

## CHAPTER VIII

### **INSTITUTE OF FOREST PRODUCTIVITY RANCHI**

The Institute of Forest Productivity (IFP), Ranchi, has the mandate of taking up the research needs in the forestry sector for the four States of Eastern India viz. Bihar, Jharkhand, West Bengal and Sikkim.

The Institute is undertaking forestry research activities with a thrust on Tree & Planting Stock Improvement, Modern nursery practices, tissue culture technique, Compost production and use, Bio-fertilizers, Seed processing for all of which initiation has been made in the recently concluded World Bank aided Forestry Research Education and Extension Project. The Institute is also continuing with the extension activities to support lac cultivation together with collection & compilation of market data on lac. Hydro-metrological studies from ecological angle in a few selected watersheds in the Himalayan region of Darjeeling district at ERS, Sukna and Provenance trials on Eucalyptus and plant-soil interaction studies at FSVS, Midnapore are two other activities in hand since late 1980s.

Twenty four projects on forestry research and development relevant to the research needs of the Eastern Region have been finally included in the National Forestry Research Plan (NFRP) for this Institute and activities on some of these prioritized projects keeping in view the availability of human & infrastructure resources are being initiated in 2002-03 and efforts for ensuring the funding of these projects are under way.

### **PROJECTS COMPLETED DURING THE YEAR 2001-2002**

**Project 1 : Planting Stock Improvement Programme (PSIP) component of World Bank aided Forestry Research Education & Extension Project.**  
*For technical report contact, Principal Investigator- Dr. S. Nath.*

**Findings :** Seed stand: Seed stands over an aggregate area of 100 ha. with genotypically and phenotypically superior trees of 12 selected Most Prominent Trees (MPTs) species have been identified in West Bengal [*Michelia champaca* (10 ha.), *D. sissoo* (10 ha.), *Duabanga sonneratoides* (5 ha), *Pinus patula* (5 ha), *Alnus nepalensis* (5 ha), *Betula alonoides* (5 ha), *Bombax ceiba* (5 ha) and *Anthocephalus cadamba* (5 ha)] and Jharkhand [*Acacia catechu* (10 ha.), *Cassia*

*seamea* (10 ha.), *Tectona grandis* (12 ha), *Schleichera oleosa* (10 ha) and *Dalbergia sissoo* (8 ha)] (each 50 ha.) by the Research Circle of the concerned SFDs and the same are being developed and maintained as Seed Production Areas for quality seeds.

*Clonal Seed Orchard (CSO)*: 5.0 ha. of CSO of 14 clones of *Eucalyptus tereticornis* (raised in the year 98, 99 at Netaipur under the FSVS, Midnapore) was maintained.

*Vegetative Multiplication Garden (VMG)*: 6 ha. VMG of Bamboo and 4 ha. VMG of *Paulownia fortunei* (created in the year 1997-98, 98-99 & 99-2000) was maintained at FSVS, Midnapore (WB) and Chandwa (Jharkhand) respectively.

*Seedling Seed Orchard (SSO)*: Over an aggregate area of 54.25 ha. have been created for four species viz. *Eucalyptus* species (27.25 ha), *D. sissoo* (9 ha), *G. arborea* (8 ha) and *Acacia* species (10ha.) and maintained.

**Project 2: Development of bio-fertilizer in relation to productivity of important tree species.** For technical report contact, Principal Investigator - Dr. S. Nath

**Findings**: Field survey and laboratory analysis were conducted and a few strains of rhizobium bacteria and VAM were identified from *Acacia auriculiformis* and *A. mangium*. Superiority and effectiveness of identified strains were tested under nursery and field conditions.

**Project 3 : Studies on Bamboo cultivation in southern Bihar and West Bengal with special reference to its vegetative propagation, nutrient cycling and performance.** For technical report contact, Principal Investigator - Dr. S. Nath.

**Findings** : Survey for collection of information, data and trials on nutrient cycling study, effect of soil work on growth and vegetative propagation of bamboo have been conducted in nursery and field condition at FSVS, Midnapore, West Bengal. Trial for propagation of bamboo through single node culms cuttings, double node culms cuttings and culms cuttings at seedling stage was conducted and propagation methods have been developed. The macro proliferation was found to be influenced by the applications of micronutrients. The technique has been developed in *Dendrocalamus membranaceus* and on an average 6-fold increase in tiller number was noticed, whereas in control, only 3 to 4 fold increase was obtained.

