

# Pulp And Paper Industries Vs Man-Made Forests With Special Reference to The Sirpur Paper Mills

Prasad V.V.S., Sai Prasad.K., Karoshi.V.R.

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*ABSTRACT:-- Per-capita use of paper in any country is the index of civilization. As on today, India's per-capita use of paper and paperboard is the lowest in the world. The forests of India are under immense pressure, thus we have hardly 11% of good forest cover against 33% of forest cover as recommended by National Forest Policy - 1988. Total requirement of fibrous Raw-Materials of forest based industries can never be met from the traditional forests. Thus to survive & prosper the forest based industries have to embark on programmes of massive man-made forestation. The paper presents a brief account of the approaches adopted by the Sirpur Paper Mills Ltd., Sirpur Kaghaznagar (A.P.) for getting fibrous raw materials on sustainable basis in particular, and greening of earth in general.*

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## INTRODUCTION

The per-capita consumption of paper has been widely accepted as an indication of the degree of civilization a nation has attained. Presently, India's per-capita consumption of paper & paperboard is hardly 3 Kg, the lowest in the world, even lowest among the developing countries; against a world average of about 45 Kg, with 218 Kg in Singapore, 225 Kg & 315 Kg in Japan and the U.S.A., respectively. The forests of India are under immense pressure and their management is becoming increasingly complex (Ray, 1994). Though the National Forest Policy of 1988 has recommended 33% forest cover for safer ecology, the actual forest cover is not even 11%. According to a recent study (Anon., 1993) fifty percent of recorded forest area (77 million ha) is good forest (with crown density of 40% & above) and the rest is degraded.

Report of FAO says that 16.8 million ha of forest disappears every year globally. Like wise, the satellite data of NRSA has revealed that India is losing its natural forests at the rate of 1.3 million ha

every year, and maximum deforestation has taken place in states like Madhya Pradesh, Maharashtra, Orissa. Andhra Pradesh and Jammu & Kashmir (Kushalapa, 1992). It is clear that the total requirement of wood as a whole can never be met from the traditional forests as such. Hence, no alternative is left but to go for captive plantation/man made forest plantation of high yielding, short rotation pulpable species both on forest and non-forest including private lands.

### **Vital role of Sirpur Paper Mills Ltd., Sirpur Kaghaznagar in keeping catchment area green and prosperous.**

The Sirpur Paper Mills Ltd. is one of the oldest industries in Andhra Pradesh that was started by the erstwhile Hyderabad Govt. & went into production in 1942. The total existing licenced and installed capacity of the Mills is 71,100 tonnes per annum of

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**The Sirpur Paper Mills Ltd.  
SIRPUR-KAGHAZNAGAR-504 296 (A.P.)**

paper and paperboards. The main conventional raw material used in the mills from the beginning was bamboo. As bamboo resources have been depleting year after year due to gregarious flowering, poor regeneration and illicit felling, the mills worked hard and changed the technology thus started using bamboo and mixed woods, in the ratio of 50:50.

Paper Mills in India are frequently referred to as "Environmental enemy" as they cause pollution and severe the denudation of forest cover to meet their forest based raw material requirements. This blame is partly faded away in the recent times and scenerio has changed mainly because of the earnest efforts of pulp and paper mills towards greening our country by contributing in a big way through massive afforestation and re-forestation programmes. In this connection the Sirpur Paper Mills has taken up following vital programmes Viz..

### SOCIAL FORESTRY PROGRAMMES

To supplement the Social Forestry plantation activities of A.P. the Sirpur Paper Mills launched its social forestry programmes since many years and intensified since 1984 (Table-1) The different social forestry programmes as per the recommendation of National Commission of Agriculture are being implemented by the SPM Ltd., Viz..

**Table-1.**

#### Yearwise seedling distribution under social Forestry Project

Year (s)	No. of seedling	Area Covered (acres)
1979	1,50,000	37
1980	3,00,000	87
1981	3,86,000	306
1982	2,40,000	111
1983	2,50,000	101
1984	8,00,000	284.5
1985	3,30,000	208
1986	6,12,000	394.5
1987	3,51,000	303
1988	9,000	8
1989	11,00,000	1026
1990	15,00,000	1500
1991	18,49,500	1781
1992	11,30,000	1130
1993	3,20,000	320
1994	1,62,500	162.5
1995	9,12,500	312.5
1996	2,50,000	312.5
	<b>1,00,52,500</b>	<b>8384.5</b>

### Farm Forestry Project

In this project over 30 lakhs of Bag-Plants have been supplied free of cost to the farmers of over 20 villages of *Eucalyptus*, *tereticornis*, *Dendrocalamus strictus*, *Acacia auriculiformis*, *Ailanthus excelsa*, *Delonix regia*, *Pithacalobium saman*, *Pongamia pinnata*, *Ceiba pentandra*, *Gmelina arborea* and *Casuarina equisetifolia* etc., Fruit bearing trees like Mango, Guava, Pomegranite, lime, coconut etc. have been distributed to cover over 11 villages.

