TOWARDS AN ECONOMICALLY VIABLE PLANTATION

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The Rubber plant is grown primarily because of its latex, *ie* the economically important component of the plant. Harvesting of latex from the plant is done by tapping. Tapping technique adopted should be capable of giving biologically possible highest yields for the longest possible period from a plant. We should not attempt to get yields that are biologically not possible. We have found ½S d/2, 100% tapping intensity to be the highest possible intensity in which rubber trees could be exploited. If economic yields can not be obtained from this system it is due to a problem with the poor yield potential of the trees and not due to the tapping system or intensity. If we exceed the biologically possible intensity of tapping the rubber plant will become stressed and we may not able to exploit it with economic yields for a longer period. As a result we will not be getting the maximum possible yield from a plant and hence from the investment we have made. Our tapping recommendations are designed to achieve the maximum possible yield from a plant and from the investment we have made. This will ensure sustainable high production levels in our Estates and this is a must for the economic running of our Estates.

Most Rubber Estates in Sri Lanka records low productivity and have become uneconomical units. To rectify this situation it is important to analyse the present status in our Estates to find out reasons for poor productivity and profitability.

Productivity in our plantations

As far as productivity is concerned, what we record now in our Plantations is very much less than the potential productivity per unit land area of rubber. Further, it is also less than in majority of the other rubber growing countries. It may be that in other countries they are growing rubber on virgin soils where as it is the 3rd or 4th generation in Sri Lanka. However, this can not be the only reason and we can not afford to have such low production levels in our plantations for economic reasons.

As a result of low productivity and increasing management and labour costs, the cost of production (COP) is increasing. But as we all are well aware the net sale averages (NSA) does not rise at the rate the cost of production is rising.

Therefore, majority of our Estates have become uneconomical units. When an Estate is running at a loss it is imperative that the agromanagement will be neglected and as a result essential inputs will be curtailed. Further, rate of exploitation of rubber plants will be intensified in an attempt to achieve economic yields.

These will lead to unhealthy and poor yielding plants resulting in a further loss in productivity per unit land area. This situation will lead to a vicious cycle.

This was the situation when the Estates managed by the JEDB and SPC were given to the Private Management Companies. Since the privatizing of management the rubber prices have improved but yet most Estates are still uneconomical units. The total production levels in our Estates are yet too low to bring down the COP and to generate an income to cover the management and input costs. This situation has to be changed to protect the rubber industry in Sri Lanka. It is an industry which generates foreign exchange, employment whilst protecting our environment.

Strategies to overcome the uneconomic situation

The factors that contribute to uneconomic running of estates are mainly high labour wages, poor NSA and low productivity.

Estate managers do not have control over the labour wages. Anyway, the labour wages should increase with the increasing cost of living. The problem we are faced with is we can not increase the rubber prices to accommodate the increasing cost of production. Therefore, the estate managers needs to utilize the labour efficiently, *ie* improving labour productivity, to compensate for wage increases.

NSA is also a complicated issue where Estate Managers do not have much control. Nevertheless, attempts should be made to manufacture grades to meet the need of identified end users and those which could be sold at a premium price.

The Estate Managers must and should be able to increase productivity to economic levels. Each Estate Manager should ask him-self the question why is the productivity is low in the Estate than the potential. Once the reasons are identified, steps should be taken to rectify them.

From the surveys we have carried out we find that the productivity and total yields in our Estates are low mainly due to;

a). Planting of low yielding clones. Around 70% of our mature rubber extents are of clone PB 86.
b). Low revenue extents in our Plantations.
c). Low productivity per unit land area even in the depleted revenue extents.
d). Interference of rain on tapping.

a. Clones

Planting of high yielding clones provides the most attractive and inexpensive way of increasing productivity. We should have a mixture of all high yielding clones in our Estates.

b. Low Revenue Extents

For an Estate to continue as an economically viable unit sustainable high production levels should be achieved. The total production in any Estate will be highest if the entire extent is under mature rubber. We can not have this situation because of tapping out the bark and ageing of trees. Therefore, the RRI recommends a 30 year planting cycle. With the biologically possible maximum tapping intensity and our bark consumption rates a replanting cycle of more than 30 years is not possible. A 30 year replanting cycle will ensure a sufficient mature extent is an Estate inorder to achieve high production levels.

