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POTASSIUM NUTRITION OF MATURE RUBBER

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A field experiment on mature rubber was conducted, continuously for five years, to study the influence of K on volume of latex and dry rubber yield in a laterite soil (red ferruginous soil) of Kerala, India. Latex volume and dry rubber yield were significantly influenced only during the fourth and fifth year of treatment. Significant yield increase was observed only during the summer months indicating the beneficial influence of K in improving the water balance in the plant system. The highest dry rubber yield was recorded due to the application of 75 kg K_2O/ha in the fifth year of study. The optimum dose of K fertilizer and critical values of soil available K (both Morgan K and ammonium acetate K) and critical leaf K concentration were also derived from the respective response model studies.

Key words : Available potassium, Critical values, *Hevea*, India, Laterite soil, Potassium nutrition, Rubber

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INTRODUCTION

The response of rubber tree (*Hevea brasiliensis*) to potassium (K) fertilization has been reported to vary qualitatively. While Punnoose *et al.* (1978) observed significant increase in yield of rubber and Tupy (1973) and Pushparajah *et al.* (1975) recorded improvement in latex flow and its stability due to application of K, Pushpadas *et al.* (1975) found positive correlation between higher levels of K application and high incidence of tapping panel dryness and Abdulkalam *et al.* (1980) recorded negative effect of K application on the girth of rubber.

The laterite (red ferruginous) soil where rubber is generally grown is inherently deficient in K. Most of the plantations in the traditional rubber growing regions of India are now in the third planting cycle. Karthikakuttyamma (1997) reported a net negative balance of K in rubber plantation agroecological system at the end of one plantation cycle. In order to have a better understanding of the situation, a long-term study was undertaken, the results of which are discussed in this paper.

MATERIALS AND METHODS

An experiment was initiated during 1990, on mature rubber trees of the clone RRIM 600 planted in 1976 while tapping was in the BO-2 panel following the 1/2S d/3 system. The soil of the experimental area was laterite (clayey-skeletal, kaolinitic, isohyperthermic Ustic Kanhaplohumults). The treatments included seven levels of