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THE RESPONSE OF YIELDS OF CLONES RRIC 100 AND RRIC 121 TO THE CHANGES IN THE DISTRIBUTION AND AMOUNT OF RAINFALL

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ABSTRACT

The influence of the rainfall on rubber yield of two popular rubber clones RRIC 100 and RRI 121 was studied. It showed that the yield of RRIC 121 is influenced by the rainfall factor but not in RRIC 100.

INTRODUCTION

Rubber (*Hevea*) production depends on not only genotype and good management practices but also on weather factors which the growers have no control. Sri Lanka being a tropical country, rainfall is a very important factor in determining growth and yield of crop plants. It is known that the amount, distribution of rainfall and number of rainy days determine the economic yield of rubber. Normally the ideal annual rainfall for rubber is within the range of 1650 mm – 3000 mm. A uniform annual distribution of rainfall is regarded as favorable for growth and productivity, but both foliage and panel diseases are favored by high rainfall. On the other hand growth and yield tend to be depressed by low rainfall. Therefore it is important to study the influence of rainfall on the yield. It would be useful to evaluate the performance of different *Hevea* clones with respect to different rainfall.

Plant material and location

Two most popular clones RRIC 100 and RRIC 121, twelve years of age were selected from two sites *viz.* Eladuwa and Dartonfield. Both sites were located in Kalutara district, which comes under Low Country wet Zone (WL).

Data collection and analysis

Daily records of the rainfall were collected from the two sites. Latex volume, dry rubber content (DRC) as measured by a Metrolac and other field observations were recorded for period of one year, under study. The weekly average of volume of latex, DRC and g/t/t (yield) were determined and plotted against the rainfall in the analysis.

RESULTS AND DISCUSSION

Rainfall data of the two sites were compared. The rainfall distribution in two sites follows a same pattern (Fig.1a) it is characterized by the typical bimodal pattern caused by monsoon influence in Low Country wet zone. However, of the two sites Dartonfield received the highest amount of rainfall (Fig.1b). A total of 4421.7 mm rain was experienced during the 52 weeks period studied in Dartonfield while the total rainfall received in Eladuwa was 2982.48 mm. Three dry spells were observed during the $7^{th} - 8^{th}$, $21^{st} - 22^{nd}$ and 50^{th} -52^{nd} weeks in both sites.

