Effect of Foliar Application of Nitrogen and Phosphorus on Fruit Yield in Para Rubber (*Hevea brasiliensis* Muell. Arg.)

Low rate of seed production either in natural condition or after hybridization have been a permanent bottleneck in rubber breeding. Only about 5–10% of the female flowers have been reported to mature as seeds in rubber. However, it has been observed that premature fruit drop during early stages is one of the reasons for the low seed production in rubber (Ferewada, 1965). Eventhough about 25% of the female flowers have been fertilized, many of them are reported to drop prematurely bringing down the seed yield. Most often there has been a confounding effect of powdery mildew also in bringing down the final seed yield.

An experiment was conducted at the Rubber Research Institute of India, Kottayam to study the effect of foliar application of nitrogen and phosphorus on seed production in rubber during 1985. Twenty four rubber trees of the clone Gl–1 were divided into 4 replications. All trees were of equal age and at tapping. The treatment tried were (i) 0.2% urea (ii) 0.5% ortho-phosphoric acid (iii) 0.2% urea+0.5% ortho-phosphoric acid (iv) 0.2% urea+0.5% ortho-phosphoric acid+ 0.05% topsin (a systemic fungicide) (v) water spray and (vi) Control. All treatments were imposed as foliar spray using a rocker sprayer. Four sprays were given at an interval of 15 days starting from the first week of February, 1985. The fungicide treatment was given 2–3 days before the application of the nutrient solution. About 10 litres of the solution were sprayed in each case. Initial counts of fruits were taken on first week of March, 1985 and the final count on last week of April, 1985. In each tree 5 branches were randomly selected and all the fruits were counted.

The data given in Table I indicate significant differences among the treatments with respect to the final fruit count. Highest fruit count was recorded in the combined treatment of urea and phosphoric acid followed by its combination with the fungicide. All the three treatments involving phosphoric acid were at par in effect. Foliar application of urea alone did not differ significantly from control and water spray. This might be due to the high inheren

Table I. *Effect of foliar spray of nitrogen and phosphorus on fruit yield in rubber*

Treatments	Fruit count		%
	Initial	Final	retention
0.2% urea	25.0	6.50	25.0
0.5% ortho-phosphoric acid	22.0	11.00	50.0
0.2% urea+0.5% ortho-phosphoric acid	26.4	14.0	53.0
0.2% urea+0.5% ortho-phosphoric acid +0.05% topsin	26.0	12.50	49.8
Control	18.8	4.25	22.0
Water spray	19.0	4.00	21.5
C.D.		5.77	

JI of PI Crops. 15(2):

nitrogen content of the soil. The soil P level is low as compared to the soil nitrogen content. Regarding the retention of young fruits it was observed that almost 50 per cent of the young fruits were retained in all the treatments involving phosphorus resulting in high final count. Whereas in other cases only 20–25% retention was noted. The fungicide treatment did not have any appreciable effect in enhancing the final fruit number.

Thus, it indicates that competition for phosphorus between the developing fruits and other plant parts is one of the major causes of reduced seed production in rubber. However, the effect of K, if any, has not been studied. Haines (1946) reported that soil application of complete fertilizer mixture have doubled seed yield in rubber. Watson and Narayanan (1965) have reported significant increase in seed production of rubber under two different soil types by continuous soil application of ammonium sulphate. Specific effect of phosphorus in fruit production of mango (*Mangifera indica*) was studied by Reddy and Majumdar (1983). They reported that foliar application of phosphorus not only increased the fruit yield but also improved its quality.

Thus, it is evident from the present study that direct application of phosphorus as foliar spray play a considerable role in preventing premature fruit drop in rubber.

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