

## CHAPTER-X

### CENTRE FOR SOCIAL FORESTRY AND ECO-REHABILITATION ALLAHABAD

The Centre for Social Forestry and Eco-Rehabilitation has been established to meet the forestry research needs of Gangetic Plains of Uttar Pradesh, Bihar, and Northern Vindhyan tracts of Madhya Pradesh. The main research thrust of this centre is on ecological rehabilitation of Gangetic plains and Northern Vindhyan, biological rejuvenation of soil of high salt concentration, developing suitable silvicultural models for reclamation of ravines, and development of watersheds in command areas. Since this region is largely devoid of forest cover, this centre is also involved in developing suitable packages of social forestry.

The centre, which is a satellite centre, of Forest Research Institute, Dehra Dun, has also undertaken research projects under World Bank-ICFRE FREE Project, UNDP-ICFRE Project and NABARD Project.

#### FOREST PRODUCTIVITY AND BIOFERTILIZERS

In the first phase of the programme, the Centre has selected areas around silica mines of Shankargarh to study ecological characteristics and composition of the eco-system. Seedlings of *Butea monosperma* and *Acacia catechu* have been inoculated with VAM, *Rhizobium* and PSM in various combinations for trial in the mined area including control with no inoculation.

#### DEVELOPMENT OF AGROFORESTRY MODELS

The Centre has undertaken two research programmes of the National Bank for Agriculture and Rural Development (NABARD) project and World Bank-ICFRE FREE project. The former programme aims at developing silvi-agri, silvi-horti and silvi-pastoral models in the three selected watersheds of Bharetha, Bamhrauli and Bhagvatpur for improving the rural economy while the objective of the latter programme is to develop a suitable technological package for rehabilitation of marginal agricultural lands of the region.

Design and Diagnostic survey has been conducted to study various models viz., silvi-agri, silvi-horti and silvi-pastoral, and the choice of species. A working group of 5 potential farmers has been identified in each micro-watershed for diffusion of different agroforestry models.

Seeds have been collected from plus trees of *Eucalyptus* and *Dalbergia sissoo* from SPAs in North Gonda and Fatehpur district. Nursery has been established at Padilla and seedlings are being raised for plantation in agroforestry.

Experiments have been designed in agroforestry in Bamhrauli and Bhagvatpur by implementing silvi-agri models of *Eucalyptus/Dalbergia sissoo* and agricultural crops (Jwar and wheat) in North-South and East-West planting to study the performance and influence of directional planting. Silvi-horti models were tried by planting *Eucalyptus* with existing Guava trees in the fields in Bamhrauli village.



Paulownia introduction trial



Growth performance of *Eucalyptus camaldulensis*  
(Two years old) under species testing trial  
at moisture stress site



Growth performance of *Emblica officinalis*  
(Two years old) under species testing trial  
at moisture stress site



Effect of biofertilizer on the growth of *Dalbergia sissoo*

## WASTELAND DEVELOPMENT

This Centre has taken up wasteland development programme in Handia Tehsil (Upardaha Tal), 40 Km. away from Allahabad. The area is characterized by high pH (9.7), ESP 60-30%, electrical conductivity 2.4 ds/m and soluble salts 62g/kg. The soil is coarse loamy mixed, thermic family of aquic petrocalcic natrustalf. Besides, the area remains water logged for a long period. At the site described above, plantations raised in previous year have been maintained and data are being recorded periodically. To study the effect of intercropping of agriculture crop with plantation on fertility status of the soil, an experiment was also set up in which paddy (*Oryza sativa*) was intercropped with 6 months old neem trees planted on mounds. Data are being recorded periodically.

To reclaim the alkaline soil through biological rejuvenation, another site near Naini (Allahabad) has been selected. The area is alkaline and subject to water logging after heavy rainfall. A number of experiments have been laid out. Data are being collected periodically.

