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Field verification of hydrologic models and the application of decision support systems in the conservation planning process

Timothy J. Schauwecker *, Wayne Wilkerson, Jeremy Murdock, Austin Moore, Mississippi State University; * tschauwecker@lalc.msstate.edu

Abstract:

Conservation Planning requires that choices be made between potentially numerous alternative designs and outcomes. The application of hydrologic modeling tools in the planning process allows for the ability to weigh the outcomes of alternate strategies against one another in an attempt to maximize the effects of the implementation of conservation practices. Past research has shown that in Mississippi, modeling is utilized by very few of the practitioners that are integral parts of the conservation planning process. Our research aims to bring down barriers to the use of hydrologic models so that they can be more useful to farm consultants and landowners. We present the results of field verification of hydrologic models in agricultural systems, an analysis and critique of a common hydrologic model (BASINS/HSPF) as it relates to general usability, and the description of the development of a decision support tool that makes installation and maintenance cost data and pollutant removal efficiency data available to conservation planners. Vegetated swales and stream buffers were installed in three grazing land test basins and field measurements were compared to modeled scenarios. We also present the description of a simple hydrologic calculator in a spreadsheet format that we feel has the potential to put the power of hydrologic decision support into the hands of more landowners. Using a series of questions and accompanying help functions, a user is able to calculate and compare Curve Numbers for parcels of land on which they would like to implement conservation practices. Our ultimate goal is to make conservation planning decision support accessible to any landowner who wants to weigh the outcomes of multiple scenarios.

Impact Statement:

Project outcomes include field verification of modeled conservation practices and the further development of a conservation planning decision support system. Partnerships include those developed between landscape architects and civil and agricultural engineers, and between those groups and agricultural land managers. Lessons learned include the difficulties associated with bringing a useful decision support system into the public realm.

Category: Human Dimensions

Type of Presentation: Oral Presentation