Natural Rubber Research, 18(1) : 81-86, 2005

EFFECT OF PLANTING DENSITY AND FERTILISERS ON GROWTH AND EARLY YIELD OF RUBBER IN TRIPURA

S. Roy, M. Choudhury, T. Eappen, S.K. Chakraborty and S.K. Dey
Rubber Research Institute of India, Regional Research Station, Agartala – 799 006, Tripura, India.

Submitted: 16 August 2005 Accepted: 30 June 2005

Roy, S., Choudhury, M., Eappen, T., Chakraborty, S.K. and Dey, S.K. (2005). Effect of planting density and fertilisers on growth and early yield of rubber in Tripura. *Natural Rubber Research*, 18(1) : 81-86.

A field experiment was conducted with two rubber (*Hevea brasiliensis*) clones, RRII 105 and RRII 118, planted at three different densities and using three fertiliser regimes. Plants at low density showed higher girth increment and higher yield per tree as well as per unit length of tapping cut. However, the highest mean annual yield was estimated for a population density of 824 trees per hectare under S/2 d/3 system of tapping. The casualty due to wind damage and the estimated loss of yield were lowest in the highest density planting. The plant stand of 606 trees per hectare with the clone RRII 105 may be suitable as the plants reach tappability within nine years. The percentage of casualty due to wind was also lower in this density compared to that in the lowest density. No increase in yield was observed with higher doses of fertiliser application during the period of the study. Significantly higher content of available phosphorus and potassium in soil under higher doses of fertiliser (60:60:30 and 80:80:40 kg/ha of N, P_2O_5 and K_2O) was evident in the eleventh year.

Key words: Growth, *Hevea brasiliensis*, Nutrition, Planting density, Tripura, Wind damage, Yield.

INTRODUCTION

Tripura now occupies the second position among the states in terms of area under rubber (*Hevea brasiliensis*) cultivation in India. High wind velocity is one of the important constraints in this region. The plant stand per hectare declines gradually due to wind damage over the years. This situation warranted a study to identify the optimum planting density that can help in withstanding high velocity wind and also compensate for the reduction in crop due to loss of trees. Heubel (1939) observed that the wind damage to *H. brasiliensis* was more at lower densities of planting. Dijkman (1951) reported reduction in damage in wind susceptible clones by increasing the planting density. In the wind-prone areas of China a planting density of 630 trees per hectare is recommended (Zongdao and Xaegin, 1983). However, increasing the number of plants per unit area beyond an optimum may lead to poor growth and yield due to competition among the plants. Devakumar *et al.* (1995) observed that the effect of closer planting on growth becomes evident from as early as the fourth year. Application of higher doses of fertilisers may be necessary to reduce the competition for nutrients and to get optimum yield.

The main objective of this study was to identify the optimum planting density at which plants reach tappable size quickly, suffer the least wind inflicted casualty and give maximum yield per unit land in Tripura. The study also envisaged ascertaining the requirements of N, P and K for such population density.

Correspondence: S.K. Dey (dey@rubberboard.org.in)