

Effect of land use on microbial biomass and enzyme activities in tropical soil

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Land use change especially from forest to intensive agriculture for sustaining livelihood causing severe consequence on soil quality. Soil microbial biomass and enzyme activities are very sensitive to change in environment. The objective was to assess effects of three land uses i.e. forest, organic and conventional farming on microbial biomass C and N and enzymes involved in C-cycle (β -glucosidase), N-cycle (leucine-aminopeptidase), P-cycle (Phosphatase) and S-cycle (Sulphatase) at different depth (0-100 cm with 10 cm in interval) of soil in Chitwan, Nepal.

The result showed that both carbon and nitrogen content (%) was significantly higher in organic farming than conventional farming and forest. However, the trend decreased in lower depth. Significantly high microbial biomass C and N ($\mu\text{g C and N g}^{-1}$ soil) were found in organic farming than conventional farming and forest at 0-10 cm but the trend was inconsistent in lower depth. β -glucosidase, leucine-aminopeptidase and sulphatase (nmol g^{-1} soil) activities were higher in organic and conventional farming compared to forest at 0-20 cm. Phosphatase activity was higher in conventional farming than forest and organic farming at 0-20cm. The activities were inconsistent below 20 cm. Application of farmyard manure and organic matter from the vegetation contributes the higher microbial biomass and enzyme activities in organic farming.