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PRODUCTION OF PLANTING MATERIAL FOR RUBBER REPLANTING AND NEW PLANTING PROGRAMMES IN SRI LANKA

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INTRODUCTION

The total hectarage under rubber in Sri Lanka is decreasing and the latest available statistics reports it as 114,679 ha. Further, rubber cultivation in traditional rubber growing areas is continuously being threatened by housing schemes and other development programmes. Whenever, the prices are low crop diversification too takes place. New planting programmes in traditional rubber growing areas remain at a very low level due to non availability of land.

As a result, the production of rubber too has declined to below 100,000 MT creating a scarcity of rubber for even local consumers and compelling them to import rubber. Though importation of raw rubber affects the local rubber farmers, the authorities have no other alternative as there is a threat of foreign investors moving their factories to countries where enough rubber is available. Therefore, there is a need for increasing the rubber production in the country for the survival of the industry. This can be achieved in two ways. One is to expand the area under rubber cultivation while the other is to increase the productivity.

The farmers in drier areas have shown an interest on perennial crops such as rubber, as they are depressed with their traditional annual crops due to their vulnerability to adverse climatic conditions. If they shift to rubber cultivation, they can still grow their traditional annuals under rubber as inter-crops during the immature phase of rubber.

The planting material production for rubber cultivation requires nursery management and bud grafting both of which demands proper planning, timing and good knowledge on the quality and the behavior of budded plants. As far as the quantity of the budded plants produced is concerned, very often either a shortage or a surplus is experienced owing to the fact that rubber cultivation is generally driven by the price of the rubber. The main disadvantage with shortages is that farmers lose interest in the quality of the plants, allowing plant producers exploit the situation to their advantage by selling every single plant they produce.

Annual planting material requirement for replanting programme

For replanting programme of rubber in Sri Lanka, the planting material requirement is about 2 million (3% of the total land area (3440 ha.) × 550 plants).

New planting programmes and annual planting material requirement

In traditional areas - 500 ha.

The target in non-traditional areas - 2000 ha annually.

Accordingly, the total planting material requirement is 1.375 million (2500 x 550) plants.

The sources of planting material

When the government decided in 2003 to expand rubber cultivations to non-traditional areas like Moneragala, there were four state owned rubber nurseries namely Walikadamulla, Meerigama, Ratnapura and Egaloya. Another rubber nursery at Gurugoda had been abandoned for some years. A nursery was established at the Moneragala site whilst the abandoned nursery at Gurugoda too was reopened by the RRISL who managed the government nurseries from July 2003 to July 2004. If coordinated and managed properly, the government nurseries have the capacity to produce the entire planting material requirement of the country.

The private sector too had some nurseries scattered in traditional rubber growing areas but most of them were not functioning due to poor demand prevailed for rubber plants in late 1990s due to poor rubber prices.

The regional plantation companies too had nurseries to cater to their replanting programmes but did not have enough budwood nurseries.

Clone recommendation

The current clone recommendation by the RRISL for rubber cultivation is given in Annex 1.

The clone recommended by the RRISL for the new planting programme in Moneragala is given in Table 1.

Table 1. *Clone recommendation for Moneragala*

Clone	% Extent	
Group 1		
RRIC 100	15	90%
RRIC 102	15	
RRIC 121	15	
RRIC 130	15	
PB 28/59	15	
PB 217	15	
Group II		
PB 235	3	10%
PB 260	3	
RRISL 203	2	
RRISL 205	2	

Note: Grouping here has no connection with the three groups in the list of normal clone recommendation of RRISL given in Annex 1.

Current constraints in the new planting programme

In order to produce good quality budded plants, proper maintenance of budwood nurseries is important. A budwood plant can give the first crop after 1 to 1 ½ years and the full productivity is achieved after about 4 years. Due to poor prices prevailed for a long period, farmers were not interested in planting rubber and there was no demand for rubber plants. As a result, most budwood nurseries were abandoned, over-grown and over-aged and fully neglected. Though the rootstocks can be produced in required quantities, availability of budwood can therefore be a problem.