**Project 4 : Reclamation strategy for degraded lateritic soil and optimization of productivity.** For technical report contact, Principal Investigator - Dr. S. Nath.

**Findings** : Trials on effect of bulky organic manure, macro and micronutrients singly or in combination in order to ameliorate degraded lateritic soils have been conducted at FSVS centre, Midnapore. The first trial with decomposed Rice husk at varying levels have shown improved growth of seedlings (*A. auriculiformis*) up to 400% over 300% in control. In the second trial, among 10 different bulky

organic matter and manure applied on the basis of same N content, mustard oil cake favoured maximum growth of *Eucalyptus*, followed by Sal litter, FYM and Rice husk. Improvement of soil organic C, available N, and CEC has also been noticed.

**Project 5: Nutrient assessment for forest tree species in relation to availability indices, critical levels, and optimization of doses of nutrient elements under lateritic soil condition.** *For technical report contact, Principal Investigator - Dr. S. Nath.*

**Findings :** Nursery and field trials were conducted and optimum doses for macronutrients (N, P & K) and micronutrient (B, Zn, Mo, Mn) were evaluated for 1 to 5 yrs old *Acacia auriculiformis*, *A. mangium* & *Eucalyptus* spp. under lateritic soil conditions. Relationship between soil nutrient status and nutrient uptake of the above mentioned spp. has also been drawn.

**Project 6 : Provenance trial of eucalyptus, neem, sissoo & gamhar species.** *For technical report contact, Principal Investigator - Dr. S. Nath.*

**Findings :** A total of 69 provenances of 8 different *Eucalyptus* species have been examined at FSVS Centre of the Institute. On the basis of survival, height, diameter, volume indices and overall biomass score, highest suitability index were evolved.

**Project 7 : Eco-restoration: Hydro - metrological studies.** *For technical report contact, Principal Investigator - Mr. N. Ram.*

**Findings :** Hydro metrological data recorded. Infiltration under various plantation areas studied. The rainfall pattern in foothills and other sub-tropical zone during the last one and half decades in the number of rainy days and amount of rainfall shows decreasing trend. Drastic decreasing trend of number of rainy days have been observed mostly from Tea Estates located near by Nepal border due to heavy deforestation. Infiltration of water decreases pH value of wells water. Big rivers with much disturbances shows increase in pH value.

## PROJECTS CONTINUED DURING THE YEAR 2001-2002

**Project 1 : Extension Activities on Lac Development.**  
*Principal Investigator - Mr. Y. Shridhar.*

**Status :** Maintenance of 5 Whether Nucleolus Broodlac Farms for supply of broodlac to farmers and other user agencies. Training on scientific and improved methods of lac cultivation imparted to extension workers and lac growers. Trials on vegetative propagation of traditional lac host spp. (Kusum, Palas, Ber) are in progress. Software for Lac Data Base under the name of LACSTAT was developed and made operational.

## NEW PROJECTS INITIATED DURING THE YEAR 2001-2002

### **Project 1 : Application of plant tissue culture techniques for micro propagation of selected forestry species.**

*Principal Investigator - Mr. Animesh Sinha.*

**Status :** Trials on plantlets production by tissue culture technique of the species, *Tectona grandis*, *Asparagus* sp., *Tinospora* species are in progress. Two species of bamboo (*Dendrocalamus asper* and *D. strictus*) were established for multiplication. Micro propagation of a lac host species, kusum (*Schleichera oleosa*) has also been initiated in Mandar Research Centre.

### **Project 2 : Introduction of Exotic species (*Paulownia*) and others in South Bihar & Jharkhand with special reference to its productivity.**

*Principal Investigator - Mr. B.P. Tamta*

**Status :** Trials on different methods of propagation (seeds, stem cuttings and root cutting), standardization of nursery and field plantation techniques are in progress.

