2.4 Forest Management

Overview

Field surveys have been conducted to lay out sample plots of commercially important tree species in semi-arid region of Rajasthan. Demand supply gap analysis of important tree species of Eastern U.P. has been conducted and the results of the study were communicated to the various stakeholders through extension material. Market price data of commercially important species of timber, fuel wood and bamboos was collected and brought out in the form of "Timber and Bamboo Trade Bulletin". Databases of gene sequences available in public domain can be exploited for applying bioinformatics for enhancing forest productivity. A lead in this direction is being taken by way of consolidating, categorising and classifying wood forming genes in Eucalyptus. Database on Red sanders (*Pterocarpus santalinus*) has been developed, while databases on deodar (*Cedrus deodara*), kail (*Pinus wallichiana*) and commercial timber information system are in progress. Work is going on for developing a computerised database for forest pathology herbarium, dynamic database for forestry discussion forum, web portal for forestry research extension and GIS/RS based information system on lac production. Besides this, information technology services were provided and maintained at all institutes. ICFRE website was continuously updated.

Projects under the theme

Projects	Completed Projects During the Year	Ongoing Projects	New Projects Initiated During the Year
Plan	02	04	01
Externally aided	00	00	02
Total	**02**	**04**	**03**

2.4.2 Forest Economics

Demand supply gap analysis of important tree species of Eastern U.P. was carried out covering 66 villages of Gorakhpur, 24 villages of Maharajganj, 45 villages of Deoria and 56 villages of Basti. Data were analysed for demand supply gap analysis and current growing stock by tree enumeration studies for all the four districts. The results of the study were communicated to the various stakeholders through extension material.

Market price data of commercially important species of timber, fuelwood and bamboos were collected from selected markets and SFD/Forest Corporation depots all over India. The collected data were compiled, published and disseminated as "Timber and Bamboo Trade Bulletin" to various stakeholders.

2.4.3 Forest Biometrics

A reconnaissance survey of the plantation areas was conducted in semi-arid regions of Rajasthan and 50 plots were selected for productivity and biometrics studies in Jaipur, Ganga Nagar, Sikar, Bikaner, and IGNP areas. Plots were also selected in Jaisalmer and IGNP area for *Prosopis cineraria* and *Ailanthus excelsa*. Permission for felling of required trees has been sought from the SFD. Work has been started on productivity study and growth & yield modelling for teak plantations in Gujarat state. Details of teak plantations in the state has been sought from the SFD.

2.4.4 Information and Communication Technology (ICT)

Information technology services were provided, website was continuously updated and maintained at all institutes. Education and Training in Remote Sensing, GIS and Information Technology was provided. For development of

information system on Deodar (*Cedrus deodara*) and Kail (*Pinus wallichiana*) work is in progress. Computerised database system for pathology herbarium of FRI is being developed.

With a view to using bioinformatics in the study of *Eucalyptus* wood formation, DNA sequences have been downloaded for the following wood formation genes: 4CL, C3H, C4H1, C4H2, CAD, CC0AOMT, CCR, CesA1, CesA3, COMT, EXPANSIN, F5H, GH17, GH28, IRX3, IRX5, LACCASE, PAL, SAM-1, SAM-2, TUBULIN, ACCASE, GH17, GH28, EXPANSIN, CesA2 and COMT. Identification of conserved regions and primer designing was carried out for the above genes.

Web database was developed for Red sanders (*Pterocarpus santalinus*). It contains information about the taxonomy, vernacular names, morphology, physiology, habitat, distribution, tree improvement, properties (anatomical, physical, mechanical and chemical properties), utilization, patent, project, durability, pest and diseases along with a bibliography. Classified information on national and international trade, government rules (import and export rules), illegal activities and availability of wood in depot are also included in the database.

Work was carried out on development of Commercial Timber Information System (CTIS). Model design of website has been prepared. Survey of Bangalore and Chennai markets was conducted to ascertain market price, availability of timber species and their source. In Chennai market, at present Beech wood, Sapplei Log, Ash wood, Dak wood, Cherry wood, Tali log, Gmelina log, Teak, Badak, Venteak, Rubber wood, Silver wood, Neem wood, Kongu, Venkai and Mansa kadambai are available. These are imported from Germany, Ivory Cost, Burma, Togo, Ghana, Ivory Coast, Costa Rica, El Salvador, Panama, South Africa and some other states of India.

The web portal for forestry research extension is being developed for Rajasthan and Gujarat. Training of staff has been completed and fields have been selected for database. Design and layout of website has been completed. Species wise information about the classification, ecology, silviculture, phenology, propagation and utilisation aspects is included in the database. Data of 60 trees species of arid region has been collected and data of 40 more trees species is under process.

A dynamic database is being developed for forestry discussion forum. Database structure has been finalised.

For monitoring of lac host belts in Chotanagpur area, application of GIS/RS is being studied. Distribution pattern of lac host areas is being examined based on host trees. Lac production data have also been obtained. Constraints in lac production have been identified through this process. In some of the areas, the lac hosts are not being used for lac production due to excessive heat or cold, non-availability of broodlac, lack of assistance, training on improved methods of lac cultivation, etc.