## ENVIRONMENTAL REHABILITATION - VINDHYAN HILLS AND GANGETIC PLAINS

Environmental degradation has been proceeding at an unprecedented rate in the region jeopardising biodiversity and sustainable economic development of agriculture and forest resources. The Centre, through one of its research assignment under the World Bank project, has aimed at developing a suitable technological package for rehabilitation of degraded areas of the region. Under this project, relevant literature has been reviewed to ascertain the extent of degradation and technology gaps. The survey of literature reveals that in the Eastern Gangetic plains and Vindhyan region of U.P., there is varying level of degradation which can be broadly classified into (i) Salt affected lands (ii) mined areas (iii) ravines (iv) skeletal and (v) moisture stress sites. In first phase of programme, rehabilitation of salt affected lands has been undertaken in one of the representative sites.

Regarding mined area rehabilitation, one site at Shankargarh, which is a degraded forest area (due to silica mining), has been selected and an agreement with State Forest Department, U.P. has been made for making available land in the area to carryout various experiment aiming at developing site specific technological packages.

In addition to the above experiments, provenance trial of *Tectona grandis*, testing trial in moisture stress site, and *Paulownia* introduction trial established at old cantonment during the year 1995-96 are also being managed and relevant data are being collected periodically.

## PAULOWNIA INTRODUCTION TRIAL

To assess the suitability of *Paulownia* species in the Gangetic plains, an experiment was set-up with four species of *Paulownia* (*P. fortunei*, *P. kawakamii*, *P. fargesii* and *P. tomentosa*). Data pertaining to the growth attributes have been recorded periodically. After 20 months of plantations, *P. fortunei*, *P. kawakamii*, *P. fargesii* and *P. tomentosa* have attained heights of 343.1 cm., 364.4 cm., 307.6 cm. and 255 cm. with collar diameters of 30.5 cm., 33.5 cm., 29 cm. and 22.5 cm. respectively.

## PLANTING STOCK IMPROVEMENT

Quality planting material is the foremost requirement to obtain increased yield per unit area and to maintain adequate forest cover for eco-restoration. Therefore, the Centre has started a planting stock improvement programme under the ICFRE/World Bank FREE project. Various activities under the programme are- (i) identification and development of seed

production areas of *Dalbergia sissoo* to obtain superior quality seeds (ii) establishment of clonal seed orchard of *Eucalyptus* hybrid by propagating clones of superior genotypes (iii) establishment of seedling seed orchard of *Dalbergia sissoo* and *Acacia nilotica* for quality seeds, and (iv) establishment of vegetative multiplication garden of *D. sissoo*.

In order to develop seed production area of *D. sissoo*, forest areas were surveyed at Manikpur in Fatehpur division; Mauranipur in Jhansi division; Hasnapur, Bankatwa in Gonda and Sohelwa in Bahraich division. After studying the phenotypic characteristics of the stands two sites were selected- one each at Bankatwa and Hasnapur. Area of each of these stands is 20 hectares.

Candidate Plus trees of *Acacia nilotica* have been identified at Manikpur in Fatehpur division for collecting seeds of superior quality to be used for establishment of seedling seed orchard. Efforts have been made to get suitable piece of forest land for developing seedling seed orchard. Candidate Plus clumps of *Dendrocalamus strictus* have been identified and marked in Kashi Forest Division.

### EXTENSION

The UNDP-ICFRE project envisages transfer of technology from research-centres to the end users. The technologies developed have been popularised in rural areas. These include introduction of multipurpose trees like neem, *Dalbergia sissoo*, *Emblica officinalis*, bamboo, poplar etc. which can fetch attractive returns for the rural masses. During the year, 400 plants of Bamboo and 400 Entire Transplants (ETPs) of Poplar were distributed among 76 farmers of the demonstration villages.

### EDUCATION/TRAINING

One training-cum-demonstration programme was conducted at Jhalwa village for farmers, teachers, women etc. 59 participants attended the programme and gave a positive feedback to the UNDP Project being implemented by the Centre.