

Abstract

Land use intensification leads to soil degradation and consequently to loss of biodiversity and more specifically to soil biodiversity. A study was undertaken to assess the effect of land use change on selected soil organisms at Embu and Taita Taveta benchmark sites in Kenya. Soil samples were collected from geo-referenced points located in natural forest, plantation forest, tea, coffee, napier grass, agro-forestry, fallow, maize/beans intercrop and land under horticultural crop production. The soil organisms were grouped into three main categories based on their morphology and sizes as follows; microbes, mesofauna and macrofauna. A general decline in diversity and abundance of beneficial microbes was observed with increase in land use intensity. Richness and abundance of *Trichoderma* was highest and lowest at the napier grass and coffee benchmark sites, respectively. Land use intensification had no significant effect on arbuscular mycorrhizal fungi (AMF) populations and their diversity. Results also confirm that land use has a significant effect on the diversity of rhizobia. It was also observed that the frequency of isolating nematode destroying fungi (NDFs) increased with increase in land use intensity. An increase in abundance of plant pathogenic microbes was associated with intensity of land use where the abundance of *Fusarium* and *Pythium* spp. was significantly ($P < 0.05$) affected by land use. The ratios of free-living to plant parasitic nematodes were 5.18 and 0.54 in the natural forest and annual crop production systems, respectively. Similarly, the abundance and diversity of collembollas decreased with increase in land use intensity. This study confirmed the hypothesis that land use intensification significantly led to loss in soil biodiversity which may account for the decline in soil quality and productivity.