

## **THE CLONAL COMPOSITION OF BUDWOOD NURSERIES AND ITS ROLE ON THE PRODUCTIVITY OF RUBBER IN SRI LANKA**

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### **INTRODUCTION**

The RRISL has recommended a list of 45 clones which are categorized into three groups (Annex.1). However, the current distribution of clones in both mature and immature fields in estates under Regional Plantation Companies (RPCs) shows that more than 75% of the area is covered by only three clones, namely RRIC 100, PB 86 and RRIC 121. Small holder sector farmer's share of the total hectorage is about 60% and therefore the extent under PB 86 and RRIC 100 can be even higher as they were given only RRIC 100, RRIC 102 and RRIC 121 until the year 2003.

Due to various foliar diseases in rubber a balanced clonal composition is very important for the existence of the industry. In 1985, the clone RRIC 103 which was recommended in group 1 then was totally wiped out due to the foliar disease *Corynespora*. We must not forget the fact that all these clones have close relationship in their genetic constitution and some have common parents. Therefore, as far as the rubber industry of the country is concerned, it must have as many clones as possible to face a situation like that without the industry getting affected. The current clonal composition in Sri Lanka is in a very unhealthy situation, specially when there are enough clones in the list of clone recommendation. The recommended clones for rubber are first maintained in budwood nurseries as source bush plants. Generally, the clonal composition in the plantations is somewhat similar to that of the budwood nurseries. Therefore in order to correct the clonal composition in the plantations, it is necessary to maintain a good clone balance in budwood nurseries.

The clone balance in the small holder sector farmers in Sri Lanka has a direct relationship with what is available in the budwood nurseries of government rubber nurseries. The small holder sector farmers were supplied with only three clones, RRIC 100, RRIC 102 and RRIC 121 until the introduction of two new clones, RRISL 203 and RRISL 2001 in 2003. There are some private rubber nurseries to supply plants to the RPCs and small holder farmers but the quantity of plants produced in these nurseries is very small and they also have only RRIC 102 and RRIC 121. But, Regional Plantation Companies could have maintained a good balance in the clonal composition had they wanted. The use of RRIC 100 is temporarily banned for traditional rubber growing areas as it has been over used over the years.

## **Objective and methodology**

Proper management of budwood nurseries is very important not only to produce high quality budded plants but also to maintain a balance in the clones used in plantations. The impact of mixed budwood nurseries on the productivity of plantations has been discussed earlier (Seneviratne *et al.* 2000 a&b) in detail. However, poor condition of budwood nurseries is still a main issue towards the productivity of plantations as well as for the quantity of the plants produced in rubber nurseries. A survey was conducted by the Plant Science Department in 1999 to gather data on the clonal composition of budwood nurseries, with the intention of maintaining a good clone balance.

## **Clonal composition in budwood nurseries**

The composition of clones as per the 1999 survey is shown in Figure.1. As it is clear from Fig 1, the clone RRIC 100 dominates with a share of 27%. About 20% of it is RRIC 121 and 10% is of RRIC 102. The share of the rest of the 40 clones, is 43%.

Though this was to be corrected by adding new clones while uprooting the old and unwanted clones, unfortunately, until last year no one was interested in even planting rubber due to poor prices prevailed, and therefore no attention was paid for the budwood nurseries.

In 2005, a survey was conducted again by sending a questionnaire, as there was a huge demand for authentic planting materials of the new clones to establish budwood nurseries. This demand was due to the high rubber prices and there by the interest shown on replanting which should have been replanted earlier. Data gathered for RPCs are shown in Fig. 2.

As shown in Fig 2, the situation has not been changed significantly over the years except for the RRIC 100 which has come down from 27% to 8.5% which is possibly due to the ban of RRIC 100 and therefore not replacing the over aged plants. The total number of plants too has been reduced from 64454 to 19870 showing no establishment of budwood plants during the recent past. The number of plants of RRISL clones has been increased from 3050 to 4827 which is a good indication. The requirement of budwood plants for the RPCs is about 15,000 if the replanting hectorage is only 3%. But when the rubber prices are high the replanting area has been as high as 6% in some plantation companies. Therefore, still there is a shortage of budwood of new clones in the budwood nurseries.

