Potato-legume intercropping on a sloping terrain and its effects on soil Physico-chemical properties

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Abstract

**Aims:** To assess the effects of potato-legume intercropping on selected soil physical and chemical properties after four consecutive growing seasons (from the short rains in 2014 to long rains 2016).

**Methods:** The experiment was laid out in a randomised complete block design with four replicates. The treatments were potato-dolichos (PD); potato-garden pea (PG); potato-bean (PB) intercropping systems, and a pure stand of potato (PS). After every harvest, crop residues were ploughed back and selected soil physico-chemical properties were assessed after two years of cultivation.

**Results:** Potato-legume intercropping resulted in a significant increase down the slope for clay and silt under PS, PG and PB whereas; an opposite observation was made for sand and bulk density. Nonetheless, under PD, slope position had no significant effect on soil physical properties. In all cropping systems, a significant increase was observed down the slope for pH and cation exchange capacity. Similar observations were made for phosphorous, nitrogen and organic carbon under all the cropping systems except PD.

**Conclusions:** This study has established PD as a viable intercropping system, which could be adopted by farmers for improved soil fertility.

**Keywords:** Soil fertility; Slope position; Spatial variation; Intercropping systems; Crop residue incorporation