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EXCHANGE PROPERTIES OF SOILS IN THE TRADITIONAL RUBBER GROWING TRACT IN SOUTH INDIA

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Exchange properties of the soils from five locations in the traditional rubber growing tract in South India with distinct variation in average annual rainfall were compared. The base saturation per cent and exchangeable bases showed wide variation between soils with variation in average annual rainfall. Soils of the high rainfall areas were showing very low base saturation with extremely low status of potassium, calcium and magnesium. Extractable acidity values were also high in two locations experiencing high rainfall. Though natural rubber is adapted to acidic, low base environment, studies are required to assess the growth and yield performance in soils with extremely low base status.

Keywords: Base saturation, Cation exchange capacity, Exchangeable bases, Extractable acidity, *Hevea brasiliensis.*

INTRODUCTION

The traditional rubber growing tract in India lies between 75^{0}10' and 77^{0}30' E longitudes and 8^{0}15' and 12^{0}35' N latitudes. The rubber plantations occur in a belt with an elevation of 30 m to 450 m MSL mostly in the midlands and, to a small extent, in the lower parts of the highlands. Details on rainfall (normal for 35-50 years), temperature, potential evapo-transpiration, soil water balance and the soil taxonomy as per USDA system of classification were reported (NBSS and LUP, 1999).

The major soil forming factor in the traditional rubber regions is climate. Humid tropical climate with a pronounced dry season has resulted in intense leaching of silica and bases down the profile or out of it with accumulation of clay and hydroxides of iron and aluminium (NBSS and LUP, 1999). Soils in the traditional rubber cultivation belt are mainly red ferruginous dominated by Fe and Al oxides and hydrous oxides and kaolinite clay (Krishnakumar, 1989 and Karthikakuttyamma *et al.*, 2000). Majority of the soils belong to ultisols which are moderately deep to very deep. These are low base status soils with consequent higher acidity. The dominant clay mineral is kaolinite, which is low in activity (NBSS and LUP, 1999). In general, organic carbon status is high in the rubber growing soils. At the same time, these soils are reported to be deficient in available P and K (George, 1961; Karthikakuttyamma *et al.*, 1976; Joseph *et al.*, 1990 and Karthikakuttyamma *et al.*, 1991). Lower values of exchangeable cations (Krishnakumar, 1989) and high total Al

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