Relating Electrical Conductivity Mapping to Soil Properties from the World's Oldest Cotton Experiment. (S06-siriprieto161143-Poster)

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Abstract:

Electrical conductivity (EC) mapping is a potentially useful tool for measuring soil variability. The Old Rotation, the oldest continuous cotton (Gossypium hirsutum L.) experiment in the world (ca.1896), provides a valuable resource for evaluating soil spatial variability. The objective of this study was to determine the relationship between soil chemical properties and EC in the Old Rotation. Soils at the site classified as thermic Typic Kanhapludults. Soil EC was measured at two depths (30 and 90 cm) using a Veris 3100 direct contact sensor with geo-referencing. Soils were grid sampled (346 points) at close interval (1.5 x 3.0 m). Soil organic carbon (SOC) and soil total nitrogen, extractable P, K, Mg, Ca, pH, and CEC were measured at two depths (0-5 and 5-15 cm). The EC was most highly correlated with P, Mg and K than other properties. Soil nitrogen and SOC had no relationship with EC. The relatively poor and variable relationships between soil chemical parameters and EC established from this intensively sampled study suggest that mapping plant nutrients and SOC using EC is problematic due to dependence on soil physical properties, e.g., clay content.

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