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EFFECT OF LIMING ON THE AVAILABILITY OF NUTRIENTS AND GROWTH OF YOUNG RUBBER

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A field experiment was conducted for seven years from planting in young rubber in the replanting field of a large estate in the traditional rubber growing tract to study the effect of liming on the availability of nutrients and growth of rubber (*Hevea brasiliensis*). Lime alone, fertilizer alone as per standard recommendation and graded levels of lime in combination with fertilizer were compared with no-lime and no-fertilizer control. Liming improved the growth of plants which was significantly evident from the fifth year onwards. Fertilizer and lime, alone or in combination were significantly superior to the control. Lime alone was found to be as good as fertilizer alone treatment during the fifth year indicating the beneficial effect of liming in these acid red ferruginous soils. Later, during the sixth and seventh years, liming at 75 or 100 per cent of lime requirement along with fertilizer was significantly superior indicating the beneficial effect of liming in improving the availability of nutrients and growth of plants.

Analysis of soil samples during the fifth year of experimentation indicated that the pH of the soil changed from very strongly acidic to moderately acidic. Available P and K status were significantly improved by liming. Liming significantly improved the exchangeable Ca status of the soil. The exchangeable Mg and K were improved by fertilizer alone or lime and fertilizer treatments. However, application of lime alone reduced the availability of Mg indicating antagonistic effect of excessive Ca on Mg availability. Exchangeable Al content in the soil was significantly reduced by lime alone or lime at 75 or 100 per cent lime requirement along with fertilizer treatments. Leaf Ca concentration increased with liming and significant difference was recorded during the seventh year of the experiment.

Keywords: Exchangeable aluminium, Liming, Shell lime, Soil acidity, Red ferruginous soils, Young rubber.

INTRODUCTION

Soil acidity has been recognized as an important agricultural problem in the tropics (Sanchez, 1976; Tisdale *et al.*, 1985). Low nutrient status and the presence of toxic elements, particularly Al are major constraints to intensive crop production in the acid soils (Adams, 1981). Under heavy rainfall conditions, all the exchangeable bases (Ca, Mg and K) and salts are leached from the soil profile leaving behind materials rich in Al and Fe oxides which render the soil acidic and infertile.

Soils in the traditional rubber cultivation belt are mainly red ferruginous dominated by Fe and Al oxides and hydrous oxides and

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