

Economics of Bamboo and Eucalyptus Plantations

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The paper industry will have to face the challenge of raw-material shortages in the coming decades. The present production of about 8,00,000 tonnes will have to be nearly doubled by 1980 as per the estimates of the Planners at a growth rate of 7%.

The challenge comes from the long/medium fibre raw-material. With the Himalayan pines beyond economic reach, Bamboo is the sole raw-material but its resources are limited. Either we produce our own raw-material or import the pulp at enormous price. We have decided to choose the former course, which means Forest as well as Paper technology have to find the solution hand-in-hand.

At present huge quantity of mixed hardwood with short fibre are standing in the forest untapped, or consumed as fuel if tapped. The paper industry has no doubt started mixing this short-fibre-wood-pulp with Bamboo to make up the deficit. The mixed-hardwood is posing problems, as it is heterogeneous. Even so, the Paper-technologist will have to find a way of digesting all the mixed-hardwood, if he has to serve the people and if the industry is to survive.

The Forest-technologist is doing his best to augment the pulp-resources, by growing plantations of Bamboo (medium-fibre) and Eucalyptus

(short-fibre), within the limited land-resources.

The State of Andhra Pradesh has 2 paper mills of a total capacity of about 300 tonnes. With the existing raw-material resources just sufficient for this rate of production, in order to double it, our plantation effort has to be on a gigantic scale. Provided the Paper-technologist and industry co-operate with the Forest-technologist agreeing to use short fibre-pulp upto 40%, and pay the latter reasonable royalties, as indicated by the National Commission on Agriculture, our plantation effort should be as much as 48,000 hectares of Bamboo, and 70,000 hectares of Eucalyptus by 1980 making due allowance for existing resources. (It is assumed Bamboo yield—10 tonnes per hectare on a 3-year cycle and Eucalyptus—35 tonnes per hectare without bark on 10-year rotation and both air-dry).

The cost of production works out as detailed below:

Bamboo: Total cost upto 4th year is Rs. 1,000/- per hectare. Rs. 600/- in the 1st year, Rs. 200/- in the 2nd year, Rs. 100/- each in the 3rd and 4th years. Harvesting may be commenced in the 9th year and end in the 30th year. The yield of 10 tonnes per hectare at every harvest is estimated to be 20 tonnes per hectare at the last harvest. There will be 8 harvests. The cost is compounded @ 6%/9% to the year of harvest and proportionate cost debited to the harvested crop. For example, the cost is compounded to the 9th year, and 1/8 of it will be debited to the first crop. The balance 7/8 is compounded to the 12th year. i.e. year of 2nd harvest, and 1/7 of it will be debited to the 2nd crop and so on. At the above rate the cost of the bamboo at every harvest will be:

	@ 6%	@ 9%
1st crop:	Rs. 21.00	Rs. 26.00 per tonne standing.
2nd crop:	Rs. 25.00	Rs. 33.00 per tonne standing.
3rd crop:	Rs. 29.00	Rs. 41.00 per tonne standing.
4th crop:	Rs. 35.00	Rs. 53.00 per tonne standing.
5th crop:	Rs. 42.00	Rs. 69.00 per tonne standing.
6th crop:	Rs. 47.00	Rs. 89.00 per tonne standing.
7th crop:	Rs. 56.00	Rs. 115.00 per tonne standing.
8th crop:	Rs. 33.00	Rs. 175.00 per tonne standing.

The project will give an IRR=11% @ Rs. 60/- per tonne standing.

Eucalyptus: Total cost is Rs. 1,500/- per hectare, Rs. 900/- in the 1st year, Rs. 450/- in the 2nd year, and Rs. 150/- in the 3rd year. Harvesting will be done at the 10th, 20th and 30th year. The 2nd and 3rd harvests will

be of coppice crop, and a 20% increase is expected over the 1st crop. The air-dry under-bark yield is estimated at 35 tonnes, 42 tonnes and 42 tonnes per hectare respectively. The cost is compounded @ 6%/9%

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and apportioned to each crop on the same lines as for Bamboo and it will be:

	@ 6%	@ 9%
1st crop:	Rs. 25.00	Rs. 32.00 per tonne standing.
2nd crop:	Rs. 38.00	Rs. 64.00 per tonne standing.
3rd crop:	Rs. 68.00	Rs. 153.00 per tonne standing.

The project will give an IRR=10% at Rs. 60/- per tonne air-dry underbark.

There is no dearth of area for raising plantations on the required scale. Both the sectors concerned should act together in the larger interest of the country.