### Block Planting Project

An area of over 4000 ha of reserve forest of Easgaon forest Block adjoining the paper mills was clear felled and refugees of Bangladesh were rehabilitated about three decades ago by the Govt. Most of the land was not capable of supporting commercial agriculture. The soils are red sandy loams which are found suitable for tree cultivation. To demonstrate the profitability of tree cultivation on such lands the mills embarked on this project, which was grand success. We can recall the Poverb "seeing is believing". On seeing the unbelievable performance all most all the settlers are comming forward to raise the forest crops in their holdings.

### Bund Planting

The farmers in the mills catchment area are encouraged to plant a minimum of 100 trees each on the peripheri of their fields so as to make them self-sufficient and self-reliant in the matter of bonafide needs of fuel and timber requirements. As a result of which we can see today the wind-breaks/shelter-belts in most of the farm lands in the mills catchment area. This positive sign in greening earth could be attributed to the dedication of the forest department of the mills.

### Urban Forestry - Plantation

India is extremely rich in beautiful trees, shrubs, herbs and climbers etc. The variety and the colours are just amazing. Trees like Banyan (*Ficus bengalensis*) are known as noise abaters (Shah, 1988). The paper town (Sirpur Kaghaznagar) touches over 45 deg. C in summer. To improve and supplement the oxygen pool inturn to minimize the warmth,

the mills embarked on this programme of planting of shade & fruit bearing trees in and around the town.

### Environmental Forestry

The mills conducted experiments on use of mills effluent water to raise suitable agricultural and tree crops. As a result of which Paddy, Green gram, Red gram, Cabbage, Cauliflower, Subabul and Eucalyptus is being grown by the farmers by using the Mills effluent.

An area of over 35 ha near Korsini village (adjoining the paper town) has been planted with different species Viz., **Eucalyptus tereticornis**, **Leucaena leucocephala**, **Dendrocalamus strictus**, **Acacia auriculiformis** and **Glyricidia maculata** to improve the environmental condition of the area, in turn, it serves as a recreation spot to the industrial town.

### Afforestation programme

Since 1980, afforestation works have been taken up by the mills, on Kotagiri hills adjoining the paper town. The different species like **Glyricidia maculata**, **Pongamia glabra**, **Cassia siamea**, **Azadirachta indica**, **Melia azadirach**, **Leucaena leucocephala** etc have been tried by adopting staggered contour trench technique and got fair success.

Most of the projects comes under the banner of SOCIAL FORESTRY are met with partial success due to lack of active involvement of rural people and lack of financial support. Hence the Sirpur Paper Mills Ltd., (SPM) having realized the need to support the tree - farming community in growing pulpwood trees in their marginal lands has taken up an ambitious scheme of "SPM-NABARD Eucalyptus Project" since 1992. In this project the SPM thought to fit and make use of farmer's land which are presently fallow, and unfit for cultivation of agricultural crops economically). The chief objectives of the project are

- a) To raise and maximise areas under pulpwood.
- b) To encourage tree-farming on waste lands to the best advantage of small and managerial farmers.

- c) To assist in over-all economic development of the Mills catchment area.
- d) To generate a healthy feeling towards trees by the Public.
- e) To relieve the pressure in the natural forests.

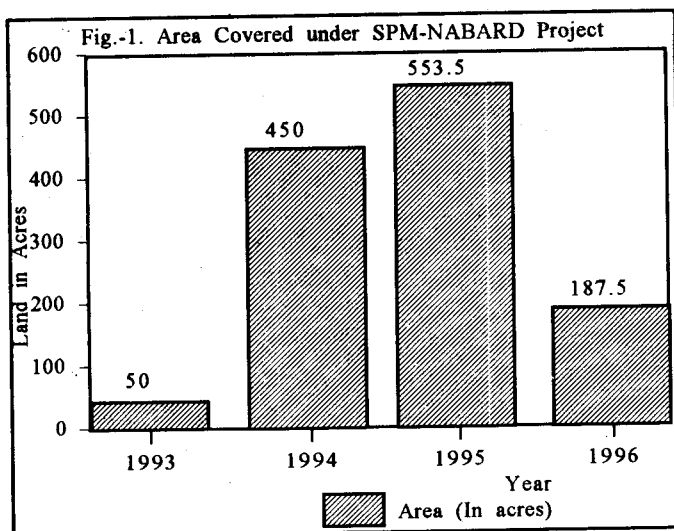
In the Mills catchment area the edaphic and climatic conditions are conducive for the growth of Eucalyptus. Hence, this species is recommended in the project with about 25% mixture of other pulpable species. Eucalypts are recognised as fast grown trees which have tremendous potential as industrial raw material. In general the Eucalyptus have the following features which makes them to establish & grow in harsh climates & problematic sites. Such features are viz.,

