Land Use Impacts on Infiltration Rates in the Surface and Near-Surface Horizons of Three Soil Series in the Northern Piedmont. (S05-lin172339-Poster)

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Abstract:

Soil infiltration rates as affected by land uses (including croplands, pastures, woodlands, and urban) were investigated on three dominant soil series (Manor, Glenelg, and Penn) in Chester and Montgomery Counties, PA. The study area represents the Northern Piedmont Highlands and Lowlands of the MLRA 148. Land use impacts on soil properties were reflected in changes in soil morphology (e.g., compacted layer, structure, and macroporosity) and physio-chemical properties (e.g., bulk density and organic mater). Ring infiltration, bulk density, texture, and soil morphology were determined at each site using routine soil survey and soil quality test kit procedures. Transects depicting the soil variability were also examined at many sites. Regression models are attempted to estimate the mean and variation of infiltration rates within and among the soil series and land uses studied, incorporating use-dependent and use-invariant soil properties. These models facilitate the interpretation and utilization of the National Cooperative Soil Survey databases for characterizing water flow in soils and would assist the incorporation of dynamic soil properties into the soil survey databases.

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