The clonal composition of budwood nurseries should be corrected as early as possible specially when the prices are high and replanting takes place at a rate. In order to change the clonal composition of budwood nurseries, attention should first be given to the current clonal composition of the estate. The current situation with regard to RRIC 100 is that it has already been overused and according to the latest data about 40% of the land under the RPCs are already under this clone. Therefore, this clone should not be used for replanting in RPCs. Action has been taken to control its use in the small holder sector too through government nurseries. However, the farmers in

the non traditional areas are still supplied with this clone as the extent under rubber in those areas is rather low.

### **Remedial action**

All estate managers should first be aware of the clonal composition of their mature and immature clearings. If a clone covers more than 10-15% of the total area the source bush plants of that clone in bud wood nurseries should be removed or replaced with a new clone even if they are less than 10 years of age.

The annual requirement of planting material should then be calculated according to the replanting programme of the estate.

The first requirement in nursery establishment is the availability of good quality budwood. Rootstock nurseries should not be established unless the desired clones and the required quantity of budwood is available in budwood nurseries. A budwood plant will yield about 50 buds on average after 3-4 years of establishment.

The number of budwood plants in budwood nurseries should also be decided according to the annual planting material requirement. When there are too many budwood plants, the maintenance cost will be high and therefore the entire nurseries get neglected.

As the life span of budwood nurseries is 10 years, in order to maintain the required quantity, about 10% of the nursery should be replanted every year with new plants or new clones.

New clones are supplied by the RRISL on request, but when all the estates demand for their total requirement which was not planted for 5-6 years, it would be difficult to meet the requirement at once. Further, RRISL can supply only a limited number of plants and the estate can multiply them in their nurseries.

It is always advisable to maintain central nurseries rather than small nurseries in every single estate or as they do sometimes in many divisions in one estate. This leads to poor management and waste of resources.

It is clear that though there are very high yielding clones recommended by the RRISL, the impact of it is not reflected in the annual production or the productivity of the country due to poor usage of them. The practice is always to budgraft with what is available in budwood nurseries.

Worst situation was experienced by the RRISL during the past two years in nursery inspection programme; even when there are no budwood nurseries, stock nurseries are established and buds are harvested from immature clearings and sometimes from mature clearings. If this practice continue, the clonal composition will remain the same and there is a risk of using clones such as RRIC 100 which are banned.

It should always be kept in mind that once planted, a clearing will remain for about 30 years and therefore there is no chance to change the clonal composition. Postponing the replanting programme by a year or two due to unavailability of budwood of better clones is always desirable than planting with old low yielding clones due to their availability in budwood nurseries.



