

BIODIVERSITY OF EARTHWORMS IN THE SOILS UNDER RUBBER PLANTATIONS IN TRIPURA

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In spite of the monoculture nature of the plantations, rubber (*Hevea brasiliensis*) plants offer an ecofriendly environment for soil flora and fauna. The dense canopy of the rubber plants provides shade and conserves soil moisture. This makes the soil hospitable to soil microarthropods and earthworms which play a major role in soil fertility, ecosystem function and production. Rubber plantations in Tripura showed the presence of 20 species of earth worms. Interestingly, rubber plantations show high indices of dominance and low species diversity of earthworms and soil microarthropods as compared to that of the mixed forest. Being an exotic earthworm with its origin in Brazil, *Pontascolex coreobrevus* represents 61 per cent biomass and 72 per cent density of total earthworm population in the rubber plantation.

Key words: Biodiversity, Earthworms, Microarthropods, Monoculture, Nematodes, Rubber.

INTRODUCTION

Soil microorganisms are an integral part of agricultural and forestry ecosystems and play a critical role in maintaining soil health, ecosystem functions and production. Soil biodiversity reflects the variability among living organisms in the soil ranging from the myriad of invisible microbes to the more familiar macrofauna such as earthworms and termites. A biodiversity crisis has arisen recently due to the dramatic loss of species, habitats and ecological interactions.

Raising a forest plantation is the most widely adopted method to restore the fragile ecology of forests that have been denuded for various purposes, including shifting cultivation (*jhumming*), in the north-eastern region of India. *Hevea brasiliensis* is endemic to Amazon rain forests and the tree has all the attributes

of a forest tree species. It was introduced into Tripura in 1963 by the Forest Department to check soil degradation due to slash and burn agriculture practiced by the local tribal people and also as a part of their rehabilitation programme. Rubber has become an important cash crop in the economy of Tripura where it occupies more than 33,000 ha of land. Being deciduous, it shows leaf fall during February – March, with an annual litter addition of 7 t/ha to the plantation floor (Jacob, 2000). *Hevea* leaf litter has been reported to be a good substrate for growth and reproduction of South African vermicomposting worm, *Eudrilus eugeniae* (Chaudhuri *et al.*, 2003). Comparative studies on soil biodiversity in rubber (*H. brasiliensis*) plantations with other forestry plantations or natural forests are sparse (Bhattacharya *et al.*, 1985). Studies on ecology and biodiversity in rubber plantations in