



**LEOPOLD CENTER**  
FOR SUSTAINABLE AGRICULTURE

## Completed Special Project

Drainage water quality impacts of agricultural management practices

**Project ID:** ESP2008-NASHUA

### Abstract

*Investigators analyzed the impacts of liquid swine manure application, tillage, rotation and cover crops on dissolved nutrient loss in subsurface drainage. The project took place at the ISU Northeast Research Farm near Nashua. Tile drainage water samples were collected weekly for nitrate and dissolved-reactive P analysis during 2009 and 2010. Nitrate-N concentrations were highest under continuous corn receiving swine manure every year compared to other treatments. Corn-soybean rotations that received manure only before corn had lower nitrate-N concentrations compared to corn-soybean rotations that received manure before both crops. During these three years, which were not ideal for cover crop growth due to cold wet springs, nitrate concentrations in tile water from the corn-soybean system without a cover crop were similar to or slightly higher than concentrations from the corn-soybean system with a cover crop.*

**Lead investigator:** Matthew Helmers, ISU Agricultural and Biosystems Engineering

### Co-Investigator(s):

Ramesh Kanwar, ISU Agricultural and Biosystems Engineering, and Antonio Mallarino, ISU Agronomy

**Year of grant completion:** 2010

This special project was part of the Leopold Center's Ecology Initiative.

**Topics:** Nutrient management , Water quality, quantity and management

### RELATED INFORMATION

This is a special project and has no final report. See continuing research at the Nashua site:

- [Investigation of bacteria transport and resistance mechanisms and implications for water quality](#) (E2012-05)
- [Drainage water quality impacts of current and future agricultural management practices](#) (XP2011-04)

Read about [related water quality work at the Nashua farm site](#).

**Related grant:** Improving soil health and water quality through better soil phosphorus assessment and management practices [E2015-13]