



## USDA-CSREES 2005 National Water Quality Conference

### Soils and Nutrients in Agricultural Drainage Ditches

*Abstract: Situation: Detailed knowledge of soils formed within drainage ditches is critical to the development and evaluation of BMPs that specifically target the management of drainage ditches. Awareness of the spatial distribution of P within an agricultural drainage network will aid in identifying critical ditch reaches that can be targeted for conservation practices.*

*Objectives: (1) Investigate the morphology of agricultural drainage ditch soils under a pedological framework to identify critical source areas of P and assess their potential role in phosphorus release to overlying waters. (2) Examine the spatial distribution of ammonium oxalate-extractable P, Fe, and Al within an agricultural drainage network.*

*Methods: Soil morphological descriptions (n = 73) were performed at 40 m intervals along transects within 10 agricultural drainage ditches. Samples were analyzed for pH, organic carbon, water-extractable P, Mehlich 3-P, and oxalate-extractable Fe, Al, and P. Surficial soil samples (0-5 cm) were collected at 10 m intervals (n = 405) along transects within each drainage ditch and were analyzed for pH and oxalate-extractable Fe, Al, and P.*

*Partnerships: University of Maryland, College Park; University of Maryland Eastern Shore; USDA-ARS Pasture Systems and Watershed Management Research Unit, University Park, PA; Maryland Department of Natural Resources. Integration of Research, Teaching, and Extension: Results from this study will be used as a starting point for field investigation during a summer high school internship program in 2005 and 2006.*

*Results: Based on preliminary data, P levels are very high in 0-5 cm depth of ditch soils with an oxalate-extractable mean of 700 mg kg<sup>-1</sup> and a range of 135 to 6916 mg kg<sup>-1</sup>. Degree of P saturation has a mean of 57 % and a range of 18 to 110 %. The full data set will be available for presentation.*

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