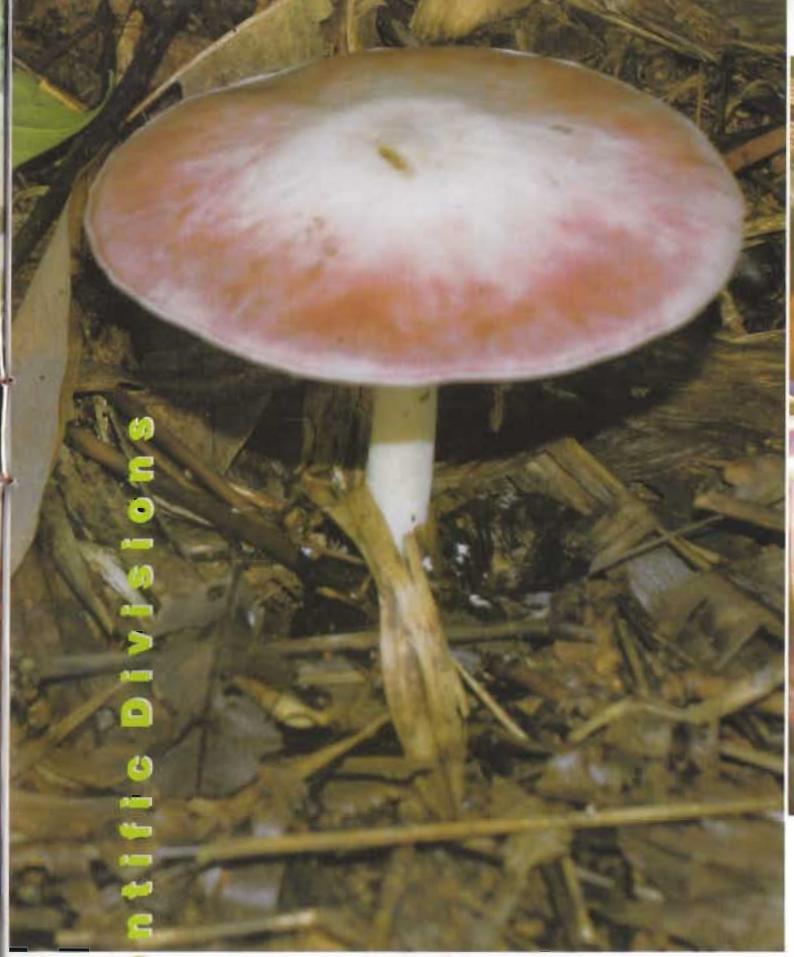
The thrust areas of research of the Division are ecosystem and landscape analyses, rehabilitation and restoration, population ecology and dynamics, biodiversity evaluation and conservation of fragile ecosystems, traditional knowledge system analysis and biodiversity-informatics. Inventorisation of biodiversity of different forest types and protected areas, evaluation of below-ground biodiversity, taxonomic studies and conservation of RET species have been some of the other areas of research in the Division. Besides, the Wildlife Biology Department deals with inventorisation of fauna, endangered animals, man-wildlife interaction and wildlife census. Nursery and plantation technology of selected indigenous timber species, ethno-biological studies and cultivation of medicinal plants and other NTFPs such as bamboos and rattans are other activities of the Division. A Herbarium representing the forest flora of the State, an Arboretum of rare and characteristic species of moist deciduous forests of Kerala, a Palmetum with about 80 species of palms, a Canetum with about 30 species of rattans, a bio-resource nature trail, etc. are the major facilities of the Division.

Wood Science and Technology

Research and extension activities related to wood structure, properties and utilization, developing appropriate technologies for wood treatment, timber drying and carbonization of timber residues are undertaken in the Division. The Division has facilities like wood preservation plant, drying kiln, Universal Testing Machine (UTM), image analyzer, NIR spectroscope, microscopes, microtome, etc. The Division has undertaken extensive studies on wood structure, properties and preservative treatments for various timber species like teak, eucalypt and rubber wood. Also, anatomical and utilization studies of bamboos, reeds and canes have been undertaken. The Division has developed implements helpful for bamboo extraction.

