

CHAPTER-IX

INSTITUTE OF FOREST PRODUCTIVITY RANCHI

Institute of Forest Productivity, Ranchi is looking after the research needs of forestry sector in Bihar, West Bengal, Sikkim and Union Territory of Andaman & Nicobar Islands. The Institute is primarily engaged in extension and development of programme package for lac cultivation; conducting research on agro-forestry, and forest productivity; and hydrological studies on Balason catchment.

The highlights of activities undertaken by the institute during the year 1996-97 are summarised as below :

DEVELOPMENT AND EXTENSION OF LAC CULTIVATION AND OTHER NON-WOOD FOREST PRODUCTS

Cultivation of lac is carried out mostly by the tribals of Bihar, West Bengal, Madhya Pradesh, Uttar Pradesh, Maharashtra, Orissa and Gujarat. Cultivation is done on naturally occurring host trees of Palas (*Butea monosperma*), Ber (*Zizyphus mauritiana*) and Kusum (*Schleichera oleosa*).

Maintenance and improvement of broodlac farms

The institute is maintaining five Nucleus Broodlac farms-cum-demonstration centres, three in Bihar and one each in Orissa and West Bengal. Details are given below :

Sl.No.	Name of Farm	State & Location	Type of Farm
1.	Turhamu N.B.Farm	Plamau (Bihar)	Rangeeni lac Farm
2.	Malichak N.B.Farm	Gaya (Bihar)	Rangeeni lac Farm
3.	Hesadih N.B.Farm	Ranchi (Bihar)	Kusumi lac Farm
4.	Chakidi N.B.Farm	Mayurbhanj (Orissa)	Kusumi lac Farm
5.	Chorida N.B.Farm	Purulia (West Bengal)	Rangeeni lac Farm

These farms act as centres for imparting training to local villagers, predominantly schedule tribes, in scientific methods of lac cultivation and also supply broodlac to the cultivators.

Trials of new lac hosts for lac cultivation

Trials with *Acacia auriculiformis* (a new lac host) were undertaken in Purulia district of West Bengal with encouraging results, but the crop was more susceptible to climatic vagaries resulting in losses before harvesting. The new strain of lac insect recommended by Indian Lac Research Institute, Namkum (Ranchi) as an early variety, has been tried at Chakidih and Hesadih farms last year. This year there have been considerable loss of crop due to pest attack and continuous rains during the settlement season.

TREE IMPROVEMENT

A survey was conducted to identify Seed Production Areas. Marking of candidate plus trees of *Tectona grandis*, *Dalbergia sissoo*, *Gmelina arborea*, *Acacia auriculiformis* and other

multipurpose tree species in Bihar and West Bengal were undertaken. 367 ha of seed production area was identified and 143 plus trees of different species were marked. From the identified SPAs, seeds were collected. 22 ha. of seedling seed orchards of different species have been raised during the year 95-96. Vegetative multiplication garden of Bamboo was raised in 4 ha. and that of *Pawlounia* in 0.25 ha. in West Bengal and Bihar respectively.

VEGETATIVE PROPAGATION OF BAMBOO AND MPT SPECIES

Vegetative propagation of bamboo was carried out using the best local variety of bamboo *Bambusa balcooa* in nursery as well as in the villager's fields (demonstration plantations). This was done to motivate the villagers with advanced technology of node cuttings of one to three years old culm. From the parent clumps, young (1-3 yrs) culm was removed and by making holes in between two nodes, the internode space of the cuttings were filled up with indole butyric acid (IBA) solution (0.001-0.01) or only with water. Within 5-6 days in hormone treated cuttings and 7-15 days in water treated cuttings, vegetative growth was observed as new buds sprouted at each node. The cuttings were planted on villagers land as well as in the nursery sites.

BIOFERTILIZERS

Mass culture of VAM was prepared and applied in nursery beds and polypots (during pot filling), for raising demonstration plantation. It has been observed that 5 months old inoculation produces most efficient inoculum as reflected in plant growth.

