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ENJOY 2000 PLUS YIELDS: ADHERE TO BASIC AGRONOMIC PRACTICES

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The national rubber yield despite of unprecedented levels of grower friendly trading in the past couple of years remained around 1000 kgs per hectare per year during the year 2005. Neighboring India records a national yield level of about 1500kg per hectare per year whilst the potential in Sri Lanka is 2000 plus. Visits undertaken for advisory and experimental purposes by the staff of the rubber Research Institute reveal that what is necessary to achieve potential rubber yields in our country is not rocket science but simply adhering in to the basic agronomic practices recommended by the national institute for Rubber Research.

In this paper the agronomic practices recommended by the Rubber Research Institute are briefly discussed. Since it is apparent that a major gap exists between the recommendations and adoption levels of them, strategies to over come this important aspect are also briefly discussed.

Land selection

Rubber should be planted only in land suitable for the purpose. The Rubber Research Institute can be consulted by the rubber growers for assistance in identifying suitable land for cultivation of rubber. Even in suitable land there could be pockets of varying size that are not suitable for growing rubber, *i.e.* water logged areas, areas with shallow soil. Though rubber should not be planted in such areas, it is apparent that some growers do it for the purpose of achieving a high stand per hectare. But it should be stressed that such investments will not yield the desired returns.

Land preparation

During replanting, the importance of removing the previous vegetation needs to be emphasized to the grower in order to ensure that the new cultivation is free from white root disease. Ignoring such recommendations would result in high costs in controlling this disease, poor stand per hectare, unproductive use of scarce labor and poor returns for the investment.

During land preparation, recommendations on soil and moisture conservation, planting distances should be strictly adhered to. Soil and moisture conservation enhances productivity through relatively more efficient use of available soil moisture and nutrients by the plants. Attempts to increase land productivity through planting a stand higher than 500/ha is wastage of valuable and scarce resources. It should be born in mind that an increase in stand/ha beyond 500 would lead to prolonging the

immature period through competition for light and lowering the grams per tree per tapping, *i.e.* g/t/t.

Since the threat from domestic and wild animals to the newly planted clearings is increasing, fencing should be done to completely eradicate this issue.

Clones

The Rubber Research Institute recommends more than 40 clones to the plantation sector. The recommendation stresses the importance of planting a larger number of clones rather than concentrating on a couple of clones. This is important since specific clones may become susceptible for deadly diseases that are not economical to control. Therefore in a situation where only a few clones are planted such diseases could make the rubber plantation vulnerable to diseases and hence uneconomical to the grower.

Planting material

The economical life span of a rubber tree is more than 30 years. Therefore the planting material used for establishing a rubber clearing should be of the highest quality since any error regarding this cannot be rectified until replanting is done. In addition to the other agronomic practices required the quality of planting material is mandatory to active the potential yield of a clone. Through managing your own nurseries and by adopting recommended nursery practices quality planting material could be raised. Vegetative characters of the plants, *i.e.* Colour of leaves (C), Height of plants (H), Stock scion angle (A), Diameter of the scion (D), Size of leaves (S) and number of leaves (No) can be used to identify and select quality plants for planting (CHADSNo).

Soil and moisture conservation

Current rubber plantations are about the 3rd or the 4th generation. At each replanting, the land gets exposed to high sunlight and rainfall. This scenario makes the soil vulnerable to degradation each time replanting is undertaken. Therefore soil moisture and nutrient levels can limit the growth of newly planted rubber. Hence recommended soil and moisture conservation methods should be adopted to prevent further degradation of soil and to enhance the efficiency of using available moisture and nutrients.

Field planting

Planting should be commenced early in the planting season for the plants to receive the highest levels of rainfall during the year of planting. This practice is necessary for successful field establishment of the plants and early growth vigour.

In the plants selected for planting the top leaf whorl should be hardened and tailing, *i.e.* cutting of tap root if grown into soil, should be undertaken in the nursery two weeks prior to field planting of them.

Transporting and then field planting of the quality plants should be done as per recommendations to avoid any disturbance to the plant. Any disturbance created either to the aerial part or the root system during these activities will seriously retard the growth of plants.

Immature upkeep

Animal damage in new rubber clearings is on the increase. Therefore the fences erected for this purpose should completely prevent the entry of animals. In undulating land gaps, animal entry is possible between the lowest strand of barb wire and the ground. These gaps should be blocked with stone terraces, sand bags or using live fence posts.

Until the plant reaches a height of 2.4m the all side shoots should be removed at the earliest. If the plant does not branch at this height, branching needs to be induced. Inducing of branches should be done only when the top leaf whorl is hardened and the apical bud is fully dormant.

Immature leaves become vulnerable to common leaf diseases such as *Oidium* and *Gleosporium*, depending on clone, location and time of the year. During the first and second years such diseases have to be controlled using recommended fungicides to prevent the loss of growth vigor and retardation of growth.

