Analyses of GPR Signals to Distinguish Surface and Subsurface Diagnostic Horizons. (S05-collins111532-Poster)

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Abstract:

Florida has seven soil orders (Alfisols, Entisols, Histosols, Inceptisols, Mollisols, Spodosols, and Ultisols). The epipedons are ochric, mollic, histic, and umbric. Common diagnostic subsurface horizons are argillic, spodic, kandic, and lithic. Also, the thickness of the organic material in Florida's Histosols varies. The objective of this research was to determine if the surface and subsurface diagnostic horizons in Florida's soils could be distinguished through the use of GPR (distinctive signals). Based on preliminary GPR data, the Mollisols (mollic) and Inceptisols (umbric), and Alfisols and Ultisols (argillics) were grouped because there were no signal diversities. Physical and chemical analyses included: moisture content, pH, particle size, and organic carbon content. Reflex software was used in the radar post-processing. The lab results were compared to the GPR signal data to determine if the diagnostic horizons had a unique radar profile. All the epipedons were difficult to distinguish except the histic. Argillic, spodic, and lithic horizons could be separated but not the kandic. Histosols, especially those with mineral substratum, were the easiest to identify.

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