Forestry and Human Dimensions

The Division consisting of Forest Economics, Sociology and Urban Forestry Departments undertakes research on human dimensions of forestry, including livelihood and recreation, environmental conservation and linkages between social and natural sciences. The major areas of research are natural/forest resource management, economic valuation, sustainable utilization of non-timber forest products, policy issues and strategic planning, sustainable forest management, participatory role of local communities in the conservation and sustainable management of forest ecosystems, resource use conflict and livelihood issues and agro-forestry systems. Assessment of supply-demand position of wood for the state, estimation of availability of bamboo in home gardens, evaluation of the livelihood conditions of bamboo workers in Kerala and establishment of a model watershed with people's participation are some of the recent achievements of the Division.



Forest Health

The Division with its Forest Entomology and Forest Pathology Departments undertakes research on various aspects of microbes, insects and weeds in the forest ecosystem.

The Division maintains authentic collections of microbes and insects of Kerala forests and also of microbial pathogens of forest insects. Eco-friendly technologies are being developed to manage the pests, diseases and weeds in forest plantations, mainly through biological means. Management of nursery and plantation diseases, diversity of plant pathogenic fungi in different forest ecosystems, VA and ectomycorrhizal fungal diversity, and biology, ecology and control of forest invasive weeds are the main areas of research in the Pathology Department.

In the Entomology Department, the thrust areas of research include monitoring of forest insect diversity, control of termites in plantations, wood damaging insects and teak defoliator, traditional methods of post-harvest protection of bamboo from insect borers, etc. The mass production technology of the bio-pesticide *Hyblaea puera* Nucleo Polyhedrosis Virus (HpNPV) has been standardized and the application technology has been transferred to stakeholders. The concept of butterfly garden has been popularized and technical advice provided to various agencies for the establishment of butterfly parks.

Additional Facilities

Extension and Training

The Division liaises with the users /stakeholders, facilitates transfer of technology to various stakeholders and conducts training programmes in different aspects of tropical forestry like forest management, forest seed handling, medicinal plant cultivation, environmental impact assessment, biodiversity monitoring and evaluation, remote sensing and GIS, root-trainer technology, clonal propagation, tree improvement and statistical application in forestry. The Division has excellent facilities for conducting training programmes including modern lecture halls and well furnished trainees' hostel for accommodation.

Central Instrumentation

This central facility caters to the material / chemical analysis needs of research, within and outside the Institute. The Unit provides advanced instrument facilities for analysis and measurement to users from industries, R&D establishments and academic institutions, co-operates with professionals and academic staff and undertakes training and services for personnel from industries, R&D establishments and academic institutions. The Unit is equipped with highly sophisticated laboratory facilities to carry out spectroscopic measurements, material/chemical characterization and structure analysis.

Library and Information

A modern library with a core collection of 16,000 books and 9,000 back volumes of journals on forestry caters to the information requirements of scientists and research scholars of the institute. The collection includes many valuable reference books, doctoral theses and back volumes of periodicals and databases in CD-ROMs. As the Institute is a member of international bodies like APAFRI, IRGWP, IUCN and IUFRO, the library has in its collection the publications from these organizations. More than 90 journals including 30 foreign journals are subscribed by the library. Online Public Access Catalogue of books and back volumes is available. In addition, the library provides for online access to over 1900 journals related to environmental forestry, which has provision for accessing full text/abstracts and search facility. Bibliographical databases developed on specialized topics are made available in CD-ROM. The CD Server installed in the library provides access to not only these CD-ROMs but also the TREECD 1939-1990 which covers Forestry Abstracts, Forest Products Abstracts and Agro forestry Abstracts. Annotated bibliographies on teak, bamboo and rattan, both in print and CDs are also available. As a step towards establishing a forestry portal, e-books, e-prints, research reports and scientific papers are presently available for searching.

Tree Health Helpline

KFRI has launched a Tree Health Helpline recently to attend to all queries related to tree planting and management like site selection, species site matching, planting, thinning, soil testing, fertilization, pest, disease and weed management, multi-species interactions, tree/wood sample identification, preservative treatment of wood and economic valuation of natural resources. The clientele of the service will be the Kerala Forest Department, wood-based industries, other stakeholders, general public, students, private and public firms. A large number of queries are being attended to, problems diagnosed and remedies prescribed. Various Departments of KFRI like Soil Science, Forest Entomology, Forest Pathology, Forest Physiology, Forest Botany, Silviculture, Wood Science, Statistics and Wildlife Biology are involved in the activity.

