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FORMS OF PHOSPHORUS IN RUBBER GROWING SOILS OF KERALA

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Soil physico-chemical properties and forms of phosphorus in four soil series *viz.*, Peruva (Entisol), Lahai (Ultisol), Thrikkannamangal (Ultisol) and Chandanikunnu (Inceptisol) in which rubber (*Hevea brasiliensis*) is grown were estimated. All the soils were acidic (pH 4.30 to 5.22). The organic carbon status of the soils varied from low to high (0.36 to 2.70%). The clay content ranged from 27 to 40 per cent. Texturally, the soils were sandy clay loam and sandy clay. Total P varied from 168 to 1033 g/kg and was in the order Peruva > Lahai > Thrikkannamangal and Chandanikunnu. Active forms of P comprised of saloid-P, Al-P, Fe-P and Ca-P which contributed 19 to 30 per cent of total P. Fe-P was the prominent active P form which constituted 50 to 61 per cent. Organic P comprised 58 to 69 per cent of the total P.

Key words: Central Kerala, Forms of P, Rubber growing soils.

INTRODUCTION

Phosphorus (P) is considered to be one of the least available plant nutrients in the soil. P deficiency often limits crop production in acid soils because of the strong bonding of phosphate by iron (Fe) and aluminium (Al) oxides. Plants acquire P as phosphate anions from the soil solution. Inorganic fixation and formation of organic complexes of available phosphate in the soil are the primary reasons for its low availability. In this context, phosphorus deficiency is considered to be one of the major limitations for crop production, particularly in tropics. Rubber (*Hevea brasiliensis*) growing soils in Kerala, India are mostly acidic and highly weathered in nature. In general these soils are low in available P (NBSS & LUP, 1999). The efficient utilization of P fertilizers in these soils is possible only if their reaction with soil constituents is well understood. The present study was taken up to quantify the forms of phosphorus in different soil series under rubber.

MATERIALS AND METHODS

Twenty eight small rubber holdings, seven each from *viz.*, Peruva (Prv), Lahai (Lah), Chandanikunnu (Cdn) and Thrikkannamangal (Tmg) soil series were selected for this study representing different soil orders *viz.*, Entisol, Ultisol and Inceptisol. Lahai and Thrikkannamangal soils are deep or very deep

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