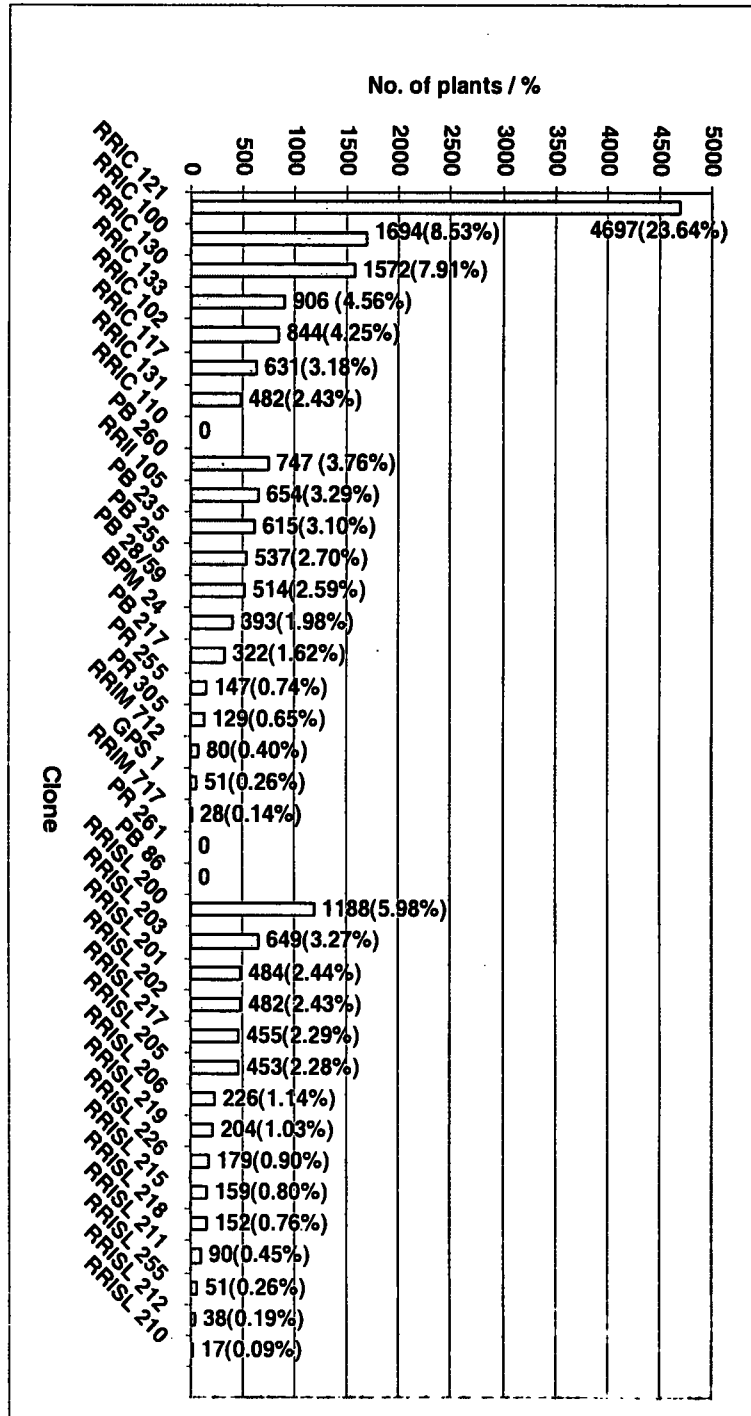


Fig. 2. Clonal composition of bud wood nurseries under RPCs 2005

## **Annexure 1**

The list of recommended clones by the RRISL.

### **REFERENCES**

- Seneviratne, P, Nugawela, A, Weerakoon, U S, Alwis, M N de and Zoysa, L (2000a). Budwood nurseries in Sri Lanka: condition of the nurseries in the estate sector. *Bulletin of the Rubber Research Institute of Sri Lanka* **42**, 38-48.
- Seneviratne, P, Nugawela, A, Weerakoon, U S (2000b). The effect of the condition of the budwood nurseries on the productivity: mixed clones. *Bulletin of the Rubber Research Institute of Sri Lanka* **41**, 44-49.

## REVISED CLONE RECOMMENDATION

### 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<sup>1</sup>, PB 217\*<sup>1</sup>, PB 28/59\*<sup>1</sup>

\* PB 217 and PB 28/59 are not recommended for areas having more than 3750 mm of rain fall.

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

RRIC 117	RRISL 203*	RRISL 210	RRISL 2001*	PB 235 <sup>1</sup>
RRIC 131	RRISL 205	RRISL 211	PB 260 <sup>1</sup>	
RRIC 133	RRISL 206	RRISL 215	BPM 24	

**Group III** – each clone to be planted upto two hectares (Estate/RRI collaborative clone trials)

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			

<sup>1</sup> should be tapped 67% intensity until intensification

*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.*

### Clone recommendation for smallholders and private estates

RRIC 100, RRIC 102 and RRIC 121  
RRISL 203\* and RRISL 2001\*

- These two clones are recommended for holding more than 5 ha. in extent and area under each clone should not exceed more than 10% of the estate.

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