

## **Land Use Systems and Soil Quality Indicators in a Fersiallitic (5e) Soil at Matopos Research Farm in Zimbabwe**

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### **Abstract**

This study investigates soil texture and chemical properties on different land use systems in order to determine soil exchange characteristics that influence land quality. In order to assess the effect of land use over time some soil samples were taken to determine the soil quality for agricultural purposes. The experiment was carried out at Matopos Research Institute located at longitude 28°29' E, latitude of 20°24' S. A completely randomized block design (CRBD) was used for collecting soil samples for laboratory analyses from four land use systems namely rain-fed fields, irrigation land, fallow and grazing. Data was analyzed using ANOVA. There were significant ( $P < 0.05$ ) differences for the soil properties: soil texture, N, P, K, and Mg in different land use systems. N, P, and K levels were relatively high on land under irrigation compared to other land uses. Exchange properties: Cation Exchange Capacity (CEC), and calcium magnesium ratios had significant ( $P < 0.05$ ) differences among land use systems. From the findings of this investigation, it was therefore concluded that farmers periodically need to fallow their lands to sequester organic matter, stabilize soil aggregates, improves nutrient cycles for sustainable agricultural production. In addition, for best responses for land management it is important to send soils for analysis for correct fertilizer recommendations.