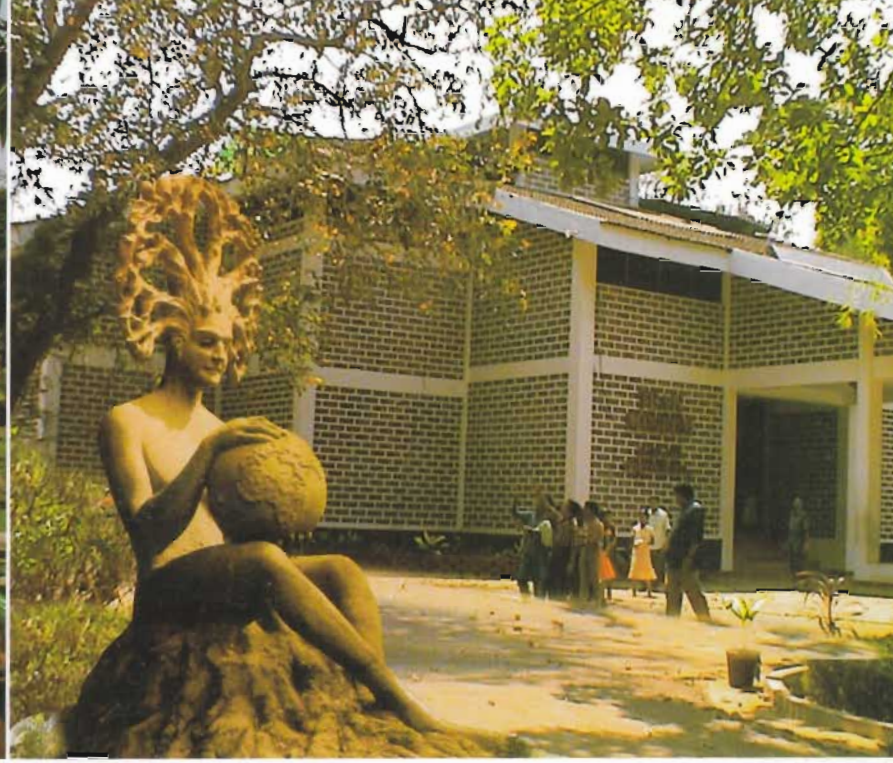
Kerala Forest Seed Centre

The Kerala Forest Seed Centre has been established at the main campus of KFRI in collaboration with Kerala Forest Department. The Seed Centre has facilities for processing and storage of forest seeds.

Seeds collected from different forest areas are dried, cleaned and graded before storage. There is facility for low temperature storage of seeds. The seeds are tested and certified and are supplied to forest departments and other stakeholders. At present seeds of forest trees such as teak and medicinal plants are supplied by the Seed Centre. It has plans to expand its stakeholder circle by meeting their demand for different forestry species.

Arboretum at Peechi Campus

The Arboretum established within the main campus at Peechi extends over an area of 5 ha. The live collection contains representative trees of moist deciduous, dry deciduous, semi-evergreen, evergreen and swamp forests. Seeds of various forest species have been collected from forest areas, seedlings raised in nurseries and planted. All the trees and planted seedlings are labeled. At present, the Arboretum has 3569 accessions of 170 species belonging to 122 genera and 46 families.