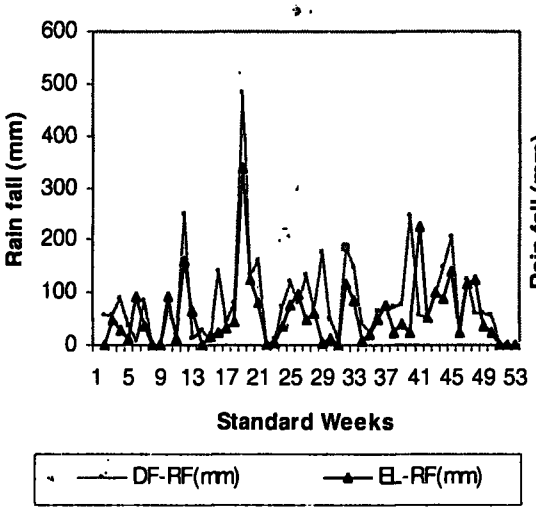

Fig. 1a. Rainfall distribution in two sites

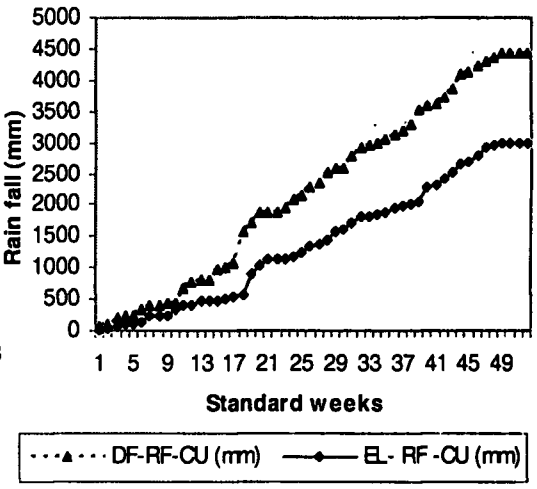

Fig.1b.Cumulative rainfall in two sites

The latex flow pattern is similar in each clone in each site. However, the clone RRIC 121 has given more latex volume (Fig. 2a) in Dartonfield site as compared to Eladuwa. It was seen earlier that the total rainfall received at Dartonfield to be higher than that of Eladuwa (Fig 1b). This difference in latex volume between the two sites was not observed with respect to the RRIC 100 (Fig.2b). It is possible that the latex flow of RRIC 121 might be influenced by the amount of rainfall. Sailajadevi *et al.* (2000) showed that cumulative rainfall had significant positive influence on the yield and yield components. The gaps, in between some weekly averages of latex volume were due to occurrence of non-tapping days due to rain interference.

Both clones RRIC 121 (Fig. 3a) and RRIC 100 (Fig.3b) showed a similar trend with regard to DRC in both sites. But RRIC 121 showed less DRC value in Dartonfield than Eladuwa. During the year it ranged between 30-40 g/100ml at Dartonfield. In Eladuwa 14 – 42 weeks, it recorded 40 – 45 g/100ml of DRC Value. Low DRC in latex at Dartonfield may be due to dilution of latex caused by the high

amount of rainfall. Reju *et al.* too, (2000) reported that the high rainfall leads the dilution of latex.