1. Colonizing ability on bare ground/site.
2. Defensive growth mechanism, as it has LIGNOTUBER which is a subterranean protective organ having potentiality to produce new-leafy shoots if the aerial part of the plant is destroyed.
3. Aggressive mechanism for rapid growth as it has indefinite shoot at the growing tip and naked bud in the axils of each leaf.
4. Accessory buds helps in replacing defected/affected shoots/buds.
5. Epicormic buds are capable of producing new leafy shoots the aerial part of the plant is destroyed.

Plantation cell of SPM has achieved a great success in raising large scale plantations of Eucalyptus in Adilabad district of A.P. Till now the mills has covered 1241 acres under this scheme with over 349 beneficiaries (Fig.-1, Table-2). Sree

**Table-2**

<b>Area covered under SPM-NABARD Project.</b>		
<b>Year(s)</b>	<b>No. of Beneficiaries</b>	<b>Area (in Acres)</b>
1993	17	50
1994	126	450
1995	160	553.5
1996	46	187.5



Saraswati Grameena Bank actively involved and motivated the rural poor in this scheme. This scheme is increasingly getting popular. It is certain that a time has come where Farm - Forestry projects are to be given the top priority and attention, by looking to the grand success and potentiality of the project. It is worth to mention that the SPM might be the one amongst few Pulp and Paper industries in India which is operating the NABARD refinance scheme with considerable quantum of success.

It is hoped that with the necessary co-operation of the Govt. active involvement of commercial banks and participation of farmers, greater and greater extents will be afforested with short rotation, Pulpable species to make a successful phenomenon of MUTUALISM between farmers and industries.

### R & D ACTIVITIES

The Sirpur Paper Mills (SPM) is concerned about the sustained supply of fibrous raw materials, Up till now the main source of bamboo is controlled by the Govt. of A.P. Availability of bamboo in the nearest bamboo circles is not enough (due to gregarious flowering, poor regeneration and ill - it felling) to keep up with the commitment of required amount of bamboo to SPM. Realising the urgency of alternate fibrous raw materials (other than Bamboo), SPM deeply involved in R & D activities. In this connection Govt. of A.P. allotted 107 acres forest block in Vempalli to SPM. The mills initiated its research activities since 1975 on species cum

provenance trials of pulpable tree species. *Acacia auriculiformis*, *Albizia lebbeck*, *Dendrocalamus strictus*, *Glyricidia maculata*, *Gmelina arborea*, *Leucaena leucocephala*, *Melia azadirach*, *Pithacalobium saman* and *Pongamia pinnata* are being recommended for this area.

### Clonal Forestry

To increase productivity of plantations the Mills standardized a relatively cheaper technology of **Macropagation of Eucalyptus via Hydropit**. This method is suitable in highly compact soils/grounds, otherwise cemented bottom is essential to avoid excess seepage loss of water. The usual size of the pit is 12M (length), 1M (width) and 20 cm (depth), however it can be modified according to our requirement. The side walls are compacted with brick-packing. The bottom of the pit is covered with pebble (4-6 cm) and sand (2-3 cm). The polythene bags (18x9 cm, 150 guage) are filled with red soil and sand in the ratio of 2:1. These bags are arranged in the pit and drenched properly. The water level in the pit is constantly maintained 1-2 cm above drain hole of the container. The double noded cappice cuttings from the superior (pulp) trees are treated with fungicide (Bavistine) for about 10 min. to avoid fungal infection. The treated cuttings are planted in polybags after giving a quick dip in IBA powder of 4000 ppm. After completing the planting operation, the pit is covered by semitransparent polysheet over arched bamboo ribs and the sides are secured by putting weight. Thus the pit would be of controlled micro environment as we seal the hydropit totally from the outside environment/atmosphere. The water within the pit modifies into moisture through formation of fog on the interior surface of the polysheet. The water droplets start falling on the cuttings as and when the drops become heavier. Thus the relative humidity within the pit would be 70-80%. The embeded ends of the cuttings initiates callus formation within 10 days and root formation starts within 20 days, which could be observed through development of the bud. When the shoot length attains about 3-5 cm, the polybag plants are brought to shade house of Hessian cloth and nursed for 10 - 15 days for acclimatization. Thus the field planting size (30-45 cm) is achieved from 60 - 75 days growth.

Mills contribution in this line as a part of Tree improvement programmes (TIP) is anticipated to go a long way in clothing of waste lands.

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