

SOIL AND ATMOSPHERIC SCIENCE

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Loess Distribution in Wabash County, Indiana and Characteristics of Late Wisconsin tills in Northeastern Indiana. D. P. FRANZMEIER, G. C. STEINHARDT, and R. B. BRYANT, Agronomy Department, Purdue University, West Lafayette, Indiana.—Loess distribution was studied in an area along the eastern front of the Mississinewa Moraine in Wabash County, Indiana. The thickness of the loess deposit was determined from soil cores taken along a north-south and an east-west transect. Similar thicknesses of loess were observed on both the early Woodfordian age (Tazewell) Cartersburg till and the late Woodfordian age (Cary) New Holland till. The thickness of the loess deposit ranged from zero to 134 cm and varied randomly. In the north-south transect it tended to be thickest near the Wabash River. The results suggest a multiplicity of loess sources in the area.

Unleached till samples were collected and characterized at each sampling site in the study area. In support of the state soil survey program, the Purdue soil characterization laboratory has characterized numerous additional samples of unleached till throughout northeastern Indiana. These data support three groupings of tills based on particle-size distribution. Tazewell till beyond the Union City and Packerton moraines generally have 8 to 18 percent clay and 40 to 60 percent sand. Tills from the Fort Wayne and Wabash moraines have 30 to 40 percent clay and 15 to 25 percent sand. Tills associated with the Union City, Mississinewa, Salimonie, and Packerton morainal systems have textures that are intermediate between these two groups.

Nitrogen fertilizer had a pronounced effect on dry matter yield and percent crude protein. Very little response was observed from the application of P and K fertilizer. Mineral composition of the Kentucky bluegrass harvested from the eight fertilizer treatments and the three replications for the four cuttings was determined.

Composition of the Clay Mineralogy of the Argillic and Fragipan Horizons of Soils of the Cincinnati Catena. G. C. STEINHARDT and D. P. FRANZMEIER, Agronomy Department, Purdue University, West Lafayette, Indiana.—We studied the clay mineralogy of the argillic and fragipan horizons of soils and the Cincinnati catena sampled in Jennings County, Indiana. These soils were developed in two zones of Wisconsin age loess above a paleosol at about 2m of Illinoian age. The clay mineralogy of the two horizons were quite similar both qualitatively and quantitatively. We found kaolinite the dominant mineral, illite and vermiculite intermediate and montmorillonite lowest. The only constant quantitative trend that was found was an increase in kaolinite content

when the argillie horizon was founded in upper loess and the fragipan was found in the lower loess. The conclusion of this study is that clay mineralogy is probably not as important in fragipan development as other properties such as amorphous materials.

Acid Rainfall Sensitive Soils of the Eastern United States. Thomas G. VANHORN and William W. MCFEE, Department of Agronomy, Purdue University, West Lafayette, Indiana.—Acidity in precipitation has increased to the point where concern has been expressed over its possible effects on the soils of the eastern United States. With cation exchange capacity (CEC) as the basis for sensitivity, soil associations of each state east of the Mississippi River were determined to be sensitive (< 6.2 me/10g), slightly sensitive (6.2 - 15.4 me/100g) or non-sensitive (> 15.4 me/100g). Each state was mapped according to the sensitivity of its soil associations and these were generalized into a single 1:250,000 map. Much of New England, northern and eastern New York, and the eastern states was found to be slightly sensitive. Also, large portions of the South; southern portions of Pennsylvania, Ohio, and Indiana; northern Michigan and northwestern Wisconsin were generally slightly sensitive. Land use, however, was not taken into account; thus, showing a much larger slightly sensitive area than would normally be expected.