# Evaluating Analytic and Risk Assessment Tools to Estimate Sediment and Nutrients Losses from Agricultural Lands in the Southern Region of the USA

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## Abstract

Non-point source pollution from agricultural fields is a critical problem associated with water quality impairment in the USA and a low-oxygen environment in the Gulf of Mexico. The use, development and enhancement of qualitative and quantitative models or tools for assessing agricultural runoff quality, and exploring actions and policy alternatives for managing water quality and quantity from intensive agricultural fields, has been widely promoted by national, regional and states nutrient reduction initiatives due to a lack of available field data. Two complementary projects supporting specifications in the recently revised USDA-NRCS nutrient management standard (590) and states nutrient criteria are in progress. The first project was formulated to investigate, within the Southern region, the feasibility of using models to estimate potential phosphorus loss from agricultural fields in lieu of phosphorus indices. The second project is intended to test and validate existing risk assessment tools to demonstrate their accuracy in assessing the magnitude, extent and risk of soil and nutrient losses, and their utility to facilitate decision support for water quality and quantity improvement, and cost-effectiveness of conservation practices at field and watershed scale in the Mississippi Delta. Preliminary results are presented on research to test and validate the Agricultural Policy / Environmental eXtender (APEX), Texas BMP Evaluation Tool (TBET), and Annual Phosphorus Loss (APLE) models in fields from MS, NC, GA, and AR, and to test and validate five quantitative (APEX, NTT, APLE, N-Index, and RUSLE2) and three qualitative (P-Index, N Leaching Index, WQ Index) risk assessment tools in the Mississippi Delta. Additional outcomes from researches include development of web-based version of selected risk assessment tools including new components for evaluating the BMP effectiveness in the Mississippi Delta and life cycle costs.