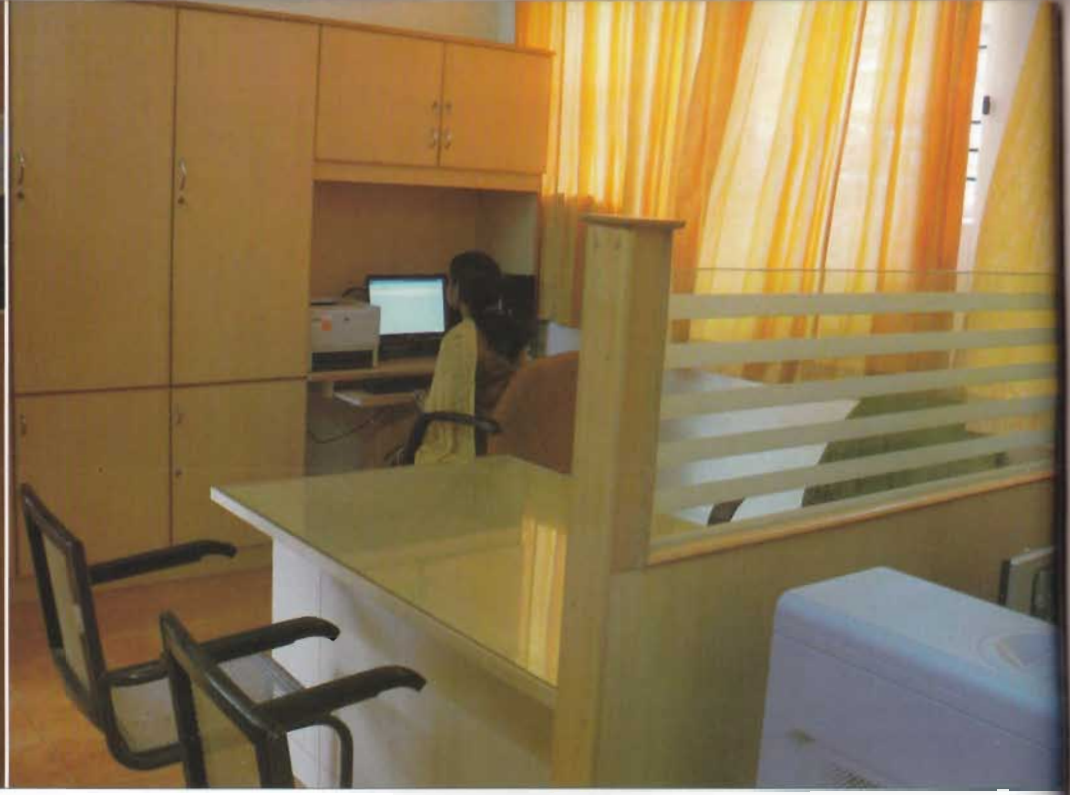
Additional Facilities

Bioresources Nature Trail, Nilambur

A Bioresources Nature Trail is established in the Subcentre campus of KFRI at Nilambur. The Nature Trail has conservation themes for thallophytes and pteridophytes xerophytes and hydrophytes, medicinal plants, orchids, palms and bamboos. The nature park also has a collection of rare, endemic, and threatened (RET) species and gymnosperms. A butterfly park is another attraction of the nature trail.

Teak Museum

A Teak Museum has been established at Nilambur. The museum depicts a unique blend of art and science displaying history of teak planting, distribution of the species cultivation practices, utilization, etc.