### **Project 3 : Studies on seed biology and phenology of important tree species (*Azadirachta indica*, *Bamboo* spp., *D. sissoo*, *Eucalyptus* spp., *Gmelina arborea*, *Michelia excelsa*, *M. doltsopa*, *Shorea robusta*, *Pterocarpus marsupium*, *Tectona grandis*, *Quercus* spp.)**

*Principal Investigator - Mr. B.P. Tamta*

**Status:** The Institute has collected 1838 Kg. seeds of different forest trees species in which approx. 535 Kg. seeds of 24 species are in stock and the rest are utilized for the raising of seedling during the current planting seasons to SFD, Jharkhand. A seed treatment plant has made operational at Modern Nursery Complex, Mandar during the year and the collected seeds were processed and treated. The processed and treated seeds are stored in storage unit. Trials on seed germination of 10 forest tree spp. have been conducted at Modern Nursery Complex, Mandar. Trials on germination percentage test, purity percentage, moisture content, seed viability and pre-sowing treatment of seeds of different tree species are in progress.

### **Project 4: Propagation of lac host trees for lac cultivation.**

*Principal Investigator - Mr. Y. Shridhar*

**Status :** Establishment of Hedge Garden of *Butea monosperma* and *Schleichera oleosa* at Mandar center under progress.

### **Project 5 : Trials on composting for specific afforestation needs and development of cost-effective packages.**

*Principal Investigator - Mr. P.K. Das*

**Status :** Trials on composting of different plant species (herbs and shrubs) and raw material in different composition have been used for compost production. The time taken for composting significantly varies depending upon the composition and nature of raw materials. Trials on some of potential herb & shrub species with different combination of raw materials will be carried out for standardization of composting pattern, nutrient status and effectiveness on growth performance of seedlings.

### Research Achievements

State	No. of Projects/ Activities Completed in 2001-2002	No. of Ongoing Projects/ Activities in 2001-2002	No. of Project/ Activities Initiated in 2001-2002
Jharkhand	01	01	05
Bihar	00	00	00
West Bengal	06	00	00
Sikkim	00	00	00

### Technologies Assessed and Transferred

1. A training-cum-demonstration program on improved and scientific methods of *Lac* cultivations was organized at Nucleus-Broodlac Farm, Chandwa in which 38 *Lac* growers were benefited.
2. Soil samples from different user agencies were tested in the Soil Laboratory at FSVS, Midnapore.

### Education & Training

#### Trainings Organised

Sl.	Subject	Target Group
1.	Planting Stock Improvement and Modern Nursery Techniques	32 Forest officers of SFDs of Jharkhand, Bihar and West Bengal.
2.	MS Office, MS Project, LAN/WAN, ORACLE and Web Designing	35 officers, scientists and subordinate staffs of the Institute.

### Linkage & Collaboration

Close liaison was maintained for strengthening the linkage and collaboration with the State Forest Departments of Jharkhand, Bihar, West Bengal and Sikkim

and research organizations like CCL, CMPDI Ltd., MECON, XISS, ILRI, Ranchi University, Birsa Agricultural University, Vidyasagar University, Midnapore, Kalyani University, SEPC, JHASCOLAMF, BIT Mesra, and NBPGR, Ranchi.

**Conferences, Meetings, Workshops, Symposia, Exhibitions organised**

Sl.	Subject	Duration	Venue
1.	5 <sup>th</sup> CTA Workshop on <i>Acacias</i>	7 <sup>th</sup> November 2001	IFP, Ranchi
2.	3 <sup>rd</sup> RAG & Liaison	29 <sup>th</sup> November 2001	IFP, Ranchi
3.	World Bank Review Meeting	-	Mandar Center, Ranchi

**Distinguished Visitors**

1. Sri Babulal Marandi, Honorable Chief Minister, Jharkhand
2. Sri Yamuna Singh, Honorable Forest Minister, Jharkhand
3. Sri R.P.S. Katwal, Director General, ICFRE Dehra Dun
4. Dr. R.M. Singhal, DDG (Research), ICFRE, Dehra Dun
5. Ms. Jasica Mott and Mr. Frenk MacNill, World Bank Consultant,
6. Sri Shahdeo Jha, PCCF, Jharkhand
7. Mr. J.L. Srivastava, CCF (Development) presently PCCF, Jharkhand
8. Dr. M.K. Sharma, CCF (presently PCCF), Bihar