

## Watershed study shows importance of face-to-face

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A Paired Watershed Study in Lafayette and West Newton Townships of Nicollet County, designed to accelerate the adoption of best management practices to improve water quality, has shown the need to work with farmers on a face-to-face basis.

The study reaffirms the influence of the local agronomist on the decisions farmers make in their operations.

This study is different in that it was developed by farmers and designed to encourage voluntary practices that will improve water quality but will not adversely affect profitability. Farmers were involved from the conception of the three-year study, which is being funded by a grant from the U.S. Department of Agriculture funneled through the University of Minnesota. David Mulla is the leader of the study with field work being done by graduate student Adam Birr.

Farmers were asked what they thought might work, and then they were asked to voluntarily adopt those practices. Designed to compare two watersheds that are similar in size, topography and farm management practices, the study uses one as a con-

trol and applies BMPs to the other. Water quality was monitored prior to and during the study.

A multidisciplinary team was developed which included the Minnesota Department of Agriculture, United Farmers' Cooperative of Lafayette, Nicollet County Extension, Soil and Water Conservation District and Environmental Services. Also, members of the Minnesota River Agriculture Team, Minnesota Pork Producers Association and two farmers from the watershed were advisory members.

The study includes a farm practices survey that is completed each year by the person responsible for management decisions of fields. All farmers in both watersheds who farm 40 or more acres were asked to participate and were compensated for doing so. Twenty five of the 42 operators in the watersheds participated.

The survey is detailed and includes land ownership and labor; machine and livestock inventory; manure and fertilizer management; crop rotations, yield goals, long term yields; soil management and tile drainage.

The survey data were used to determine current practices and decide how changes in practices may affect the

farmer's profit picture. The data were also used to determine what changes in practices might best be used to improve water quality and hence to develop educational material.

Birr, who did much of the field work in the study as part of his doctoral thesis, said, "We credit the high rate of participation to the local agronomist and to the two farmers on the advisory team."

So far, the study has shown that farmers prefer practices like the following: switching from moldboard to conservation tillage using a combination tool (disk-chisel); installation of rock inlets and Hickenbottom risers; and soil, manure and crop testing for nutrients, followed up by variable rate application of phosphorus and spreading manure in low soil-testing locations.

"Other practices which are receiving some interest include buffers along ditches, fall no-till on soybean residue and zone tillage," Mulla said.

The first BMPs were implemented in the fall of 2002. There was a big storm during May of 2003 in the western (treated) watershed. The amount of total suspended solids reduced because of conservation tillage was

noticeable after that one storm event in the treated watershed. "The one big storm did more than anything we could have done to convince farmers that conservation tillage was good thing," Mulla said.

The Board of Water and Soil Conservation has indicated that conservation tillage is an important practice for safeguarding water quality. As a result of this project, the percent of fields with enough crop residue to qualify as conservation tillage has increased from 9 percent before the project to 40 percent after implementation of tillage BMPs. At the end of 2003, farmers had implemented BMPs on roughly half of the treated watershed area.

"We learned that farmers are more willing to share information when a local agronomist encourages them to do so. You have to work with them face to face. Other factors that enter into the picture are the age of the farmer, size of operation, capital available, type of equipment and what the neighbors think. We found it easier for farmers to make changes in tillage than nutrient management," Mulla said.

The 2003 crop year was the first year that BMPs were applied, and this year

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## Implementation of BMPs leads to better yields

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will see a total of 48 percent of the study area implementing some form of BMPs. Mulla said that farmers have experienced the same or higher crop yields as a result of implementing the BMPs.

The monitoring in the watersheds is for turbidity, sediment, phosphorus and nitrate. Automatic samplers are set up to take samples during storm events and grab samplers are taken between storms at culverts and at the mouths of the watersheds.

Initial monitoring showed high rates of phosphorus and nitrate nitrogen coming out of these watersheds. The researchers are continuing to look for trends this year to see if there are differences in water quality loadings.

Mulla explained that this study is unique. "Traditional methods used to improve water quality have

applied BMPs at a low density over a large area. This approach is different because it is more targeted. Since we started, two other studies have been started, modeled after this one."

The funding for the study will run out at the end of the 2004 crop year. An application to extend the study is being made through the Legislative Commission on Minnesota Resources. Farmers in the watershed are interested in continuing the study. There is a feeling that the BMPs have not been in place long enough to determine whether or not there is a significant change in the water quality. As Birr said, "It takes time and legwork to build up trust with producers."

This part has already been done. Butch Altmann of the United Farmers Co-op said, "We have already built trust; let's not lose it."