Characteristics of soils in selected maize growing sites along altitudinal gradients in East African highlands

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Abstract
Maize is the main staple crop in the East African Mountains. Understanding how the edaphic characteristics change along altitudinal gradients is important for maximizing maize production in East African Highlands, which are the key maize production areas in the region. This study evaluated and compared the levels of some macro and micro-elements (Al, Ca, Fe, K, Mg, Mn, Na and P) and other soil parameters (pH, organic carbon content, soil texture [i.e. % Sand, % Clay and % Silt], cation exchange capacity [CEC], electric conductivity [EC], and water holding capacity [HC]). Soil samples were taken from maize plots along three altitudinal gradients in East African highlands (namely Machakos Hills, Taita Hills and Mount Kilimanjaro) characterized by graded changes in climatic conditions. For all transects, pH, Ca, K and Mg decreased with the increase in altitude. In contrast, % Silt, organic carbon content, Al and water holding capacity (HC) increased with increasing altitude. The research provides information on the status of the physical-chemical characteristics of soils along three altitudinal ranges of East African Highlands and includes data available for further research.