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INFLUENCE OF PLANTATION CROPS ON SOIL PROPERTIES IN TRIPURA

Thomas Eappen, D.V.K.N. Rao, M. Karthikakuttyamma, A.C. Sarma*, S.K. Dey*, Y. Annamma Varghese and A.K. Krishnakumar

Rubber Research Institute of India, Kottayam – 686 009, Kerala, India.

* Regional Research Station, Rubber Research Institute of India, Agartala – 799 006, Tripura, India.

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Impact of different plantation crops on soil properties in Tripura was studied in comparison with barren land. Multivariate analysis of variance indicated that there were significant differences among tree crop plantations. The analysis of variance of repeated measures showed that Ca, Mg, K, P, OC and pH varied significantly in different years while P and K did not show significant difference among plantation systems. The highest quantum of leaf litter was added by sal followed by teak, rubber, acacia and cashew. The nutrient contents in the litter did not follow any general trend. The variability in the soil properties was due to different types of plantations while the location did not contribute much. The leaf litter addition and consequent Mg content of soil was influenced by the location. Cluster analysis showed that rubber and sal formed the initial cluster with lowest distance between them while teak alone formed the second cluster. Acacia and barren land formed another cluster, which was distant from all the others. The present study indicated that rubber plantations in Tripura are comparable to forest tree plantations particularly sal and teak for the parameters observed.

Key words: Eco-system, *Hevea brasiliensis*, Rubber growing soil, Soil property, Tripura.

INTRODUCTION

The comparison of plantations with natural forest ecosystem has attracted several scientific investigations (Evans, 1982). Besides ensuring a stable ecosystem the plantations also aim at an economic return to the planter (Bruning *et al.*, 1978; Akrcoll, 1979). The different types of canopy covers are known to influence the water movement in the soil and consequently the nutrient content (Megahan *et al.*, 1962; Nazator, 1969). The litter added by different crops also cause differences in soil organic matter and nutrient content (Jha *et al.*, 2000). The tillage and other crop management practices along with other biotic and abiotic factors influence the soil properties (Holland, 1969; Norris, 1970).

The replacement of natural forest with crop plants usually reduces the biomass and nutrient potential of the ecosystem. However, in Tripura the tropical rain forests are largely denuded due to shifting cultivation and rubber (*Hevea brasiliensis*) cultivation on such land would lead to eco-restoration and improvement in soil physical properties (Krishnakumar *et al.*, 1990). Rubber plantations are considered as a self-sustaining eco-system, closely resembling natural forest (Samarappuli and Yogarathnam, 1995; 1997). Karthikakutyamma (1997) observed that there is no significant difference between the soil physical properties of rubber plantations and adjacent forests.

Correspondence: rrii@rubberboard.org.in