

Abstract

Soils perform various functions for the purpose of supporting agroecosystems. Numerous agroecosystem support functions rely on the properties of soils. Inappropriate agricultural techniques and land usage have led to a global 12.5% drop in soil health during the previous few decades. Inappropriate cultivation, nutrient mining, and overuse of inorganic chemical treatments are some of the activities that may have degraded soil quality. A study on the influence of intensive agriculture on soil properties and nutrient availability under different cropping systems and locations was done in the years 2018 and 2019 in Kauwi and Zombe Wards of Kitui County, Kenya. Four commonly occurring cropping systems, namely, vegetable, cereal, fruit, and agroforestry, were selected in the two locations. Uncultivated land in the area was considered as control. In total, there were five treatments, which were replicated five times in each of the locations. During the typical long (March, April, May) and short (October, November, December) rainfall seasons, composite soil samples were randomly taken from the cropping systems. Analysis of the results revealed that the influence of cropping systems on locational variation of soil quality parameters varied significantly ($p < 0.05$). Further, the interaction between cropping strategies and locations significantly influenced soil pH and soil organic carbon. In Zombe, the vegetable cropping system registered the lowest soil pH and electrical conductivity values. Similarly, Soil Organic Carbon, Nitrogen, Phosphorus, and Potassium mean values under the vegetable farming system were higher in Zombe compared to Kauwi ward, probably due to the heavy application of fertilisers. Based on the results from the study, farmers in the area should be sensitised to embrace sustainable agricultural practices that promote moderate application of fertilisers to maintain healthy soils.