

# **Research work carried out under Plantation Research and Evaluation, Jharkhand**

## **Ranchi**

Gharkhantaga Research Nursery was established over an area of 19.5 ha. during 2002-03. This nursery is situated on Tipudana - Namkum in Gharkhantaga village at a distance of 15 km from Ranchi. During 2003-04 the plants were raised in the root trainer having capacity 150 cc and 250 cc. These raised plants were planted in field during 2003-04, 2004-05 and 2005-06. The potting mixture i.e. Soil, Sand and Compost in the ratio of 2 : 1 : 1, was used in raising of plantation. The growth data were analyzed during 2006-07 and concluded that the roots were not establishing themselves properly and plants were showing dwarfing phenomenon. The size of root trainer depends on biological and economical feature of plants. The dwarfing effect and low survival was found in case of 150 cc root trainer. Further experiment on potting mixture was carried out. Two more research centres at Gamharia and Deoghar have been established for comprehensive plantation research.

### **Study the effect of potting mixture on plants raised in root trainer in Nursery condition**

The potting mixture of soil, sand and compost in the ratio of 1:1:1, 1:1:3, 1:1:5 and 1:1:8 were used in raising of plants in root trainer. The potting mixture 1:1:3 was found suitable. The 250 cc root trainer was found suitable for small seeds and such kind of big sized seed available in the month of April - May.

### **Study the effect of potting mixture on plants raised in root trainer in plantation condition**

The plants raised in different potting mixtures (soil, sand, compost 1:1:3, 1:1:5 and 1:1:8) were planted in research plots made in Tamar, Masania, Getalsud of Ranchi district and Saldih of Saraikela-Kharsawa district.

### **Comparative study of plants raised in root trainer and poly bag :-**

Plants raised in root trainer and poly bag were planted in research plot designed statistically in the field. The measurement is being taken quarterly.

### **Study the effect of size of root trainers for raising/ seedlings in Nursery condition**

Four sizes of root trainer i.e. 250 cc block – height 4”, 250 cc single cell height 7”, 300 cc block height 6.5” and 300 cc single cell height 7.5” were used in Garkhatanga (Ranchi), Gamharia (Saraikela-Kharsawa),

Gharmara (Deoghar). The data regarding height of plants, collar diameter, root diameter was analysed and concluded the height (volume) of the root trainer affect the growth of plants. The plants raised in these root trainers, have been planted in research plot designed statistically.

### **Preparation of model for rehabilitation of mined out area :-**

The forest of Chatra village in Ranchi district was used for stone mining. This mined out area is being used to develop model for rehabilitation and stabilization. Different species of bamboos are also being tried for rehabilitation of the area.

### **Growth study of species planted in different plantation of the State**

To study the growth of different species, 540 sample plots in different plantation of the state have been taken and report will be published shortly after compilation of the data.

### **Trial of different plantations**

- (1) Trial of bamboo plants raised by Vegetative Macroproliferation method have been under taken in Hazaribag, Saraikela and Deoghar district;
- (2) Trial of Sal and its associates including LKTS (Lesser Known Tree Species) over 30 hectare in Hazaribag, Saraikela & Deoghar district;
- (3) Trial of different QGS species raised in root trainers;
- (4) Trial of different clones of Eucalyptus;
- (5) Trial of multitier farm forestry models.

**PROGRESS REPORT OF RESEARCH WORKS BEING CARRIED OUT**  
**UNDER “RESEARCH AND EVALUATION” SCHEME BY**  
**CONSERVATOR OF FOREST & STATE SILVICULTURIST**  
**(YEAR 2008 – 2009)**

The brief description of the research works being implemented under “Research and Evaluation” head is as under:

(1) **Study of natural regeneration of Sal and its associated species in the forests of Jharkhand** :-

Forests of Jharkhand are primarily endowed with Sal and its associated species e.g. Asan, Gamhar, Karam, Bija, Khair, Salai, Dhau, Semal, Jamun, Mahua etc. Natural regeneration of these species do take place through seeds and regeneration as such is influenced by various factors such as soil, availability of light, climate, presence of weeds, status of other competing plants, fire, grazing, browsing, indiscriminate removal etc.

The main objectives of the study are as below:

- Assessment of qualitative and quantitative change in natural regeneration after management intervention viz. Silvicultural operation, Soil and moisture conservation, protection from grazing, fire etc.
- Determination of suitability of associated species of Sal in terms of regeneration in different soil/ moisture/ climate regimes of the state.
- Compilation and analysis of the data with regard to the ratio of existing species and the regenerated tree species.

In light of the diverse nature of Sal forests in Jharkhand, six districts of Jharkhand namely Ranchi, Hazaribagh, Lohardaga, Palamu, East Singhbhum and Jamtara have been selected so as to get a multidimensional perspective of the situation. In each selected district a Sal forest of 40 ha. Area has been selected. 20 ha. of this area (named as ‘Control Plot’) has been left untouched whereas the rest 20 ha. forest area (named as ‘Sample Plot’) has been subjected to management and moisture conservation works etc. Enumeration data is being collected twice (October and March) in the year in the laid out quadrants (10m. x 10m.) and sub-quadrants (1m. x 1m.).

This scheme was initiated in the year 2007-08. Data compilation is under progress. The scheme is of five years duration.

(2) **Study of the effect of Silvicultural operation on the Bamboo forests of Jharkhand:** The state of Jharkhand has about 842.50 sq. km. of Bamboo overlapping natural forests. Apart from this a large area has been afforested by bamboo species after creation of the new state of Jharkhand.

The Primary objective of the scheme is to assess the effect of silvicultural operations on the natural regeneration and productivity of Bamboo forests.

The study is being carried out in five districts of Jharkhand namely Palamu, Latehar, Chatra, East Singhbhum and Jamtara. An area of 40 ha. of Bamboo thinning of bamboo clumps, Soil and moisture conservation activities etc. have been carried out. Data collection regarding the no. of regenerated culms and their growth is under progress.

The Scheme was initiated in the year 2007-08. The study is scheduled to be completed in 2009-10.

(3) **Eco – restoration of degraded forests** : As per the State of Forest Report, 2005, the state of Jharkhand has 23,605 sq. km. of forest land, out of which 10,949 sq. km. area has open forests (canopy density : 10 – 40 %). These forests have been subjected to acute biotic pressure as a result of which the soil erosion in such areas is at its worst. Also, the natural regeneration in such areas has been adversely affected. In this perspective the present scheme is being implemented. The primary objective of the scheme is to undertake various activities in the selected degraded forest areas towards eco-restoration of the same and also to monitor the changes in various parameters such as status of natural regeneration, soil conservation, water tale, soil quality etc.

Under this scheme three areas (273 ha.) have been selected in Ranchi and Hazaribagh districts. The main work components that have been carried out in these areas are as below:-

- Intensive silvicultural operation.
- Lantana removal.
- Soil and moisture conservation works
- Plantation in blank areas.
- Protection

The works under the scheme has been initiated in the year 2007-08. The scheme is of five years duration.

(4) **Maintenance of two Research nurseries and Plantation of Bamboo of improved variety :-** Two research nurseries (20 ha.) located in Latehar (Hesla) and Dumka (Ganeshdih) districts are being maintained. Mother plants (1750 in no.) of Amla, Mango, Ber, Imli, etc. are being maintained in these nurseries. In these nurseries the planting material of bamboo species have also been raised through Culm cutting. A total of 70 ha. of areas has been planted with such bamboo plants in the year 2008 – 09.

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