

Agriculture's Clean Water Alliance

Agriculture is one of the economy's more capital-intensive business endeavors. The cost of land and machinery to farm it is significant. Costs of seed and the chemicals that many use to maximize yields are also expensive.

Because commodity production provides such thin profit margins, farmers must maximize every production resource. The effort in addition to producing greater yields can in some cases help the environment. A dramatic case in point is an ambitious Iowa effort to curb the run-off that can occur from application of nitrogen fertilizer. John Nichols explains.



Located in the heart of the "Corn Belt", the Raccoon River meanders its way, slowly, through west- central Iowa.

It's a relatively large watershed, draining some 3,500 square miles. 1.7 million acres are devoted to row crops and nitrogen is used extensively as fertilizer for corn. In order to be used by the plants, nitrogen changes over time into nitrate. It then either fertilizes the plants or runs off the land into the river.

Dr. L.D. McMullen, the manager and CEO of Des Moines Water Works claims the level of nitrates in the Raccoon River is on the rise.

L. D. McMullen: "We have basically tried to do whatever we can to be able to educate people in our watershed, to say, help us, so that we end up with less nitrate coming down onto us, because the trend is definitely upward and about a 25-year record of data that we've collected on a daily basis, the trend is upward, for about every month of the year."

Treating some 43-million gallons daily, Des Moines Water Works supplies about 400,000 central Iowans with water.

In order to comply with EPA regulations, municipally treated water can contain no more than 10 milligrams of nitrates per liter.

Studies have associated nitrates with a number of human health risks including cancer, miscarriages, and "blue baby syndrome."

Nitrates also are cause for concern because of the expense of their removal. In 1991, Des Moines Water Works built the world's largest nitrate removal plant at a cost of nearly 4-million dollars. Eight years later, the system was in operation a record 106 days at a cost of more than 300,000-dollars.

L. D. McMullen: "We think if we don't reverse that we're either going to have to build more nitrate removal facility or we'll end up violating the drinking water standard. And we don't want to do either"

Nitrates enter the watershed from a variety of sources, including naturally occurring events like rainfall and decomposition of plants. They also come from urban landowners who fertilize their lawns. But the vast majority of nitrates in the Raccoon River entered as run-off from farm land.

Topography is a key factor in the equation. The same glacier that gave west-central Iowa an abundance of fertile soil also yielded some of the flattest land in the region. Tiles drained what were once wetlands, putting soggy fields into production. But the tiles also act as plumbing... funneling nitrates downstream.

Nitrate concentrations in the Raccoon have more than doubled in the past 25 years, prompting the EPA to place the river on its list of impaired waterways.

Since the EPA has the authority to implement and enforce strict new regulations on farming practices and fertilizer application in the watershed, 11 fertilizer dealers are

attempting to respond to the problem proactively.

They call themselves "Agriculture's Clean Water Alliance," and their mission is to keep the nutrients out of the Raccoon River and its tributaries. Roger Wolf coordinates the project.

Roger Wolf: "Agriculture's Clean Water Alliance supports a variety of initiatives to achieve our mission. Among those, one of the key ones was supporting what we call an Environmental Code of Practice which basically establishes reasonable and practicable guidelines that all the members could stand behind for fall fertilization and particularly on anhydrous ammonia."

Research conducted by Iowa State University over the past decade has shown most corn producers could substantially reduce the amount of nitrogen needed if they delay application until after the plants emerge.

Dr. Fred Blackmer, a research agronomist at Iowa State has studied the issue extensively. He claims, unless conditions are ideal, much of fall-applied nitrogen may be lost.

Dr. Fred Blackmer: What we're finding is some farmers don't lose very much but others can lose 70, 80 or 90 percent of what they put down and one of the most surprising things is many times these farmers don't even know that they have lost it. They have low yields and they don't attribute it to the losses of fall-applied N.

Blackmer advocates applying nitrogen in the spring, closer to the time when the plants can use it. And, he claims side dressing anhydrous is beneficial to the plants, the environment and the farmer,

Dr. Fred Blackmer: What we've found is that farmers can substantially reduce their average rates of fertilization and actually end up with higher yields. So, we think moving to side dressing will really help them increase their profits while they're reducing losses of nitrogen from their fields.

(Slug: Raccoon River)

Agriculture's Clean Water Alliance operates an extensive monitoring program in the Raccoon River Watershed.

Every two weeks, the Alliance takes samples from the major branches of the Raccoon River and its tributaries.

Wolf claims the monitoring program is useful in water quality analysis.

Roger Wolf: "Currently it has forty-two remote sites located upstream from Des Moines and basically they're situated on various tributaries that enter the Raccoon River. Water samples are collected biweekly. This past year volunteers collected samples every two weeks and the samples are analyzed at the Des Moines Water Works and then that data is then looked at and analyzed to determine what are the trends and what are we seeing."

Currently, nitrate levels in the Raccoon are running about 8 milligrams per liter. Des Moines Water Works frequently blends treated water from the Raccoon River with that of the Des Moines River, as well as ground water. Generally those sources are lower in nitrates, helping the utility stay well below EPA limits.

While the Des Moines Water Works ran its nitrate removal facility more than 90 days this past year, Assistant Manager Randy Beavers envisions a day when nitrates won't be a problem at all.

Randy Beavers: "The nitrates facility is working great. Although it's our hope and goal that with partnerships up in the watershed that we can mothball that facility. That would really be a happy day for us, when we don't have to operate it any further."

Roger Wolf: "Certainly the downstream water users have concern about this because ultimately they have to pay the Des Moines Water Works to treat the water, to bring it within the levels of the water quality standards.

Clearly the federal government is looking at enhancing a regulatory framework and figuring out how to achieve the improvements that we're after. We certainly are very concerned of what the implications for agriculture might mean in a regulatory environment and these agribusinesses are here to help the farmers do it voluntarily."

For Market to Market, I'm John Nichols.