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Low intensity harvesting of natural rubber: A financial perspective

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Abstract

Cultivation of rubber is a long term investment with about 30 years of rotational age. Harvesting is considered to be the most important operation in rubber plantations since it determines not only the productivity but also economic life of the tree. It requires high level of skill and also contributes to *ca.* 45% of the cost of production (COP) in Sri Lanka.

Economical lifespan of the tree ends when the consumable bark of the tree is over by tapping. Therefore, any increase in bark consumption rate shortens the economical lifespan. There are records on 16 year lifespan in some estates. Previous studies revealed that in plantations, *ca.* 38% of the total harvesters are unskilled and in some estates, it has been as high as 89%. On average this results in a yield loss of *ca.* 118 kg per hectare per year. This situation aggravated with poor daily outturn of harvesters and increased COP. The nature of this profession does not attract young people for latex harvesting. With that only about 17% of the harvesters have been below 30 years of age. Low intensity harvesting systems facilitate to reduce the COP through the reduction of the cost of tapping and also reduce the harvester requirement in rubber plantations. In addition, LIH systems with shorter tapping cuts may eliminate the skill factor of harvesters to some extent. Hence, LIH system would be a practical solution to the problems associated with skilled worker shortage in latex harvesting. Moreover, considerable financial benefits are expected with reducing of bark consumption and associated increase in economic lifespan of trees. For base panel harvesting, two extended LIH systems (i.e. harvesting a half spiral of the tree in once four days and harvesting a quarter spiral of the tree once in three days) are available. Those were reviewed in this study on monetary terms.

In the application of S/2 d4 and S/4 d3, the overall production cost (COP) has been reduced by Rs. 17.40 and Rs. 16.24, respectively from the value of the traditional S/2 d2 system. Increased daily wage of harvesters were observed in LIH systems with that the highest income, Rs. 833.99 was recorded in S/2 d4 system showing 36.30% increase over S/2 d2 system. Harvester's income under S/4 d3 system was Rs. 719.00 per day and Rs. 107.13 higher than that of S/2 d2 system. With the lowest COP observed, highest net income (*i.e.* Rs. 367,022.37) per hectare per year was recorded in S/2 d4 and it was shown to be 12.49% increase over the net income of S/2 d2 system. Net annual income observed per hectare in S/4 d3 system was Rs. 355,861.95 with 9.07% increase over the traditional S/2 d2 system.

With the observed bark consumption in three harvesting systems (*i.e.* S/2 d2, S/2 d4 and S/4 d3) tested base panels of rubber trees could be harvested for 24, 40 and 54 years; hence the trees could be kept for 30, 46 and 60 years, respectively with initial six year immature phase. Extension of tree lifespan results in improved mature:immature ratio providing higher level of revenue area in an estate.

Key words: harvester shortage, low intensity harvesting, natural resources, rubber