

Chelsie was born and raised just outside of Fort Wayne, Indiana. She received her B.S. degree in Agricultural Engineering from Purdue University in 2011 and continued on to pursue her M.S. degree. Her research work here has centered on the use of the Soil and Water Assessment Tool.



Agricultural Biological

Thesis Defense

Speaker: Chelsie Boles

Title: SWAT Model Simulation of Bioenergy Crop

Impacts in a Tile-Drained Watershed

Major Professor(s): Dr. Jane Frankenberger

Date: Tuesday, November 26, 2013

Time: 12:30pm

Location: ABE 301

Abstract:

Tile drains are an important component of agricultural production in the Midwest, and their inclusion in modeling studies is important in watersheds where they are a principal hydrologic pathway. The new tile drainage simulation method in the Soil Water Assessment Tool (SWAT) was parameterized and tile flow results were compared with reviewed literature. Streamflow, sediment, and nutrient outputs were compared to measured values and simulated crop yields were examined with respect to average county yields. Plant growth stressors were examined to account for differences between simulated and published yields. The bioenergy crop switchgrass (*Panicum virgatum*) was applied over the watershed in land use scenarios developed from a review of published modeling studies and scenario planning literature. Differences in water quality and quantity arising from these land use changes, simulated by SWAT, were quantified.