

# Assessment of the Texas Best Management Practice Evaluation Tool as a Quantitative Predictor of Field-Scale Phosphorus Loss

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**Reference:** McDowell RJ, CA Pruitt, RA Bahn (eds.), *Proceedings of the 2015 Georgia Water Resources Conference*, April  
28-29, 2015, University of Georgia, Athens.

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**Abstract.** The United States Department of Agriculture and the United States Environmental Protection Agency require each state to adopt a management strategy for controlling non-point phosphorus (P) loading to public waters. The most common strategy is the P-index. Currently, 48 states use some form of the P-index as mandated by the Natural Resources Conservation Service 590 Nutrient Management Standard (NRCS 590). In spite of widespread adoption, the lack of evaluation against field runoff data and variations in implementation among states threaten the success of the P-index. As a result, the Southern Extension-Research Activity Group 17, established to review NRCS 590, advised using measured P loss data and predicted P loss from quantitative P loss models to improve P-indices. Therefore, this study assesses whether the Texas Best Management Practice Evaluation Tool (TBET), a field-scale version of the Soil and Water Assessment Tool, is able to sufficiently predict quantitative P loss. TBET was successfully calibrated and validated in Texas and Oklahoma as a qualitative tool for conservation planners. However, this study tests whether TBET can be successfully applied quantitatively to fields beyond the region of its original calibration and validation. Measured water quality data from three sites in the southern United States were used for our analysis. We present results for the baseline and site-specific calibrated performance of TBET as a quantitative P loss predictor. In addition, we test whether the soil moisture based curve number approach or the plant evapotranspiration based curve number approach produces more precise predictions with TBET.