Budwood availability in Moneragala

According to the available data the availability of budwood in Moneragala is indicated in Table 2. Based on the requirement of budwood in Moneragala district, a nursery expansion programme was planned as shown in Table 3.

Table 2. *Budwood nurseries available at the moment*

Source	Year of establishment of the nursery	Number of points	Number of plants that can be budgrafted (30 buds from a branch)
Rubber Development Department (RDD)	2004/2005	6,000	360,000
Wellassa	2005	6,000	*80,000
Bibile	1995-2005	402	18,840
Private nurseries	2004 January	2,339	70,170
Total		*14,741*	*471,010*

* Only a few buds per plant could be harvested, without affecting the growth of them.

Table 3. *Prospective budwood nurseries at Moneragala for 2006 and 2007*

Source	Year of establishment of the nursery	Number of points
RDD	2005/2006	**3,000
Wellassa	2005	4,000
Private Nurseries	2005	3,235
RRISL	2005	10,000
Wellassa	2006	5,000
Wellassa	2007	5,000
Total		*30,235*

** RDD should expand their nursery at Moneragala gradually to produce up to 1 million plants per year.

Possible plant production according to the availability of the budwood from 2006 onwards

Possible plant production in non-traditional areas can be predicted as shown in Table 4, with the following assumptions.

1. The number of buds that can be harvested per plant, increases until the plants are about 4 years old (when the maximum crop can be harvested)
2. Buds per plant:
   - First year - 6 buds
   - Second year - 25 buds
   - Third year - 40 buds
   - Fourth year - 60 buds

Table 4. *Plant production forecast in non traditional areas*

Source	Number of plants that can be produced according to the availability of buds				
	2006	2007	2008	2009	2010
RDD	360,000	378,000	435,000	480,000	540,000
Wellassa	80,000	104,000	220.000	390.000	504,000
RRISL	60,000	310,000	460,000	660,000	660,000
Private	70,140	89,590	151,015	264,140	264,140
Other	18,840	48,840	50,000	50,000	50,000
Total	***588,980***	***930,430***	***1,306,015***	***1,844,140***	***2,018,140***

Remarks:

1. For a continuous supply of budwood, 10% of the total capacity of the nursery should be planted every year as the life span of a budwood nursery is 10 years.
2. In addition, arrangements can also be made to supply plants from traditional rubber growing areas, if necessary.
3. RRISL will supply **only the budwood** material for RDD, Regional Plantation Companies (RPC) or private nurseries at Moneragala.
4. The new/replanting area possible with the above quantity of planting material would be as follows.

Possible new planting hectarage according to the availability of plants

If suitable land is available and the money for subsidy payments can be found new planting can be carried out at the expected rate of 2000 ha per year as shown by the figures given in Table 5.

Table 5. *Possible replanting hectarage up to 2010 in non-traditional areas*

Year	Possible hectarage
2006	1052
2007	1725
2008	2374
2009	3352
2010 onwards	3669

The quality of the plants and the condition of the clearings

Unlike in any other crop, rubber requires a certain vegetative growth for the tree to become economically exploitable *i.e.* 50 cm measured at 120 cm from the graft union. The quality of the plant is equally or more important than the quantity. Therefore, use of good quality plants of high yielding clones is very important.

In Sri Lanka, the average national productivity is below 1000 kg/ha/year. But the production capacity of new clones produced by RRISL is about 5 times the yield of the original rubber trees, *i.e.* 1500 – 2000 kg/ha/Year. One reason for the poor yields recorded in our clearings is the use of sub-standard planting materials due to various reasons. This is evident by the condition of immature and mature clearings in the plantations today. The poor stand and the growth vigour of the trees adversely affect their potential yield.

Also, very often the recommended agricultural practices are not followed properly, specially with regard to soil conservation, weeding and manuring.

A good quality plant

The quality of a rubber plant cannot be detected or guaranteed only by the external appearance of the plant or the size of the plant. However, the budded plant with 2-3 leaf whorls should be less then 1-1½ years old at the time of planting for that to be a high quality plant. Generally, a good quality plant has a good undisturbed root system, long internodes (30-40 cm long), and healthy leaves (Fig. 1).

Why is it important to consider the age of the plant at planting?