If a 30 years replanting cycle is adopted an Estate will have ca. 20% immature and 80% mature rubber. The 80% mature rubber will consist of ca. 6% uneconomical and 74% economical rubber. This 80% of mature rubber is important to sustain high production levels. Nevertheless, the reality is that in our Estates we have ca. 40% immature and 60% mature rubber. From the 60% of mature rubber it is difficult to achieve economic production levels in the Estate.

This situation of low revenue extent can be attributed to high bark consumption rate and as a result, shorter tapping and replanting cycles.

c. Low yield per unit land area

Even in the depleted revenue extent the productivity per unit land area is poor. It is in the range 800–900 kg/ha/year where as the potential is ca. 2000–2500 kg/ha/year.

Surveys carried out reveals that it is due to the following;

1. Poor stand of healthy and tappable trees

The healthy stand is ca. 250 trees per hectare, which is about half of the recommended number of plants. Due to this reason alone the yield per unit area drops by 50%. High percentage of dry trees also contributes to poor healthy stands.

11. Low yield potential of individual trees.

Due to a history of low inputs and use of poor quality planting material the yield potential of individual trees are low.

d. Interference of rain

According to the commonly used tapping system ½S d/2 a tree should be tapped for ca. 180 days per year. Nevertheless, due to rain interference only about 95 normal tappings, 30 late tappings are done in average on a tree. Therefore, the number of actual tappings per tree is about 125 per tree per year which is much less than the recommended 180. Anyway, about 24 tappings are recovered through recovery tapping per tree. Late tappings and recovery tappings will not give the full yield potential. Due to this and tapping days lost a significant percentage, *ie* 25–30% of the yield potential is lost. If rainguards are used the tapping days lost could be minimized, normal tapping days will increase and further, tapping will be systematic. Recovery tappings can be done away with and this will have long term benefits such as high dry rubber content values and less number of dry trees.

Reasons discussed above leads to low production levels in Estates. Nevertheless the Estate should harvest a crop to generate an income for the management of the Estate, necessary inputs and to obtain an income for the investment made.

How will the low production levels in an Estate will influence the cost of production and hence the profitability?

Cost of production

The total cost of production is determined by the General Charges, Tapping and Manufacturing Costs and the expenses on Mature Area Upkeep. Average values at present are given in Table below. Further, values estimated under different situations, *ie* different mature extents and stands are also given.

The cost per kilogram of rubber under various situations

	Mature extent(%)	60	80	80	80
Cost Item	Stand	Present	Present	Full	Full*
1. General charges		25	16	11	9
2. Tapping		16	16	16	16
3. Manufacture		8	6	5	5
4. Up-keep		5	5	5	5
Total		54	43	37	35

Full* – Together with Rainguards and Stimulation

General charges have become an important component in the COP. This is due to low production levels and increasing cost of managing an Estate. Attempts should be made to increase the total crop and lower the management costs, inorder to bring down the General charges component of the COP.

It is apparent from the above table that if correct immature to mature ratio is achieved and the stand is maintained the COP will reduce significantly increasing profitability.

Correcting the immature to mature ratio

Steps should be taken to achieve the correct immature to mature ratio in our Plantations. This can be rectified only gradually, by scaling down the replanting programme and reducing the immature period. Adjustments in the replanting programme, management of immature, normal tapped and intensified areas will have to be done to achieve this.

A. Replanting programme

In estates having large extents of immature rubber, it may be advantageous to stop replanting for a year or two. During this period, we should concentrate on the existing immature clearings, to make sure that they will give rise to areas with a complete stand of healthy plants. Further, it is important that the above, *ie* to stop replanting for a year or two, is adopted not in isolation but together with the other recommendations made in order to correct the unhealthy immature to mature ratio.