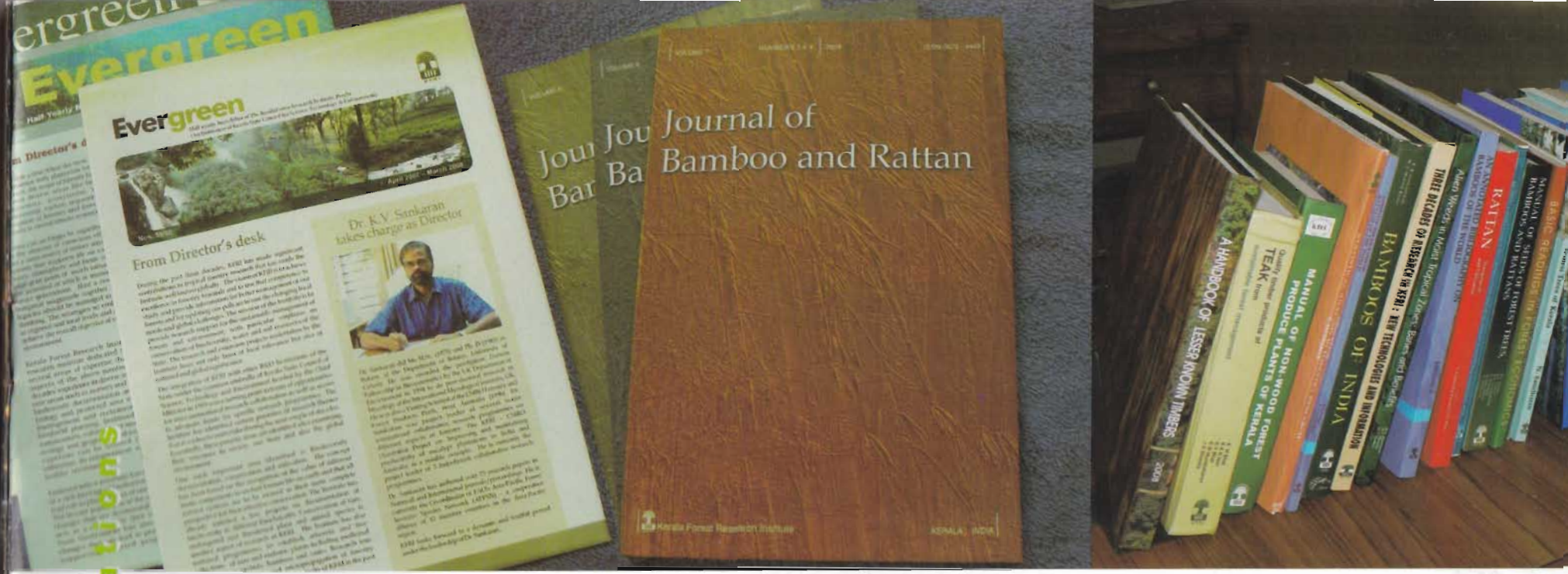


Asia - Pacific Forest Invasive Species Network (APFISN)

The office of the Asia-Pacific Forest Invasive Species Network (APFISN) is functioning at KFRI, Peechi under the coordinatorship of Dr. K.V. Sankaran, Director. The APFISN is a cooperative alliance of 33 member countries of the Asia-Pacific Forestry Commission – a statutory body of the FAO. The Network focuses on inter-country cooperation that helps to detect, prevent, monitor, eradicate and/or control forest invasive species in the Asia-Pacific region. The main activities of the Network include: 1. Creating awareness of forest invasive species (FIS) throughout Asia-Pacific region, 2. Exchanging and sharing of information among member countries, 3. Facilitating access to technical expertise, research results, training and education, 4. Strengthening capacities of member countries to manage FIS and prevent new incursions, and 5. Developing strategies for regional cooperation and collaboration in combating FIS threats. The Network is supported by FAO and USDA Forest Service. The Network publishes a bi-monthly newsletter 'Invasives' and fact sheets on major invasive weeds and pests, which are intended to share information among the member countries on FIS and the threats they pose.

Teaknet Secretariat

The Secretariat of TEAKNET- an international network of institutions and individuals interested in teak- is also located in the Main Campus of KFRI at Peechi and is coordinated by Dr. K. Jayaraman, Programme Coordinator, FMIS Division. TEAKNET addresses the interests of all categories of stakeholders related to teak, and formulates Action Plans focusing on short-term and long-term needs of the global teak sector. The website of TEAKNET provides information on several aspects of teak in addition to a directory of members including researchers, growers and traders. TEAKNET also maintains an information centre where available literature on teak is stored for dissemination. Conducting periodic meetings of the members - national, regional or international - is another activity where members can present and discuss common issues of their interest and suggest action plans leading to solutions. As a part of the long-term strategy, TEAKNET plans to provide research support, training or consultancy services with regard to teak.



Publications

Journal of Bamboo and Rattan

The Journal of Bamboo and Rattan - an international peer reviewed journal for bamboos and rattans, is published from KFRI under the leadership of Dr. C. Mohanan of KFRI who is the chief of the editorial team. The journal publishes scientific articles and reviews on biology and genetic resources, environment, propagation, management of stands, utilization, marketing, socio-economics and policy issues pertaining to bamboos and rattans.

Evergreen Newsletter

The half-yearly newsletter of KFRI, the 'Evergreen' brought out in March and September publishes general articles related to forestry, biodiversity and environment, besides disseminating news from the Institute. The newsletter is intended for free restricted distribution among individuals and institutions connected with forestry.

Research Reports, Books and Other Publications

The scientific outcome of different time-bound research projects undertaken by the scientists is brought out as Research Reports. KFRI has brought out over 400 research reports so far, on different subjects of forestry research. More than 1230 scientific papers have been published in different scientific journals by the Institute scientists.

In addition to the research papers and reports, KFRI has brought out, from time to time, several books on specific subject areas: manuals, monographs, seminar proceedings and information bulletins. Comprehensive books on biodiversity, flowering plants, non-wood forest products, bamboos, canes, lesser known timbers, invasive weeds, seed technology, nursery and silvicultural techniques are some of them. Besides, several useful information bulletins and field manuals have also been published. The proceedings of various national and international seminars/symposia brought out by KFRI are other valuable publications from the Institute.