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DISTRIBUTION OF POTASSIUM IN THE MAJOR RUBBER GROWING SOILS OF SOUTH INDIA

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Profile studies of the major rubber growing soils of South India were undertaken to evaluate the distribution of potassium and its forms. The study revealed that the available K fractions were higher on the surface soils of all the regions. The total K content was higher in the lower depth of Kinalur, Mundakayam and Pudukad soils compared to Kulasekharam where the total K was higher in the surface soil. The major portion of the total K was in the lattice and organic bound form. The organic carbon content of the soil had positive significant correlation with water soluble K, exchangeable K, fixed K, available K (Morgan extractant) and total K. The water soluble, exchangeable and available K had positive significant relationship with fixed K. The clay content of the soil also expressed positive significant relationship with the total K.

Key words – *Hevea brasiliensis*, Soil analysis, Potassium fractions, Profile study, Particle size distribution.

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INTRODUCTION

The dynamics of potassium (K) in soils is of great practical importance as it plays a vital role in the K nutrition of crops and in the economy of K fertilization. Soil K can be divided into soluble, exchangeable, fixed and structural K. The proportion of total K in the soils held in solution and exchangeable form is usually relatively small. The majority of soil K is present in K bearing primary minerals, such as muscovite, biotite, microcline and orthoclase (Fanning and Keramidas, 1977; Huang, 1977; Sekhon, 1985). In soils, K is also present in fixed form (preferentially adsorbed) by reacting with weathered micas, vermiculite etc (Rich, 1968). Water soluble K content is too low to meet the requirement of a crop during the growing season and the exchangeable K released from clay minerals and organic matter continuously replenishes the soil solution (Rich, 1968; Sekhon, 1985).

The red and lateritic soils, where rubber (*Hevea brasiliensis*) is generally grown, are inherently deficient in K (Pushpadas and Karthikakutty Amma, 1980). Palaniswami *et al.* (1978) reported that the rubber growing soils of South India are low to medium in available K status. The requirement of K to rubber varies at different stages of growth. In *Hevea*, lack of K during early stages limits the active leaf area and reduces the photosynthetic activity of the foliage and as a result girth increases only slowly and the immaturity period gets prolonged (Sivanadyan *et al.*, 1976). However, Ananth *et al.* (1966) reported negative response of K on growth attributes of young