

PROJECTS COMPLETED DURING THE YEAR 2008-2009

PLAN PROJECTS

Project 1: Evaluation of different existing land use systems for development of viable economic models in North East India. (RFRI/ SC/06/2003-2008)

Findings: The benefit cost ratio worked out for Land Use Systems (LUSs) identified at different jhum areas in Assam, Nagaland and Meghalaya. The results revealed that in Assam *Trichosanthes dioca* with B: C (3.75) followed by *Anona comosus* (3.23) were potential LUSs among other in the list, whereas in Meghalaya *Citrus* sp. (6.09) followed by *A. comosus* were practiced as well accepted LUSs because of its prospective characteristics. The data collected from various LUSs in Nagaland revealed that the *Areca catechu* (11.4) followed by *Musa paradisiaca* (10.78) were established and highly sustainable LUSs.

Project 2: Management of *Bambusa nutans* for enhancing the productivity of marketable culm through silvicultural practices (RFRI/TI/13/2005-2008)

Findings: Trial on thinning and soil mounding revealed that proper thinning and soil mounding of the clumps helps to enhance the productivity. Treatment combination of 20% thinning and 30 cm soil mounding was recorded with highest collar diameter and plant height. Application of fertilizer (DAP) was also found to be helpful in increasing the production with respect to culm height and collar diameter.

Project 3: Development of nursery for production of quality planting stock of bamboos in N.E. (RFRI/SM/06/2005-2008)

Findings: In nursery, the sand, soil, FYM and vermicasting (cultured) was found to be the best media for production of bamboo planting stock in polybags. The bamboo seedlings raised in polybags were evaluated for field performance. Seedling raised in soil and vermicasting (wild) seedlings gave best performance in the field.

Project4 : Standardization of nursery technique of *Bambusa pallida* (RFRI/SM/07/2007-2008)

Findings: Soil, sand and FYM (1:1:1) was found suitable media for propagation of *B. pallida* through culm cuttings. Culm cuttings treated with IBA 300ppm gave maximum production of new shoots with 20-25% survival. Further proliferation of plantlets gave 75-85% survival. A total of 1200 seedling raised through macro proliferation technique.

Project 5: The potential bamboo species with reference to carbon sequestration in Assam & Mizoram. (RFRI/EE/07/2005-2008)

Findings: Carbon sequestration potential of 1, 2 & 3 years old *Bambusa tulda* and *Dendrocalamus hamiltonii* from Hudamuagaon, Bhakatgaon and Bosepathar Borgurigaon of Jorhat district, Assam and Lawipu Ram & Tural Aizawl, Mizoram and from New Sonowal, Jorhat district of Assam and Lawipu Ram & Zembouk Dai of Aizawl, Mizoram respectively was studied through biomass estimation. Above ground biomass of *D. hamiltonii* was 50% in most of the samples. In *D. hamiltonii* dry biomass ranged from 46 to 54% in 1st year, 50 to 56% in 2nd year and 48 to 57% in 3rd year culms. Whereas in *B. tulda* it ranged from 43.5 to 56.3% in 1st year., 49.5 to 56% 2nd year and 53.7 to 68.7 % in 3rd year culms.

Project 6: Diversity and dynamics of Arbuscular Mycorrhizal fungi and their influence on biomass production of some medicinal and aromatic plants of Assam (RFRI/FP/10/2005-2008)

Findings: Diversity study of Arbuscular Mycorrhizal fungi associated with medicinal and aromatic plants was done for fifteen districts of Assam(i.e Dibrugarh, Sivasagar, Jorhat (including Majuli Sub-Division), Golaghat, Karbi Anglong, Nagaon, Marigaon, Kamrup (Rural), Kamrup Metro, Nalbari, Barpeta, Sonitpur, North Lakhimpur, Dhemaji and Baska). Mycorrhizal spores were isolated from the collected samples and their quantification was done. Root infection percentage was also calculated and it was found that AM fungi infect the plants with varying degree.

Project 7: Studies on structural formation of vegetation for the conservation of biodiversity in Gibbon Wildlife Sanctuary Assam (RFRI/SC/08/2005-2008)

Findings: A total of 225 plant species were enumerated from the forest (91 species of tree, 18 species of shrub, 74 species of herb and 36 species of climber). The canopy height of most of the trees (about 50%) in the study area ranged between 20-35m. The feeding height of gibbons in this study was found to be between 25 to 30 m. Identified 3 vegetation communities and other associate species. Most preferred food plants by Hoolock Gibbons were found to be 45 in number. Their phenological observations were recorded. Quantitatively all these trees are quite abundant in the study area except degraded sites.

Project 8: Development of Patchouli based viable agroforestry models for NE region of India (RFRI/CFE/04/2005-2008)

Findings: Organized farmer visits to the On-farm trials for demonstration of the patchouli agroforestry practices. Training was imparted through lectures and practical sessions during field visits. The local entrepreneurs were also invited in the program to facilitate liaisoning with the farmers. The farmers were assured 30 % higher price by these entrepreneurs for the raw material (dry leaves) to be supplied to their industries with a purchase guarantee. Under the technical guidance of RFRI, the farmers have already started growing patchouli in their tree gardens. Primary observations reveal that the practice will be highly beneficial on sustainable basis.

Project 9: Comparative studies on natural resistance of bamboos to biodegradation in Assam. (RFRI/ FP/08/2005-2008)

Findings: Evaluation trial of eleven bamboo species was conducted for their natural resistance against the biodegrading agents under the natural conditions of Assam. Test yards were laid at three sites viz, at Jorhat, Nagaon and Burnihat and were observed for the period of 18 months. The final results revealed that *Bambusa pallida* as the most resistant bamboo species and *Melocanna baccifera* the least resistant based on biomass loss during the period.

Project 10: Investigations on the formation of agar wood in *Aquilaria malaccensis* Lamk. (RFRI/ FP/11/2006-2007)



Infection in agar (*Aquilaria malaccensis*)
TCS



Infection in agar (*Aquilaria malaccensis*)
TLS

Findings: Symptoms of infection in agar trees have been identified. *Zeuzera conferta* (Walker), a stem borer larva along with the fungi viz., *Fusarium* spp., *Penicillium* spp., *Mucor*, *Rhizopus* sp., *Aspergillus* spp. and *Cladosporium* sp. were found to be associated with agar wood formation in Agar tree. Artificial inoculation with dominant fungi isolated from diseased wood found to be the best method for agar wood induction in agar tree as compared to other artificial methods.

Project 11: Appraisal of tree-crop association pattern in selected Jhum areas of NE region for efficient land use under agroforestry (RFRI/SC/12/2008-2009).

Findings: Keeping in view the objective to explore information on intercropping pattern and their socio-economic impacts, required for formulation of comprehensive agroforestry project with an aim of efficient utilization of land, studies were carried out in specific areas of Meghalaya (selected jhum practicing villages of West Garo Hills and East Garo Hills districts) and Mizoram (Aizawl district). Information on marketing channel and market data of raw and value added products were collected. New LUSs have also been observed in practice with some newly introduced crops under different programs of Govt. and Non-govt. agencies.