

SPATIAL DISTRIBUTION AND LOSS OF MICRONUTRIENTS IN SOILS FROM TWO DIFFERENT LAND USE MANAGEMENT

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Abstract

Land use – land cover changes affect the ecosystems' status and integrity to support and supply the services. Agricultural activities and attendant soil erosion, leaching or depletion of nutrients may result in increased soil degradation. The study investigated micronutrient spatial distribution and concentration in soils within two different agricultural land use management. The study employed RUSLE equations to determine the erosion rate within the selected plots. Topsoils (5-10cm) from different points within the plots were collected and analyzed for micronutrients using ICP-MS(QQQ). The plots are located in high potential soil erosion places with soil erodibility (K) factor OF 0.031-ton ha⁻¹MJ-1mm⁻¹ within the Ombeyi river catchment. The soil erosion was estimated to be > 50t ha⁻¹ year⁻¹, implying the high loss of nutrients; hence, over 52 elements were analyzed. The two plots compared micronutrients iodine (I), calcium (Ca), copper (Cu), iron (Fe), magnesium (Mg), selenium (Se), zinc (Zn), and molybdenum (Mo). In Plot 1(no terraces), micronutrients were concentrated at the base of the plot, while in plot 2 (terraces), some elements were evenly distributed. There is a significant difference in the concentration of elements between the plots; I, Se, Cu, Ca and Mg, depicting a p-Value of <0.05, while Fe, Zn and Mo with P-value >0.05. Elements in plot one were mapped with high concentration at the lower part of the plot as related to plot two which most of the elements were evenly distributed hence reduced micronutrients in plot 2. This encourages educating farmers on the importance of good terrain soil management.

Keywords: Micronutrients, Erosion