RECLAMATION OF DEGRADED LATERITIC SITES

Forest land in southern Bihar and West Bengal are mainly composed of Red and Lateritic soils. The physical and physico-chemical properties of these soils lead to the problems of shallow depth, high permeability, low water retention capacity, crust formation on the surface, etc. Experiments were undertaken by the Institute to reclaim such degraded sites and enhance the productivity by application of bulky organic matter, micro nutrients and use of fertilizers.

Reclamation through addition of organic matter

In a field experiment, effect of different types of organic matter on growth and survival of MPT species under degraded lateritic soil conditions has been studied. Neem seedling grown in earthen pots with degraded lateritic soil and variable with different doses of micro-nutrient and lime, showed different results. It was observed that except Boron, all other micro-nutrients enhanced growth of Neem. Application of higher doses of lime has shown good results in growth (height) when combined with micronutrient. Experiments are continuing.

PROVENANCE TRIAL

Eucalyptus spp.

Experiments with 69 provenances of 8 different *Eucalyptus* spp. have been initiated. Data are being systematically recorded. Candidate plus trees have been selected and trials on best coppicing schedule are being carried out. Seeds of different *Eucalyptus* species were obtained from CSIRO, Australia. Out of 15 provenances of *E. camaldulensis*, seeds from Katherine, Murchison river, Gillbert river, Gregory river north, and N. Fitzroy showed higher percentage increase in their height.



Vegetative multiplication garden of Bamboo



Agro-forestry practices (Lac cultivation and agri-farming)



Mixed plantations in demonstration village
(Baladmara, West Bengal)



People's participation (Exchange of research
informations by organising workshop)

Neem (*Azadirchta indica*)

Seeds of 18 provenances of neem from different parts of India as well as from Thailand were received and sown in nursery for studying their characteristics. Plantations of neem of above provenances have been raised in Randomised block design with 4 replications at Netaipur in Midnapore district. Growth parameters have been recorded to determine suitability in lateritic zone.

Gamhar (*Gmelina arborea*)

Seeds of 11 provenances of gamar (*Gmelina arborea*) from different areas like Bihar, M.P. etc. were collected and sown in polypots in the nursery after necessary treatment. These seedlings have been planted at Mandar (Bihar) and West Bengal in 1996-97 for provenance trials.

HYDROLOGICAL STUDIES IN BALASON CATCHMENT

During the year 1996-97, daily meteorological parameters were recorded from the experimental watershed observatory at Sonada in Darjeeling district and analysis of data has been done at Environmental research Station, Sukna. During the period from April 96 upto Jan 97, the total rainfall recorded was 3257.7 mm. In July 96 the rainfall recorded was 28.58 % of the total. Average maximum, minimum, and mean temperature recorded were 21.9, 9.2, and 15.3°C respectively. During premonsoon, months, the total rainfall was 319 mm. In pre-monsoon period, average maximum, minimum and mean temperature were 23.1, 10.2 and 16.6°C respectively. During monsoon (June - Sept 96), 2805.2 mm of rainfall was recorded and average maximum, minimum and mean temperature recorded were 22.5, 12.9 and 17.7°C respectively. During Nov. 96, 101.8 mm rainfall was recorded. Daily runoff and rainfall were recorded with automatic recorder.

EXTENSION

Extension of improved methods of lac cultivation has been taken up by the institute. The growers are being trained in improved methods of lac cultivation, by way of demonstrations in the farms maintained by the Institute. Market data were collected from 19 assembling lac centres of Bihar, West Bengal, and M.P. and disseminated among the cultivators after analysis, in the form of publication (Monthly Newsletter) with wide circulation.

EDUCATION/TRAINING

During 96-97, 200 lac cultivators including tribals were trained in Bihar and Madhya Pradesh on lac cultivation. Special training camps were organised on the specific request of Social Welfare Deptt. and State Forest Departments of Bihar and Madhya Pradesh.