

Modern Trends in Tapping - Certain General Guidelines*

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The present method of tapping was evolved through series of trials and the concept behind the present system was developed by Ridley. The system takes into account the anatomy of laticiferous system, convenience of tapping, etc.

In an untapped tree, there is no latex flow. The dry rubber content in the laticiferous system may reach a level of around 60% and through feed back inhibition, further biosynthesis of rubber stops. Thus in an untapped tree, there is no regeneration of latex or latex flow.

When a tree is tapped, the latex is expelled out due to the turgor pressure. The flow stops after a while by an in-built coagulation system. The latex and rubber lost are regenerated during the interval between two tapplings.

A steady of d. r. c. is indicative of full replenishment of the lost latex under a particular tapping system. If there is gradual fall in d. r. c., it would indicate that the extraction of latex is more than what the tree is able to replenish between two tapplings. When the intensity of exploitation increases beyond this capacity of the tree, the tree normally reacts with the incidence of tapping panel dryness.

Tapping, is a skilled operation and the main point of skill is to exploit as much latex vessels as possible without injury to the cambium which lies very near to the latex vessel rows.

The movement of hand and its synchronization with the tappers mind contributes to the skill of a tapper. Attempts to replace this skill with a machine has resulted only in limited success. Conceptually, unless a machine is able to sense the cambium layer and in response withdraws the knife automatically, it will always have a limitation and will not completely replace the skill of an able tapper. While theoretically such instrumentation is possible, it would be prohibitively expensive. Most of the automation efforts are based on certain fixed measurements and it cannot take into account the tree to tree variation in the thickness of bark. While many of the models such as Motoray I and Motoray II, reduces the fatigue of the tapper and makes the operation easier for unskilled tappers, the excellence in skill exhibited by able tappers is not matched by any of these machines so far produced.

Our country has good availability of good tappers and with the existing socio-economic situations, mechanisation of tapping should receive only low priority.

Our priorities should be to optimise the exploitation systems for different clones commonly planted. The factors that are important in determining an exploitation system are:

- a) Plant factors
- b) Price of rubber
- c) Aspects related to labour management.

Plant factors

No clone evolved so far has the physiological capability to stand daily tapping. Daily tapping results in drastic retardation of growth and high incidence of tapping panel dryness (Brown bast). There are cases where the productivity is highest with daily tapping for the first five years compared to that from other systems. But the picture changes in the subsequent years and if one takes the cumulative productivity of 10 years, low frequency systems record a higher cumulative yield compared to daily tapping.

In most of the countries the widely adopted system of tapping is $\frac{1}{2}S/2$ d/2 with or without Sunday rest. Clones with comparatively lower yield potential, barring a few clones such as GI 1, PB 6/9, etc., perform well under $\frac{1}{2}S$ d/2 system. But with the introduction of high yielding clones and good management the incidence of tapping panel dryness some time reaches alarmingly high rates under d/2 systems. Many plantations have switched over to d/3 system. While the yield from d/3 will be around 80% compared to the yield from d/2 during the first year, this difference narrows down gradually over the subsequent years. The requirement of tappers is reduced by one third when trees are tapped d/3. The incidence of brown bast can be reduced

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From the economic angle rubber cultivation is highly remunerative. Apart from the main produce i. e. rubber, valuable byproducts such as timber, seedoil, oil cake and honey are obtained. About 40% of the honey produced in India is from rubber plantations. Chemically treated rubber wood stands competition to any hard wood in fabricating furniture and construction materials as it is found to be cheap.

The technology division of the RRII have developed certain rubber parts of strategic importance required by our defence laboratories which were earlier imported into our country. Rubber is catering to a wide range of applications. Over 35,000 different rubber products are manufactured with rubber. The industry manufactures items ranging from

tiny bushes to giant beltings and simple balloons to sophisticated aero tyres.

Among rubber goods manufacturing countries all over the world, India ranks sixteenth. It is estimated that the industry produces goods worth Rs. 3200 crores annually. Capital investment in the industry comes to around Rs. 1500 crores and it generates employment to more than 2.5 lakh persons. It is also the third largest contributor to the national exchequer of our country, after steel and textile industries.

The rubber industry as it is constituted today has in its fold more than 4000 manufacturing units both in the organised as well as small scale sector spread out in almost every state and union territory.

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considerably under d/3 system. In other words, the cumulative number of trees lost in a field will be much smaller under d/3 system. The economic advantage of this system would depend upon the base yield of the area, tappers wages, price of rubber etc. If one attempts a calculation, assuming 10% reduction in yield in d/3 system (for the cumulative yield of 20 years), the costing may prove to be advantageous for d/3 system from an overall perspective. But the d/2 system will have better economic advantage with a higher price of rubber : tappers wages ratio. The yield per tapper will always be higher under d/3 system. In addition, the number of productive years will always be longer under d/3 system. The tree adjusts itself to a particular tapping system and if tapping intensity is reduced from d/2 to d/3 after a few years, it would result in sudden fall in yield. However, if the tree is opened with d/3 system, the difference between the yield which would have been obtained had the system was d/2 and the yield

under d/3 will not be much pronounced and will narrow down with years of tapping.

Upward Tapping

After the exploitation of virgin and first renewed bark, controlled upward tapping is recommended. Under situations of low yield, upward and downward tapping can go simultaneously after exhausting virgin bark under different tapping systems and one such system could be periodic tapping. Here also, the base yield, task size for upward tapping, condition of bark, etc., are factors influencing a decision.

Puncture Tapping

The concept of puncture tapping was originated based on the assumption that this system will not compete with growth. Several experimental data, however, indicate that this concept was wrong and for a given yield the retardation or growth is almost comparable with that in a conventional system. Puncture tapping

cannot be a substitute for normal system of tapping because yield is always lower. However, the possibility of subjecting the trees to puncture tapping one year earlier to normal tapping can be considered.

Under a situation of scarcity of labour, low frequency tapping system such as d/4, d/7, etc., are attempted in different countries. These systems, however, require stimulation as an additional input for economic yield. If the intensity of stimulation does not reduce the d. r. c. below 30 it may not do any harm to the tree. The tapping and exploitation policy should always take into account several plant and management aspects together. Cost of production of rubber, total productivity, physiological health of the plant and aspects related to labour management are all important factors, which would form integral part of the exploitation policy. This would vary from situation to situation and it is here that the skill of management can play a major role.

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