Clearings upto 2 years old can be corrected by replacing weak plants and infilling casualties. Polybag plants and stumped buddings can be used for 1 year and 2 year old clearings respectively.

A complete stand and recommended agronomic practices will also help to reduce the immature period.

B. Immature clearings

The agromanagement of these areas have to be improved so that the immature period is minimized.

C. Mature clearings

C. 1. Normal tapped

Tapping cycle has to be increased even beyond the normal 24 years if economic yields can be achieved. Use of guidelines and regularly sharpened knives to control the tapping angle and bark consumption rate and adhering to tapping recommendations will help in realizing this. Further, intensification can be delayed until yields become really uneconomical on panel BI–2(D) or BII–1(E).

C. 2. Intensified tapping

In intensified areas, the intensified period can be prolonged beyond the 6 years by control upward tapping.

The RRI recommends a gradual intensification system, *ie* 150 or 133% for 3 years, 200% for 2 years and 400% for 1 year. A suitable tapping frequency and length of cut could be used while doing control upward tapping to prolong the intensification period. This could be done easily during the period tapped on 133% or 150% intensity.

The above steps will help to scale down the replanting programme and to increase the percentage of mature extent in Estates/Plantations.

Nevertheless, correcting the immature to mature ratio and improving the stand of clearings are long term approaches to enhance productivity. What can we do immediately to increase profitability?

Immediate steps to increase profitability

First of all it is very important to realize that in our plantations, the revenue extent is very much low than the ideal.

Further, in this depleted mature extent the number of the healthy and tappable trees are only about 50% of the number we should actually have. Therefore, we can not afford to loose anymore trees. Hence we have to be cautious when exploiting these trees.

In the cost of production another significant component is the tapping cost. It amounts to 50–60% in some plantations. We have to bring this down by increasing the intake/tapper and the following steps could be taken to achieve this.

Increasing the intake/tapper

In the existing mature clearings the following could be considered to increase the intake/tapper and to reduce the tapping costs.

1. Fertilizer application, Soil conservation methods to be adopted as recommended to improve the nutritional status and thus the yield potential of individual trees.

2. Recommendations on tapping, recovery tapping to be strictly adopted, to control the incidence of dryness, bark consumption rate and to maintain the yield potential of trees.

3. Guidelines, regularly sharpened knives should be used to control rate of bark consumption and to maintain correct tapping angle.

4. Increasing of tapping task. Use of plastic cups and platforms may help in achieving this. Time taken for tapping is less in avenue planted, *ie* 27' x 8', 30' x 8' areas.

5. Only healthy and good yielding trees should be counted when assigning tapping tasks. The number of healthy trees in a task will have to be checked each year. If the average yield is 30g per tree per tapping (g/t/t), 300 trees in a task should give an intake of 9 kg/tapper.

6. Tapping should be supervised to ensure all trees in the task are tapped.

7. Give an incentive to encourage tappers to increase the intakes. If the tapper bringing 4 kilos and 8 kilos are being paid the same wage there will be no motivation to increase the intake. Further, if an incentive is given, the tappers may welcome an increase in the task size.

8. Rainguards can be used to minimize crop loss due to rain interference. The return for the investment on rainguards will be more in high yielding clearings in areas with rain interference.

Sustainable high production levels

In the long-term to obtain sustainable high production levels from an Estate, inorder to achieve profitability,

* High yielding clones should be included in the replanting programme.

* The recommended stand should be maintained in every clearing and the plants should be healthy and high yielding.

* Tapping should be done to achieve the 24 year tapping cycle and to minimize the incidence of Brown Bast. This will also ensure the correct mature to immature ratio in our plantations.

Though the recommendations are well known the adoption rate is rather poor. For each and every Estate there should be a specific programme of work to overcome from the poor production and uneconomic situation. The objective of this programme of work should be to achieve an economically viable system within the shortest possible period. The strategies that should be adopted may differ from plantation to plantation depending on there present situation. The Management Company and the Plantation Mangers together will have to work out this programme of work. When working according to a specific plan to achieve specific objectives the adoption pattern of our technology will also improve.