HBR

Are timber latex clones suitable to India ?

The growing of rubber trees mainly for timber in the Indian context is not advisable

Tharian George & Tom Joseph

Timber latex tree

There are built-in constraints for popularising planting materials with relatively higher timber potential and lower natural rubber yield in the Indian context. Hence the efforts to plant rubber trees with higher yield potential may have to be confined to marginal lands for the present. Even such an attempt has to be based on a comparative evaluation of timber yield of Hevea with other competing alternative timber species. Nevertheless, the steady increase in rubberwood price since 1980s pose a major R&D challenge in the future to explore the possibilities of developing planting materials meant for the joint production of NR and timber.

The three important factors responsible for the growing commercial importance of rubberwood in the world market since 1980's are: (1) its basic nature as a renewable by-product, (2) development of an appropriate processing technology and (3) comparative instability of the natural rubber prices in the post-war period. Among the alternative sources of eco-friendly timber identified in the context of substantial depletion in the traditional sources of supply and growing concern on environmental conservation, the rubberwood possesses a unique advantage as a renewable by product of rubber plantations.

The development of standardised processing technology ensured the improvement of inherent properties of rubberwood amenable to various industrial applications. Although rubberwood is only one of the by-products of the rubber plantations, its graduation from an anaemic and fragmented ancillary source of income to a matured sub-sector in the world NR economy during the last two decades is an important development. This development has serious implications on the vulnerability and uncertainty affecting the NR production sector, though in varying degrees, across the major producing countries.

Among the major NR producing countries, the extent of commercial exploitation of rubberwood varies with the resultant differences in the status

Table 1
Comparison of relative profitability under different options - 25 year life cycle

Options	BCR	IRR	NPV (Rs.)	Annuity (Rs.)
1. 25 yr. life cycle	2.24	26.41	107944	14726
2. 20% decline in NR yield with:				
(a) 20% increase in timber yield	1.82	22.90	71434	9745
(b) 40% increase in timber yield	1.83	22.93	72687	9916
(c) 60% increase in timber yield	1.85	23.00	73940	10087
(d) 100% increase in timber yield	1.88	23.10	76448	10429

The authors are working in The Rubber Research Institute of India, Kottayam.

of rubberwood processing industry. Malaysia and Thailand are having a comparatively advanced rubberwood processing industry in terms of the volume of consumption, level of technology employed, variety of products manufactured, pattern of exports and the volume of export earnings.

Emerging trend

The emerging trend is characterized by an approach favouring maximum value-addition. It is reported that R&D efforts are already initiated not only to develop planting materials meant for the joint production of NR and timber but also experimental trials are undertaken in selected cases with the only objective of an early timber comparative benefits of NR and timber harvest without the option of tapping. In this backdrop, an attempt to evaluate the comparative benefits of NR and timber production under varying conditions is found to be essential in the Indian context from the planter's point of view as India's NR production sector is a unique case due to various factors.

The main objectives of this study are to analyse the comparative profitability of:(1) different combinations of yield in NR and timber, (2) different life cycles of rubber plantations and (3) harvesting timber without the option of tapping.

The tool employed for the comparative analysis of profitability is the conventional cost-benefit analysis. The analysis is based on the information on the 'development cost' (immature phase), 'maintenance cost' (mature phase) and the average unit prices of NR and rubberwood logs during the year 1995. The cost estimates are circumscribed by the non-availability of cost components such as rent, interest and depreciation. However, this limitation will not affect the validity of the comparative analysis as the cost estimates are uniform for all the situations under consideration. Therefore, the indicators of the relative performance do not reflect the absolute level of profitability of the rubber plantations in India. The comparative analysis is based on a normal situation which is worked out on the basis of the following assumptions:

(1) Life of plantation is 25 years.