The rubber tree has only 5 years as the juvenile or fast growing period. During this period the tree should girth at least 10 cm a year to reach the tappable girth in 5 years (Fig. 2).

Fig. 1. A good quality plant

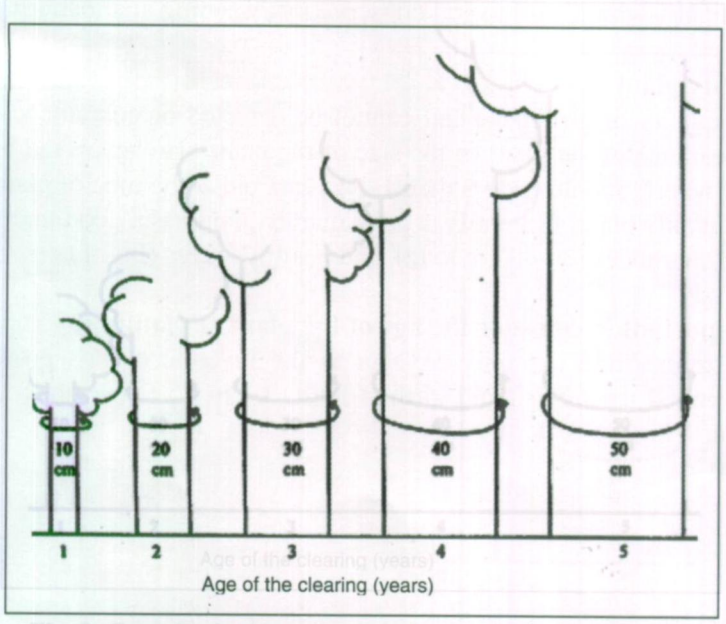

Fig. 2. Growth of rubber plants during the immature period

If the nursery period is 2-2½ years, (some times 3 years, 2 years before bud grafting and another year after bud grafting) then such plants has only 2-3 years left from their 5-6 year fast growing period. Such plants take 8-9 years or longer to reach tappable girth, yet shows a slow growth, characteristic of the mature phase, throughout their life span. These trees will not be able to give the potential yield of the clone due to poor girth and growth condition.

Generally, the cost of production of rubber is on the increase, and the rubber industry cannot survive unless the production per hectare or the price per kilo is high. The price per kilo is normally beyond the control of the planting community and hence, increasing productivity using high quality plants along with proper agro management practices is of vital importance. If the productivity of the trees is fairly close to the potential yield of the clones planted, rubber industry can be a profitable one even at low prices and with minimum number of tapping days.

Annex 1. ***Clone Recommendation for the Estate Sector***

Group I – Each clone to be planted up to 10% of the extent.

RRIC 100, RRIC 102, RRIC 121, RRIC 130[1], PB 217*, PB 28/59*

* PB 217 and PB 28/59 are not recommended for areas having more than 3750 mm of annual rainfall

Group II – Each clone to be planted up to 3% of the extent.

RRIC 117	RRISL 203	PB 235[1]
RRIC 131	RRISL 205	PB 260[1]
RRIC 133	RRISL 206	BPM 24
	RRISL 210	
	RRISL 211	
	RRISL 215	

[1]These clones should be tapped at 67% intensity until intensification.

Group III – To be planted as Estate/RRI collaborative clone trials
Each clone to be planted up to 2 ha.

RRISL 201	RRISL 220	RRIM 717	RRISL 2000
RRISL 204	RRISL 221	PB 255	RRISL 2002
RRISL 208	RRISL 222	PR 255	RRISL 2003
RRISL 216	RRISL 223	PR 305	RRISL 2004
RRISL 217	RRISL 225	RRII 105	RRISL 2005
RRISL 218	RRISL 226	GPS 1	RRISL 2006
RRISL 219			

It is advisable to limit the extent of planting of any single clone of Group 1 to a maximum of 10% of the total area under rubber to minimize the risk from conditions disastrous to rubber such as *Corynespora* leaf disease.

Latex timber clones

Following clones have been identified as latex timber clones for the Plantation Sector.

RRIC 121	RRISL 205	RRISL 2000	PB 235
RRIC 133	RRISL 2001	PB 260	