Scientific and Technological Tools to Implement Iowa Nutrient Reduction Strategy

Issue: New scientific tools and techniques and an improved understanding of the physical, chemical and biological processes are needed to predict nutrient mobilization, fate and transport in Iowa. It also is important to improve scientific understanding of the benefits derived from best management practices (BMP), from individual practices through watershed-integrated approaches.

Objective: Four research projects focus on developing scientific and technological tools to aid in the implementation of the Iowa Nutrient Reduction Strategy. A science and process-based framework using an integrated watershed approach will improve understanding of the complex nutrient management issues in Iowa, and the basis for possible solutions.

Approach: The first project will quantify the benefits of BMPs and land management practices, and associated hydrology on nutrient loading to water resources using hydrodynamic modeling tools. Three new models will be implemented to quantify nitrogen removal benefits over a range of precipitation and stream flow.

The second project will quantify the benefits of BMPs and land management practices, and associated hydrology on sediment and phosphorus loading based on field observations.

The third project will develop a functional, web-based database of available nutrient data sets in Iowa to be used by the Iowa Nutrient Reduction Center.

The fourth project involves measurement of field data parameters to support modeling, including field monitoring of nitrogen, sediment and phosphorus inputs and outputs for select BMPs installed in priority watersheds.

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