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INFLUENCE OF SOIL INORGANIC PHOSPHORUS FRACTIONS ON LEAF PHOSPHORUS STATUS IN *HEVEA BRASILIENSIS*

Phosphorus (P) is an essential plant nutrient, the limited availability of which affects crop production in tropical soils. Usually P fertilizers added to these soils react with the iron, aluminium and calcium present and get converted to Fe-P, Al-P and Ca-P (Mengel and Kirkby, 1987; Karthikakuttyamma *et al.*, 1991). Since P-fractions have different solubilities, the availability of P in soil and its uptake by plants depend on the content and rate of release from different P fractions. The noticeable feature of tropical rubber growing soils is that they do not show any relationship between applied P and available P in soil and leaf. Since the major area under rubber cultivation in India is confined to tropical regions, a knowledge on the relation between different soil P fractions, available P and leaf P content may offer an explanation for lower growth response of rubber to P application. The present study was undertaken to understand the relationship between soil P fractions and leaf P content.

One hundred and forty surface soil (0-30 cm) samples were collected from 14 large estates of traditional rubber growing tracts of South India. Leaf samples were also collected from the trees growing in the same fields during August-September. The soil samples were analysed for pH, organic carbon content, total P and available P (Jackson, 1958). The total P in the leaf samples was analysed using an autoanalyser (Karthikakuttyamma, 1989). Thirty samples varying in available P (Bray - II) from trace to 4 mg per 100 g soil were selected and subjected to P fractionation studies (Jackson, 1958). A correlation was worked out (Snedecor and Cochran, 1968) between soil P fractions and the corresponding leaf P content.

In order to elucidate the contribution of each fraction towards available P status in the soil, path coefficient analysis was carried out on the selected 30 samples. The available P was considered as the dependent variable and total P (TP), iron P (Fe-P), aluminium P (Al-P), saloid P (Sal-P) and calcium P (Ca-P) as independent variables.

The mean values for organic carbon, total, available and leaf P contents representing 14 estates in the rubber growing region of South India are given in Table 1. The percentage of leaf P varied from 0.17 to 0.38. A significant positive correlation was observed between total P in soil and leaf P content ($r=0.6982$) indicating that in addition to P extracted by Bray-II (Bray and Kurtz, 1945), P availability to plants depended upon other pools also (Olsen and Watanabe, 1970).

Thirty soil samples selected for the fractionation study had available P values from trace to 4 mg per 100 g soil. The available P, organic carbon and pH in these soil samples are given in Table 2. The soil pH varied from 4.3 to 5.8. The data in Table