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INFLUENCE OF FYM AND CHEMICAL FERTILIZERS ON GROWTH OF YOUNG RUBBER (*HEVEA BRASILIENSIS*) AND SOIL PROPERTIES IN TRIPURA

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A field experiment was conducted at Pathalia, Sepahijala district of Tripura during 2007 to 2013 to study the effect of integrating organic manures with chemical fertilizers on soil properties, growth and uptake of nutrients by young rubber. Treatments were standard recommended dose of chemical fertilizers (RDF), farm yard manure (FYM) @ 20 kg plant^{-1} + 50 per cent of RDF and control (no fertilizer and no manures). The field experiment was conducted in farmer's field in blocks of 125 plants in each block. Significant increase in girth and height were observed in plants that received FYM @ 20 kg plant^{-1} + 50 per cent of RDF and its influence was more pronounced in the initial years. At the end of six years, mean girth and tappability of the plants receiving FYM @ 20 kg plant^{-1} with 50 per cent of RDF, were 48.3 cm and 68.3 per cent, respectively. The corresponding mean girth for plants receiving 100 per cent recommended dose of chemical fertilizers and control plot were 44.7 cm and 35.8 cm, respectively. Tappable plants under these two treatments were 57.6 and zero per cent, respectively. Integrating FYM with chemical fertilizers increased the available N significantly compared to application of chemical fertilizers alone or control. Significant increase in leaf nutrient content of plants was also observed due to combined application of FYM and chemical fertilizers (RDF) indicating higher uptake of applied nutrients. DTPA extractable Zn and Mn were also significantly increased due to combined application of FYM and chemical fertilizers. Results from the experiment revealed that application of FYM @ 20 kg plant^{-1} with 50 per cent RDF could reduce the gestation period of rubber plants by six months to one year, besides improving soil health, when grown in the denuded lands in Tripura.

Key words: Degraded soils, Nutrient management, Soil fertility, Tripura, Young rubber

INTRODUCTION

Rubber (*Hevea brasiliensis*) is a major cash crop in the state of Tripura. It is mostly cultivated in the rolling hills (tilla/upland) of the state. Majority of the rubber growing soils in the state were once subjected to shifting cultivation which was usually preceded by burning the organic debris. These soils are acidic in reaction and poor in nutrient content (Chaudhuri *et al.*, 2001). Relative abundance of degraded illite clay minerals was recorded from these soils. This results in high K-fixation and poor K availability to plants (Mandal *et al.*, 2005). Growth and yield of rubber plants grown in

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