Concurrence of Mineralogical Characteristics and Family Class Criteria for Soils in the K-rich Region of NW Ohio. (S05-balduff151403-Oral)

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Abstract:

Fertility studies of NW Ohio soils in the 1960's documented very high K release rates. Consequently, these soils were classified in the illitic mineralogy family of Soil Taxonomy. Many of the series are now being re-evaluated for a possible change from the illitic to the mixed mineralogy family based on limited XRD data. The objectives are to: 1) develop an adequate mineralogical database for soils of NW Ohio; 2) examine the correlation of XRD data with total K contents; and 3) evaluate the criteria for defining the illitic mineralogy class. Total K measurements are accurate and precise, but because geologic illites have variable K contents, the relationship between K and illite contents has not been precisely established. Data collected in this study show a positive correlation between total K content and illite 1 nm peak area measurements. The highest total K contents occur in the deep water lacustrine lake plain of NW Ohio and decrease outward onto the glacial till plains. Whereas, K contents tend to support an illitic classification, a more quantitative evaluation of illite content by XRD is necessary or modification of the class criteria for the illitic family may be warranted.

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