(2) Average yield of NR is 1500 kg/ha. and the price of NR is Rs.50/kg.,

(3) The average timber yield is 150 cu.m/ha.,

(4) The farm gate price of the logs is 55 per cent of the terminal market price, i.e.; Rs. 887/cu.m or Rs. 484/tree

(5) The discount rate is 13 per cent.

The results obtained under the normal situation are compared initially with an alternative planting material having a lower yield in NR and with a higher timber yield. As evident from tables, a shift from the normal situation to an alternative planting material with a higher timber potential is not worthwhile in the Indian context . In fact, a 20 per cent decrease or loss in NR yield is not compensated even by a 100 per cent increase in timber potential. The required increase in timber potential is more than seven times to offset a 20 per cent loss in NR yield which may not be technically feasible under normal circumstances.

As the rubber plantations with modern high yielding varieties of planting materials managed by the small growers are generally found to have a comparatively shorter life, the analysis is extended to a 20 year life cycle also. The yield profile of NR and timber is assumed to be the same as the 25 year life cycle. The results are given in Table 2.

The results shown in the table indicate that as in the first case (25 year life cycle) the option of choosing planting material with relatively higher timber yield will lead to erosion of

Table-3
Selected options under a shift from 25 year to 20 year life cycle

	Options	BCR	IRR	NPV(Rs)	Annuity (Rs)
1.	25 yr. life cycle	2.24	26.41	107944	14726
2.	20 yr. life cycle	2.14	26.11	93389	13294
3.	25 yr. with 10% lower NR yield	2.02	24.70	89061	12150
4.	20 yr. with 10% higher timber yield	2.16	26.17	94717	13483
5.	20 yr. with 60% higher timber yield	2.24	26.46	101368	14430

Table -2
Comparison of relative profitability under different options — 20 year life cycle

Options	BCR	IRR	NPV (Rs)	Annuity (Rs)
1. 20yr. life cycle	2.14	26.11	93389	13294
2. 20% decline in NR yield with:				
(a) 20% increase in timber yield	1.78	22.78	63707	9069
(b) 40% increase in timber yield	1.81	22.93	66367	9448
(c) 60% increase in timber yield	1.85	23.11	69026	9826
(d) 100% increase in timber yield	1.91	23.41	74350	10584

profitability. At this juncture, it is also plausible to analyse the relative profitability of shifting from a normal 25 year life cycle to a 20 year life cycle under different yield levels of NR and timber.

Table 3 clearly shows that under the normal situation, it is not advisable to shift to a 20 year life cycle and the shift is justified only if the NR yield of planting material exploited in the 25 year life cycle is 10 per cent less than normal situation. Under the same NR yield profile, a shift to a 20 year life cycle will give comparable returns only if yield in timber is 60 per cent higher than the normal situation (25 year life cycle).

Finally, the possibility of growing rubber trees mainly for timber with lesser/no tapping options in considered in Table 4. It is assumed that rubber trees not tapped under the 15 year life cycle yield the same volume of timber as that of the trees tapped in the 25 year life cycle.

Table 4
Selected options — under 15 year life cycle

	Options	BCR	IRR	NPV(Rs.)	Annuity(Rs)
1.	25 yr. life cycle	2.24	26.41	107944	14726
2.	15 yr. no tapping (stand - 445/ha)	0.58	7.54	-19302	-2986
3.	Option - 2 with 30% lower cost	0.83	11.14	-5446	-843
4.	15 yr. - no tapping (stand- 600/ha)	0.89	11.86	-4713	-729
5.	Option - 4 with 30% lower cost	1.25	15.22	7730	1196
6.	15 yr. - tapping during last three yrs.	1.35	16.63	18784	2907
7.	Option - 6 with 30% lower cost	1.78	20.38	32082	4964

Table 4 underlines the fact that based on the given assumptions, the possibility of growing rubber trees mainly for timber in the Indian context is not advisable. The relative level of profitability do not improve significantly even with a higher stand per hectare or reduction in the total cost to the extent of 30 per cent. □