Soil Carbon Correlation with Electrical Conductivity, Terrain Attributes, and Soil Map Unit for a Coastal Plain Field. (S06-terra203542-Poster)

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Abstract:

Effects of soil management on SOC vary across landscapes due to spatial variation in terrain attributes and soil properties. We determined relationships between SOC, terrain attributes, electrical conductivity (EC) and soil map units in a Coastal Plain field (Aquic and Typic Paleudults). The 9 ha field was divided in 496 grids, and composite samples (30 cm depth) were collected and analyzed for SOC. A soil survey, geo-referenced elevation, and EC at 30 and 90 cm depths were obtained. Eight terrain attributes (elevation (ELEV), slope, aspect (ASP), profile curvature, plan curvature (PLANC), flow accumulation (FA), catchment area and compound topographic index) were calculated. The EC and SOC showed high spatial dependence as estimated by nugget semivariance. The ELEV, Slope, EC and FA had the strongest relationship with SOC (R2=0.41). Principal component (PC) analysis indicated that FA, EC, PLANC and ASP were the best describing the variability (71%). The SOC was mostly correlated with the second PC (r=-0.45). If relationships between SOC and terrain attributes can be improved, they could be used as a tool to estimate impacts of management practices at fields or regions.

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