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Water Quality Research Plans

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Abstract

Water quality is important on the national and local level. Agriculture can have a major impact on water quality. Helping to maintain or improve water quality through agricultural research is a priority of farmers in northwest Iowa.

Disciplines

Agricultural Science | Agriculture

Water Quality Research Plans

David Haden, farm superintendent

Water quality is important on the national and local level. Agriculture can have a major impact on water quality. Helping to maintain or improve water quality through agricultural research is a priority of farmers in northwest Iowa.

Northwest Iowa has some of the highest livestock concentration areas in the state. It also has significant acres of farmland. Large amounts of commercial fertilizer and manure are applied annually for crop production. Improperly handled, these resources can have a negative impact on water quality.

In 2001, the Northwest Iowa Experimental Association purchased 120 acres adjoining the research farm near Sutherland. The additional land expands the cooperative efforts that the association and Iowa State University began in 1954. Leaders of the association identified water quality research as a top priority for this new site. Plans are progressing to develop the site to address topics related to water quality issues for the 21st century.

The first study will involve tile drainage management. The study will focus on investigating the potential for drainage management practices to provide environmental benefits by reducing subsurface drainage volumes and the export of nitrate-nitrogen and phosphorus through subsurface drainage systems. It will also determine if there are any possible production benefits from making more water available to crops. In addition, the study would demonstrate the potential for wetlands to reduce nitrate-nitrogen concentrations in water coming from the subsurface drainage system.

The second study will involve a series of plots where all of the runoff is collected to measure soil, phosphorus, and nitrogen losses. The plot areas will have commercial fertilization and liquid swine manure application, practices that are used by farmers and recommended for a corn-soybean rotation. From these areas, researchers will assess soil losses: dissolved, bioavailable, and total phosphorus. Both nitrate and total nitrogen losses will also be determined.

Installation of tile and establishment of crop rotations will begin during 2005. In 2006, collection flumes and the measuring/sampling devices will be installed.