

Nutrient Trading in Iowa: A Pilot Study in the Catfish Creek Watershed

Issue: Iowa's economy is largely driven by agriculture, with more than 69 percent of the land planted in a principal crop in 2013. Fertilizer containing nitrogen (N) and phosphorus (P) is applied to farm fields to enhance soil fertility, but water quality can suffer when those nutrients leave farm fields. Financial incentives may be useful for farmers and landowners to implement nutrient reduction practices that improve water quality.

Objective: Nutrient trading provides one possible framework for nutrient reduction that could benefit both point source and nonpoint source contributors of N and P. The goal of nutrient trading is to improve water quality through nutrient reduction in an incentivized and economically advantageous way. Under this framework, contributors of N and P could generate tradable credits by adopting best management practices (BMPs) that reduce nutrient levels below required levels. Those who collect credits, such as farmers and landowners, could sell them to point source contributors downstream who also need to meet required nutrient levels or reductions. In this way, the credits provide an additional source of revenue to the sellers that could cover the cost of BMP implementation and potentially provide additional profit. This system also offers a potential cost savings to the buyer, since buying credits may be more cost effective than implementing more extensive and perhaps expensive measures.

Approach: This project will develop the scientific basis for a nutrient trading program in Iowa using the Catfish Creek Watershed near Dubuque as a pilot watershed. This will involve relating a given BMP to a nutrient load reduction. From this analysis, questions like the following can be answered: How does a given BMP equate to a nutrient load reduction (concentration or load)? How does the nutrient reduction change with differing hydrologic conditions or for different crop types/rotations? What type of variability is expected in nutrient reductions across a geologic region or landscape unit? Nitrogen is the primary nutrient to be studied initially since it is water soluble and strongly tied to streamflow and precipitation. Nutrient trading related to P will be assessed at a later time.

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