PROJECTS COMPLETED DURING THE YEAR 2007-08

EXTERNALLY AIDED PROJECTS

Project 1: Integrated management for qualitative improvement and increased production of Rohida *(Tecomella undulata)* in Rajasthan [AFRI-65/FP/2005-08]

Component 1: Insect pests and disease studies

Findings: The entire IGNP area in Jaiselmer and Bikaner districts was surveyed and 21 sites were evaluated for the insect pests and disease studies. Subsequently, on the basis of infestation intensity, six sites viz., were selected in IGNP area covering Jaiselmer and Bikaner districts. Three species of fungi belonging to the family imperfacti (*Phoma* sp., *Fomes* sp. and *Botryodiplodia theobromae*) are primarily responsible for canker-rots in *T. undulata* in IGNP area at Mohangarh. It was observed that no significant hollowness problem was encountered in the Rohida plantations raised in the IGNP area except in a few trees, which exhibited the initiation of canker formation in the main trunk.

Component II: Rohida Macropropagation

Findings: Technology developed on macro-propagation of important tree of arid region known as Marwar Teak and locally called Rohida (*Tecomella undulata*). Studies carried out in last two years indicate that rooting response of Rohida stem cuttings is not only difficult influence by several factors such as donar trees health, physiological status of cuttings and the external environmental conditions. However, tree has the potential to root relative high frequency if tree is managed well before collecting the stem cuttings. Selection of cuttings from well managed selected tree and established in mist chamber at proper time period after treating proper fungicide, insecticide and antibiotic treatments can be rooted successfully.

Component III: Growth and Yield Studies on Rohida Plantations

Findings: Total wood volume equations have been constructed and validated which assume importance in projecting the total volume at different stages (thinning and final harvest) as the plantations mature. Volume equations proposed may be applied on any population/sample of these species available in the study area as these equations have been validated for independent data set. The site index equation has been developed that may be used for assessing productive capacity of site and to select sites suitable for the particular species. These are also useful in estimating site index at a base age given height at some other age as well as estimating height at some desired age given site index. Generalized diameter height models have been developed which are useful tools for forest inventory purposes.

Project 2: Studies on prediction of NTFP availability and potential for extraction in Aravali region of Rajasthan

Findings: Significant quantities of NTFPs are gathered in three forest divisions of the Aravali region and the annual estimated values of NTFPs realized per household are Rs. 2765.00, Rs.1794.00 and Rs. 478.00 in Udaipur (central), Pratapgarh and Banswara forest divisions respectively, ignoring fuel wood and fodder grasses collection. Taking removal of fuel

wood and fodder grasses from the nearby forests into account, estimated annual financial values realized per household are Rs. 5965, Rs. 4994 and Rs. 3678 in Udaipur (central), Pratapgarh and Banswara forest divisions respectively. The financial value realized per ha or NTFP income generated from a hectare area of tropical dry deciduous forest of Aravali region was estimated as Rs.1442.00 in Udaipur (central) forest division followed by the Pratapgarh and Banswara forest divisions, yielding Rs.1006.00/ha and Rs. 392.00/ha. Such species include important commercial and medicinal plant species like *Acacia catechu* (Khair), *Boswellia serrata* (Salar or Salai), *Lannea coromandelica* (Godal), *Sapindus trifolatus* (Aritha), *Anogeissus latifolia* (Dhavra), *Madhuca latifolia* (Mahua), *Chlorophytum borivilianum* (Safed Musli), *Dendrocalamus strictus* (Bamboo) and *Embelica officinalis* (Aonla) etc.

Project 3: Efficacy and economics of water harvesting devices in controlling run-off losses and enhancing biomass productivity in Aravalli ranges [AFRI-39/FED/2002-08] (Note: Concluded from State Forest Department, Rajasthan but got extension of one year in ICFRE Plan fund in 2008-09)

Findings: Experiment was started in July 2005 with the financial assistance from Rajasthan Forest Department. Seventy five plots of about 700 m^2 area were laid in 0-10, 10-20% and >20% slope with five treatments (control, contour trench, gradonie, box trench and 'V' ditch rainwater harvesting structure) in five replicates. Growth and seedling survival were recorded in June and December 2007. Run-off was measured from July to September (8 times) and water samples were collected (two times) for soil and nutrient loss. Vegetation and shrub/ tree diversity was monitored and diversity indices calculated. Vegetation productivity was also estimated.

Presence of coarse fragment in most of the plots of >20% slope facilitated the infiltration and subsurface drainage reducing surface loss and enhanced duration of soil water availability for vegetation. Preparation of RWH structures further enhanced water availability increasing vegetation production and soil organic carbon, a benefit of carbon sequestration. Highest run-off (11.43%) was from the Control and lowest was from V-ditch plots (9.33%). The losses in other treatments were 11.28% from Box trench, 10.89% from Gradonie and 10.82% from Contour trench plots. Thus adoption of rainwater harvesting devices reduced run-off losses as the water loss in V-ditch plots was reduced by 2.1% of the total rainfall when compared with the control.

Report prepared and submitted to funding agency i.e., State Forest Department, Rajasthan.

Project 4: Baseline survey study on biological diversity in Mangala, Sarswati and Rageswari areas of Rajasthan Hydrocarbon Project [AFRI-75/FED/2006-08] (Funded by CAIRNS Energy India Pvt. Ltd.)

Findings: An extensive survey was conducted in the Mangala, Sarswati and Rageswari areas of Rajasthan Hydrocarbon Project in Barmer district to study the biological diversity in the area. Sensitive areas like community lands (Oran and Gauchar) and forest areas were also studied in detail. Site wise map has been prepared. Final report submitted to the funding agency.