Nematode community structure as influenced by land use and intensity of cultivation

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Abstract

This study was conducted to determine the effect of land use and intensity of land cultivation on the nematode community structure. The land use types represented in the study sites were natural forest, plantation forest, tea, coffee, Napier grass, agro forestry, fallow and annual crop cultivation dominated by maize intercropped with beans. Nematode diversity and abundance decreased with intensity of land cultivation, with the natural forest being regarded as the benchmark. The decrease in nematode diversity was assessed using Shannon, Simpson and species richness indices and was used to reflect the underlying changes in physical, chemical and biological properties of soil environment. The highest maturity indices for free-living and plant parasitic index were recorded in the natural forest and intensively cultivated land under annual crops (maize/beans), respectively. Plant parasitic nematodes were predominant in soils that were under agricultural production while saprofagic nematodes dominated the forested land as exemplified by the ratios of free-living to plant parasitic which were, 5.18 and 0.54 in the natural forest and annual crop production systems respectively. Changes in the nematode community structure, as exhibited by diversity indices, may be a reflection of real differences in the soil characteristics and changes in ecosystem functions. Key words: Abundance; diversity; richness and maturity index.