Each tree should have a platform with a minimum 1m radius and it should be reverse-slope, especially in sloppy land. This area should be weed free to ensure that the rubber plant gets all the fertilizer applied to it.

Correct fertilizer mixtures need to be used and correct quantities should be applied at correct time intervals. Soil should be sufficiently moist to apply fertilizer. During the first year fertilizer should be applied as a circle commencing 30cm from the tree base. From the second year fertilizer could be applied into four pockets and the distance has to be gradually increased up to about 90-120cm from the tree base. To prevent loss of fertilizer through either surface run off or volatilization, fertilizer should be buried sufficiently deep, *i.e.* 10-15cm.

During the immature period, the target should be to achieve a 10cm girth increment at a height of 120cms from the union in 100% of the stand. If there are any under performing plants, attempts can be made to improve their growth through split application of fertilizer, compost and foliar supplements.

Incidence of White Root Disease has to be detected with the first symptoms. This plus the neighboring trees, either four or two, depending on the terrain needs to be treated. Treatment has to be repeated every three months or so, until the plants are completely recovered. Treatment should not be done in very wet weather since the chemicals get diluted and become less effective.

Cockchafer grub attack on the young plants is increasing. This too has to be detected very early and treated using recommended insecticides.

Harvesting

At least 60% of the rubber trees should reach a girth of 50cms at a height of 120cms from the union for the commencement of tapping in a new clearing. At this growth stage of the clearing, the trees with a girth of 45cm or more could be marked for tapping. Tapping of a new clearing should not be commenced during South West monsoons when *Phytophthora* infections reach epidemic proportions.

Tapping system recommended to the clone should be adopted. Clones recommended for d/2 tapping may be tapped at a lower frequency, *i.e.*d/3, with the use of yield stimulants. Anyhow, in order to harvest the d/2 yields from tapping d/2 clones at d/3 frequency four rounds of stimulation has to be carried out each year. Also, each tree should be stimulated with the recommended stimulant using correct concentration, quantity and method. Clones recommended for d/3 tapping should not be stimulated unless they are being tapped at a lower frequency than that, *e.g.* d/4. Low frequency tapping has the advantages of low tapping costs, low cost of production, higher tapper income and longer tapping cycles.

Tapping has to be technically correct to harvest potential yields from rubber trees. In order to ensure technically correct tapping from tappers, the guide lines have to be drawn correctly on the trees and the tappers should be made aware of how technically correct tapping would benefit both the tappers and land owners. The tappers should be advised to direct the latex flow to the cup after tapping and ensure that spouts, cup hangers and cups are available and their placement is correct on the trees.

The recommended tapping intensity of a clone is never achieved due to unfavorable weather, social and agricultural obligations and health reasons. Therefore technologies such as rainguarding and recovery tapping need to be correctly adopted to minimize crop losses due to drop in actual tapping intensity.

Mature area upkeep

The ground conditions should be favorable for the tappers to perform their duties effectively and efficiently. The tree bases should be weed free with foot paths linking trees with in and between rows.

Soon after a clearing has reached maturity, the conventional recommendation for fertilizer can be adopted. In order to bring the under-girth trees into tapping without further delay, it may be good to continue the immature fertilizer program for them. Subsequent applications should be based on the soil and foliar analysis.

The ideal time for fertilizing mature rubber plants is one month after re-foliation when the tree is physiologically active and is in need of nutrients. Anyhow the soil needs to be sufficiently moist to add fertilizer. Further, the tree bases should be weed free, the pockets for fertilizer application 90-120cms from tree base and they should be at least 10-15cms deep. Once fertilizer is applied it should be well covered with soil to prevent any losses through volatilization and surface run-off. For areas susceptible to *Oidium* and *Gleosporium* 100g of N and K are recommended over and above the normal dosage.

Incidence of white root disease should be detected early. If the tree cannot be recovered, it should be uprooted up to the roots of pencil thickness size and burnt taking necessary precautions.

Enhancing adoption levels

Each company or grower should identify its agronomic policies. Such policies should be able to achieve its expected or estimated productivity levels. In other words such policies are the companies or the grower's strategies to realize financial objectives as well.

A basic necessity to achieve complete and correct adoption of the policies is to align all involved in the adoption process, towards its strategies. This has to be done using expertise in the relevant fields and managerial staff. Such programs will need to be both classroom type and practical. Further, they need to be repeated until all concerned are really thorough with the objectives and strategies of the company or the grower.

Continuous monitoring of the level of adoption using both external and internal monitors are mandatory to achieve high level of adoption of strategies. Internal monitoring by the relevant Managers and supervisory staff will improve adoption rates through technology transfer, focusing the staff and workers on the job and motivating them, identifying deviations early and rectifying them and identifying training needs. The reports submitted by the external monitors should be discussed with the relevant staff and workers and recommendations implemented.