The Assessment of Traditional Soil Classification Techniques versus Ground Penetrating Radar and Electromagnetic Inductance at Two Separate Sites on The Southern Mississippi Valley Silty Uplands. (S05-raley074932-Poster)

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Abstract:

Ground penetrating radar (GPR) and electromagnetic inductance (EMI) allow subsurface features to be observed without disrupting natural flow patterns of groundwater. Traditional soil characterization and classification were conducted on soils from the Southern Mississippi Valley Silty Uplands Major Land Resource Area (MLRA 134) in order to evaluate the usefulness of each of these geophysical investigation tools. Eight pedons were selected and described in Western Kentucky and Northern Mississippi based on initial EMI scans. Soils were described and sampled using methods of the Soil Survey and were classified using the U.S. Soil Taxonomic System. GPR data were collected using an SIR System 10A (GSSI, Inc.). EMI data were collected using a Geonics, Ltd. EM-31 electrical conductivity meter. All data was geo-referenced using a Trimble AgGPS-132. The Kentucky sites are Typic Fragiudalfs and Fragic Hapludalfs whereas the Mississippi sites are Ultic Hapludalfs, Typic Fragiudalfs, Typic Paleudalfs, and Typic Hapludults. In Kentucky GPR and EMI were able to successfully detect variations in soil morphology. In Mississippi however, only EMI was able to successfully detect variations in soil morphology.

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