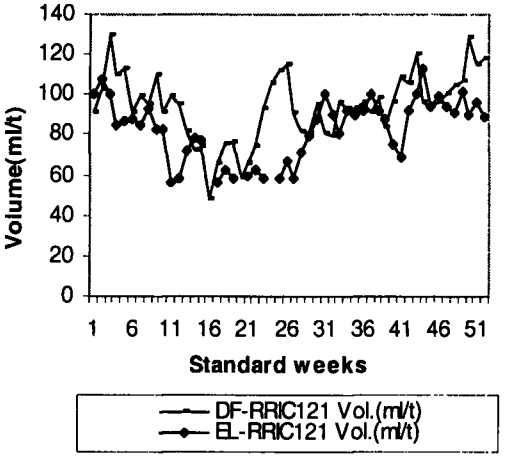

Fig. 2a. Latex volume – RRIC 121

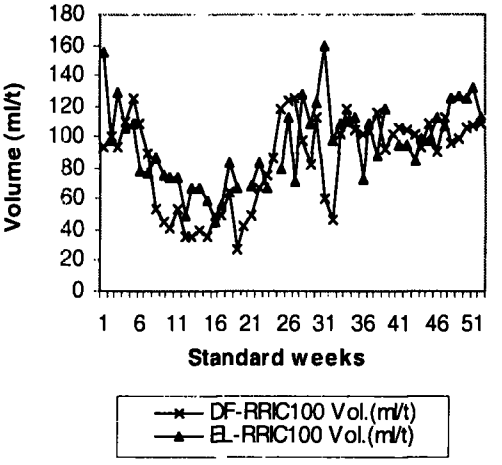

Fig. 2b. Latex volume – RRIC 100

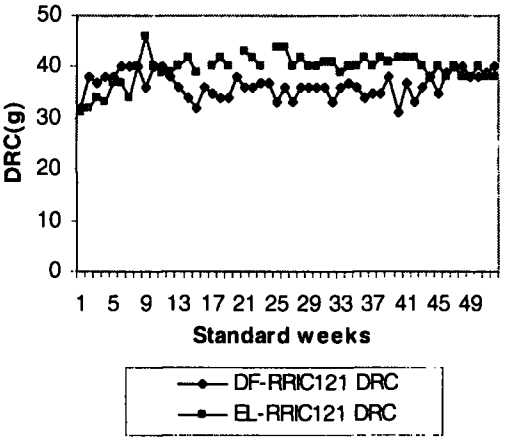

Fig.3a. DRC – RRIC 121

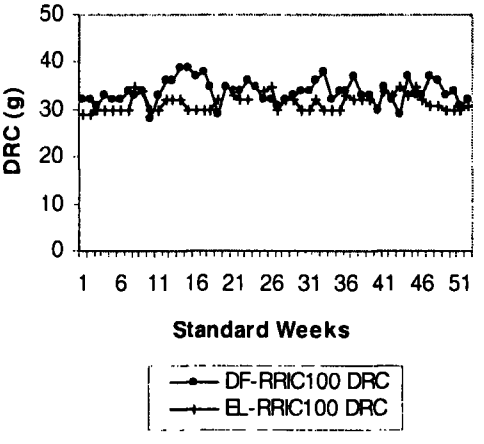

Fig.3b. DRC – RRIC 100

Clone RRIC 121 (Fig. 4a) showed significant higher yield (g/t/t) at Dartonfield though it showed less DRC value. Therefore, it is clear that higher latex volume at Dartonfield has contributed largely for the increased yield. The yield was comparatively lower at Eladuwa mainly due to the low latex volume. However, yield of RRIC 100 was approximately similar in both sites. (Fig. 4b) It is appears that yield of RRIC 100 is not affected by rainfall in contrast to RRIC 121 which is sensitive to rainfall. Jayasekera (1983) reported RRIC 100 as a highly stable clone. The yielding pattern of both clones in both sites is similar. The early studies also have shown that the monthly variation in the yielding ability was closely associated with fluctuation in

rainfall (Senanayake, 1975) for they have observed the variation in yield followed the pattern of rainfall distribution during the year. Reju *et al.* (2001) observed that the yielding pattern of different clones showed uniform trend over season. It has been observed similar pattern of yield variation for PB 86, RRIC 100 and RRIM clones over seasonal variation (Wijesuriya *et al.*, 1997).

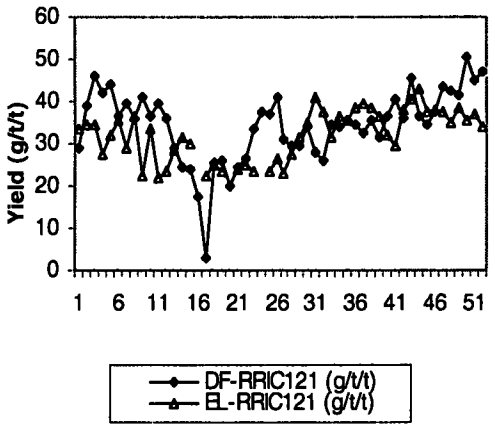

Fig. 4a. Yield - RRIC 121

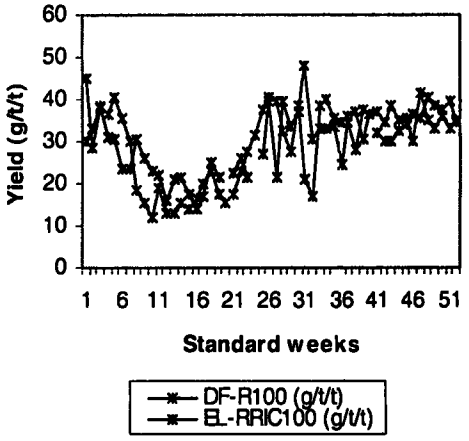

Fig.4b. Yield – RRIC 100

CONCLUSIONS

It was evident that the amount of rainfall has an effect on the latex volume and the rubber yield of the clone RRIC 121. The latex volume and rubber yield of RRIC 121 are affected by changed with the amount of the rainfall experienced at the two sites selected. However, no such effect was observed with respect to the clone RRIC 100. Its latex volume and rubber yield was slightly affected by the amount of the rainfall received at the two sites.

Therefore clone RRIC 100 can be described as a more suitable clone for rubber growing areas of low rainfall than RRIC 121. Because the unpredictable changes in agro climatic conditions in rubber growing areas of Sri Lanka are possible (Plantation World 2000) and now attempts have been taken to grow rubber in dry areas. Therefore it is important that selection of stable clones such as RRIC100, for commercial planting.

However, further investigations are necessary for conformation of this study.

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