

## CHANGES IN ORGANIC CARBON AND SOME SOIL PROPERTIES UNDER RUBBER (*HEVEA BRASILIENSIS*) PLANTATION IN SUB-TROPICAL TRIPURA

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Changes in the status of soil organic carbon (SOC), available phosphorus (av. P), available potassium (av. K), pH and bulk density (BD) were studied in rubber plantations at an interval of two decades in Tripura. Composite soil samples collected at two depths viz. 0-30 cm (surface soil) and 30-60 cm (sub-surface soil) were analysed for SOC, av. P, av. K, pH and BD. The data showed that SOC content increased appreciably under rubber, particularly in the surface layer. It was observed that in a span of twenty years, SOC status in surface and sub-surface soil increased from 0.81 to 0.96 and 0.66 to 0.73 per cent, respectively. The frequency distribution curve for SOC showed a positive shift indicating an increase of SOC under rubber soils over time, up to a depth of 60 cm. A total amount of 10.2 mt C/ha was stored under rubber soils during twenty years of rubber cultivation and the rate of carbon assimilation in rubber soils was found to be 0.24 mt/ha/yr. The frequency distribution curve for av. K showed a building up at both the depths, whereas a decline in av. P status of the soil was observed during that period. No appreciable change in soil pH was recorded during this time and variation in BD of soils was inconclusive. The study revealed that cultivation of rubber in Jhum-lands of Tripura will be beneficial for restoring soil health.

**Keywords:** Organic carbon, Rubber plantation, Soil properties, Tripura

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### INTRODUCTION

In North East India, wide spread deforestation is a common practice mainly to meet the need for fuel wood, timber, forage etc. and thus destabilising the ecology of this region. The soils in this region are highly degenerated due to shifting cultivation (Datta *et al.*, 2001) which is preceded by burning of organic debris in soil

floor, thereby reducing soil organic matter and microbial population. Planting rubber (*Hevea brasiliensis*) in these denuded soils not only gives an excellent cover, but also provides ample revenue to the people. Therefore, as a settlement of local tribes as well as to meet the increasing demand of natural rubber in the country, large-scale rubber plantating was initiated in North-Eastern region of India by many government

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