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INFLUENCE OF INTERCROPPING ON GROWTH OF RUBBER (*HEVEA BRASILIENSIS*) AND SOIL PHYSICO-CHEMICAL PROPERTIES

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The influence of intercropping on growth of rubber and soil physico-chemical properties was studied in a field experiment involving three intercropping systems *viz.* rubber/tapioca, rubber/banana and rubber/ pineapple in comparison with the standard rubber-cover crop system. Pineapple and cover crop were retained for 3-5 years and three crops of tapioca and banana were raised during this period. The girth of rubber was recorded at periodic intervals at a height of 125 cm from bud union. Soil samples were collected before and 6.5 years after planting from each system and analysed for physical and chemical properties. Bulk density and porosity of soils were not affected by planting different intercrops while an improvement in cation exchange capacity (CEC) and organic carbon status was observed in banana and cover crop established areas. An increase in available phosphorus was noticed in all the systems and the availability of potassium increased significantly in banana area compared to other systems. The tappability of rubber in 6.5 years was 43.75% in banana-intercropped areas. Growth of rubber was superior together with banana compared to other systems while in tapioca, pineapple and cover crop established areas, tappability was 37.8, 17.02 and 37.8 % respectively. The study showed that among the three intercrops and cover crop, banana intercropping is good for improving growth of rubber followed by cover crop and tapioca.

Keywords: Cropping systems, *Hevea brasiliensis*, Intercropping, Physico-chemical properties, Tappability

INTRODUCTION

In India 99% of the rubber plantation units are with smallholders and they cover more than about 90% of the total area and the mean holding size is around half a hectare per grower (Rubber Board, 2011). Since the immaturity period of rubber (*Hevea brasiliensis*) usually exceeds seven years, smallholders are forced to take up intercropping in order to get income during this period. Adoption of cropping system approach is indispensable to increase the productivity per unit area and the success of intercropping in relation to sole cropping depends on how existing agronomic practices can be manipulated to improve the land use efficiency of various intercropping systems (Sen *et al.*,1976; Ofori and Stern, 1986). The ultimate aim of intercropping is not only to obtain additional income but also to improve the fertility status in the long run. Nair (1999) reported that high output from any cropping system will deplete the soil of its nutrient store and make the system

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