CHAPTER 8

INSTITUTE OF FOREST PRODUCTIVITY RANCHI

The Institute of Forest Productivity (IFP), Ranchi, endeavors to meet the Forestry Research needs of the four States of Eastern India viz. Bihar, Jharkhand, West Bengal and Sikkim.

PROJECTS COMPLETED DURING THE YEAR 2000-2001

Project 1: Socio-economic upliftment of villagers under UNDP. (IND/92/038/A/01/99)

Objectives : (a) To identify of species compatible with agro-climatic condition and soil characteristics (soil plant relationship). (b) To standardize planting methods, maintenance and monitoring procedure – proper manuring, fertilization and disease / pest control. (c) To develop cost effective technology for mass production of quality plantation materials, with emphasis on vegetative propagation and supply of clonal materials. (d) To appropriate agroforestry models. (e) To develop technology for application of suitable biofertilizer. (f) To extend utilization and economics of recommended, suggested, and preferred species.

Results: Observation on growth parameters of MPT species in demonstration plantation under UNDP was made periodically to assess economic aspects of plantation. Studies were carried out for laying out experiments for development of suitable agroforestry models in South Bihar (Jharkhand) and Midnapore district of West Bengal. Propagation technology of *Bambusa vulgaris, B. balcooa, B. tulda* and *B. arundinacea* was developed at FSVS, Midnapore. Growth performance of *Paulownia fortunei* at nursery stage in Jharkhand region has been studied and field stage is under progress.

OLD PROJECTS CONTINUED DURING THE YEAR 2000-2001

Project 1: Planting Stock Improvement Programme (PSIP). (IND/WB/FREEP/01/94/001/2K/IFP)

Objectives: (a) Identification of SPAs and CPTs of MPT species. Collection of quality propagation materials for raising planting stock from identified SPAs & CPTs. (b) To develop suitable nursery technique and application of biotechnology for mass propagation of superior planting stock. (c) Establishment of VMG, SSO, & CSO for future utilization, extension and development.

Achievements:

Seed Stand: Seed stands over an aggregate area of 100 ha, with genotypically and phenotypically superior trees of 13 selected most prominent tree (MPT) species have been identified in West Bengal and Bihar. Clonal Seed Orchards (CSO): 5.5 ha. of CSO of *Eucalyptus* spp has been raised at Netaipur under the FSVS, Midnapore and maintained. Vegetative Multiplication Garden (VMG): 11.5 ha. VMG of Bamboo and 4 ha. VMG of *Paulownia fortunei* have been created and maintained at FSVS, Midnapore (WB) and Chandwa (Jharkhand) respectively. Seedling Seed Orchards (SSO): Over an aggregate area of 60 ha. have been created with four species viz. *Eucalyptus* species, *D. sissoo, G. arborea* and *Acacia* species and maintained.

Project 2: Development of Bio-fertilizer in relation to productivity of important tree species. (IND/PL/94/002/010/2K/IFP)

Objectives: (a) To study impact analysis of biofertilizer treatment on soil property (physical, chemical and biological) and productivity. (b) To study adaptability and tolerance of VAM fungi and *Rhizobium bacteria* under stress condition. (c) To assess the economic / productivity and application of Biofertilizer. (d) To standardize the methodology of biofertilizer application. (e) Mass culturing and distribution to user agencies with recommendation.

Achievements: Survey was conducted and few strains of VAM fungi and *Rhizobium bacteria* were isolated from *Acacia auriculiformis* and *Acacia mangium* and inoculated to study their effectiveness to enhance growth of species.

Project 3: Studies on Bamboo cultivation in southern Bihar and West Bengal with special reference to its vegetative propagation, nutrient cycling and performance. (IND/PL/93/006/010/2K/IFP)

Objectives : (a) To assess the type of Bamboo growing in Southern Bihar, W. Bengal and their utilities. (b) To study the market trends of Bamboo plantation and harvest. (c) To develop of Nursery Techniques for Bamboo. (d) Fertilizer response of different bamboo species. (e) To develop packages for farmers and Tribals. (f) To establish of *Bamboo setum*.

Achievements: Survey for collection of information and 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 and West Bengal.

Project 4: Reclamation strategy for degraded lateritic soil and optimization of productivity. (IND/PL/94/001/010/2K/IFP)

Objectives: (a) To carry out survey for selection of degraded area of Jharkhand and West Bengal. (b) To develop scientific measures for improving the nutrient status, physical condition of soil and forest productivity of degraded lateritic soil. (c) To develop cost effective suitable package for reclamation and eco-restoration. (d) To study the effect of different fertilizers and manures on growth as well as their role as a reclaiming agent in pot and field trials.

Soil laboratory at Midnapore

Achievements: Effect of different bulky organic materials, agriculture and industrial waste were applied on *Eucalyptus* spp. and *Acacia auriculiformis* to study their impact on amelioration of degraded soil in pot and field trials at FSVS, Midnapore.

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. (IND/PL/99/005/010/2K/IFP)

Objectives : (a) To study the nutrient levels of different forest species under plantation and natural ecosystem. (b) Evaluation of biomass production as affected by macro and micro nutrient application at different level. (c) Evaluation of most suitable combination of plant nutrient under degraded condition for large-scale plantation of selected species. (d) Optimization of soil amendment methods, development of package for nutrient management under degraded lateritic soil condition and recommendation for user agencies.

Achievements: Effects of N, P, K, B, Zn and Mo at different doses on growth and nutrient uptake have been studied with *Eucalyptus* hybrid, *Acacia auriculiformis* and *A. mangium* as test plants in pots. Growth data were recorded and laboratory analyses are in progress at FSVS, Midnapore.

