Predominant Properties Affecting Profile Soil Electrical Conductivity in the US Midwest. (A08-kitchen171647-Oral)

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Abstract:

Commercially available sensors for measuring apparent profile soil electrical conductivity (ECa) can be an indirect indicator of a number of soil physical and chemical properties helpful in characterizing within-field variability for precision agriculture. The objective of this research was to relate ECa data to soil properties across the U.S. Midwest. Data were collected on twelve fields in six states of the north-central US. At 12 to 20 sampling sites in each field, 120 cm deep soil cores were obtained and used for soil property determination. Physical properties were generally better related to soil ECa than chemical properties. Correlations of ECa with clay content and CEC were generally highest and most persistent across all fields. It may be possible to develop relationships between ECa and clay and CEC that are applicable across a wide range of soil and climatic conditions, such as were found in the study fields. For soils with pronounced horizon layering as a result of parent material changes or clay accumulation, soil ECa can often be used to predict the depth of that layer boundary. Surface soil texture was also highly related with soil ECa for some soil types.

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