Spatial Variation of Soil Quality Indicators in Temperate Alley Cropping Practices. (S03-mungai134722-Oral)

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Abstract:

Alley cropping has been proposed as a sustainable agricultural system for temperate regions. However, information on soil quality variability under alley cropping is limited. The objective of this study was to examine spatial variability in soil quality in alley cropping practices in Missouri. Soils were sampled to a depth of 10 cm at different positions from the treeline to the middle of the alley at two sites; a 19-year old pecan (Carya illoensis)/bluegrass (Poa trivials) intercrop (PB) and an 11-year old silver maple (Acer saccharinum) /soybean-corn rotation (SSC). Soil enzyme activities were significantly (P < 0.05) higher at the treeline than at the alley center for both study sites. Soil organic C did not significantly differ among positions at either site. Microbial community structure based on BIOLOG expressed as average well color development (AWCD) was significantly higher at the alley center at SSC, but was not different at PB. Total N exhibited differences similar to AWCD at both sites. Spatial variability in soil quality occurred among alley cropping practices relative to the position of the tree line, possibly because of different C inputs and microclimate.

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