Project 6 : Eco-restoration: Hydro-metrological studies. (IND/PL/004/010/2K/IFP)

Objectives: (a) To study the effect of protection of watershed on sediment yield, correlation with rainfall and sediment yield infiltration in to soil. (b) To study the effect of aspect longitude and altitude on rainfall distribution. (c) To record daily metrological attributes to analyse and these data send to IMD, Pune and to publish for Forest Department, Researchers and Planners. (d) To study the effect of protection under growth phyto-sociological attributes and ecological impact of natural climates and biotic interferences.

Sub-project : Eco-restoration: Infiltration studies and eco-restoration of degraded patch of Balson catchments.

Objectives: (a) Infiltration studies under a series plantation / Natural forest and tea plantation having different stress condition and different slopes. (b) To analyze rainfall trend. (c) To stabilize meteorological station and to supply data IMD, Pune, other planners and researchers. (d) To study co-relation of rainfall, run-off and sediment yields from protected and unprotected watershed. (e) To study phytosociological structure and litter production dynamics and water quality of different forest stands.

Achievements: Hydro-meteorological observations were recorded, analysed data were send to IMD Pune. Sediment yield from protected water shed was much less than unprotected water shed. Litter production from natural Sal forest was much more than Sal, Teak and miscellaneous Plantations. Infiltration rate under Teak plantation was higher compared to other plantation. Phyto-sociological structure diversity decreases under landslide area.

Project 7: Provenance trial of Eucalyptus, Neem, Sissoo and Gamhar species. (IND/PL/93/003/010/2K/IFP)

Objectives: (a) To study the adaptability of exotic Eucalyptus in Indian condition without fertilizer application under different climatic and edaphic situation. (b) To select most suitable provenance in terms of growth

and biomass production for large-scale plantations and recommendation. (c) To study the fertilizer response of the provenance. (d) To study the different spacing on the growth and performances.

Achievements: Growth of EMU Creek Nt. Petford provenance of *Eucalyptus camaldulensis* is maximum with respect to average height (15.68 m) and average girth at breast height (35.83 cm) and that of *E. tereticornis* is highest for Cannedy River in comparison to all other provenances. The average height of Cannedy River provenance is 15.64 m. and average GBH is 39.96 cm. The growth of *E. grandis* having seed lot number-13024 shows average height of 14.82 m. and average GBH 35.2 cm. While that for *E. brassiana* (seed lot no. 13408) are 10.37m. and 23.73 cm., for *E. resinifera* (13166) are 10.09 m. and 30.75 cm. and for *E.* hybrid are 11.21 m. and 31.60 cm. respectively. 3 ha. Area of 17 provenance of *Azadirachta indica*, 1 ha. area of 11 provenance of *Gmelina arborea* and 0.5 ha. of 6 provenance of *Dalbergia sissoo* were maintained and growth data were recorded.

Project 8: Activities on Lac development. (IND/PL/93/003/010/2K/IFP)

Objectives: (a) To collect and compile various statistical data on lac concerning production, prices, internal consumption, export dispatches etc. for use of Govt. departments. (b) To maintain regionally located Nucleus Broodlac farms for demonstration of improved methods of Lac cultivation and supply of quality Broodlac to the growers users agencies. (c) To maintain liaison between Central and State Govts. Concerning Lac development work, to renders technical advice to State Governments and other organizations on planning of Lac cultivation, marketing exports etc.

Encrustations of Lac on twigs

Achievements: Market surveys were conducted for collection of yield data, market price and factory production. Periodical data was also collected from *haats, arhatias*, dispatch centers, exporters, and other organizations engaged in Lac trade. The data were analyzed for publication of Monthly Lac News Letter and Annual Lac Bulletin. Besides this, liaison was maintained with the Bihar State Co-operatives Lac Marketing Federation (BISCOLAMF) Ltd., Ranchi, Indian Lac Research Institute (ILRI), Namkum, Ranchi, TRIFED, Shellac Export Promotion Council (SEPC), Kolkata and State Forest Deptt., Bihar in connection with production of Lac, its export and research on Lac. Training on scientific and improved methods of Lac cultivation is imparted to extension workers and Lac growers. Trials on vegetative propagation of traditional Lac host sp. [Kusum (*Schleichera oleosa*), Palas (*Butea monosperma*) and Ber (*Ziziphus* spp.)] are in progress.

EXTENSION

Facilities generated and services rendered:

(i) Soil samples were tested at FSVS, Midnapore and revenue generated.

(ii) 533 no. of books and 9 no. of International Journals on Forestry, Ecology and related disciplines were procured for the library. Computer facility was strengthened. Internet service and E-mail services were subscribed.

✓ **Other Extension Activities are reported in the Introduction - Forestry Extension, ICFRE.**

FINANCIAL STATEMENT DURING 2000-2001

		EXPENDITURE (RS. IN LAKH)
I. PLAN		
A.	REVENUE EXPENDITURE	
	(a) Research	37.63
	(b) Administrative Support	- -
	(c) Others specify	- -
B.	LOAN AND ADVANCES	
	(a) Loan Advances (Conveyance)	0.60
	(b) House Building Advance	2.60
C.	CAPITAL EXPENDITURE	
	(a) Building & Roads	1.70
	(b) Equipments, Library Books	- -
	(c) Vehicles	- -
	(d) Others specify	- -
	TOTAL FOR PLAN (A+B+C)	**42.53**
II. NON-PLAN		
A.	REVENUE EXPENDITURE	
	(a) Research	83.62
	(b) Administrative Support (Salary)	- -
	TOTAL FOR NON-PLAN	**83.62**
III. FUNDED PROJECT		
A.	World Bank Project	50.05
	TOTAL FOR FUNDED PROJECT	**50.05**