

Water-quality debate: Is money as effective as regulation?

By **BILL SLAKEY**
Courier Staff Writer

In fairy tales, moving a pile of sand grain by grain was the standard impossible task.

But for farmers in Iowa and around the nation today, the real task is just the opposite: how to hold all those grains in place.

The problem is "non-point source pollution," the runoff from fields, parking lots and roads that filters into streams and groundwater.

As Congress prepares to regulate non-point source pollution on a national basis this year as part of the Clean Water Act reauthorization, some observers are looking to Iowa's efforts to tackle the problem as an example of how to do it.

In its simplest form, the debate centers on whether economics and new information will help farmers change practices voluntarily, or whether regulations to

force change are needed.

"Those that are interested in an entirely voluntary program are using Iowa as an example," said Cheryl Contant, a University of Iowa associate professor and author of a recent study on non-point source regulations.

Just as agriculture dominates the landscape in Iowa, it also accounts for the majority of the non-point source pollution. According to a 1990 study by the Department of Natural Resources, agriculture was the main source of pollution in 96 percent of the affected streams in the state.

Out of more than 7,000 miles of streams surveyed, all were found to be threatened by pollution, according to the study. Almost three quarters of the Iowa's publicly owned lakes were found to be harmed.

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Runoff pollutants

Runoff from agricultural lands is the primary pollutant in 96 percent of the affected streams in Iowa.

Surface water

Eroded soil

Clouds the water and reduces sunlight to plants which fish use as food; covers spawning beds; carries pesticides and phosphorous.

Pesticides

Harm aquatic life; toxins can accumulate in fish.

Groundwater

Pollutants can filter into shallow groundwater; contaminated wells often tap these pools.

Improperly capped wells allow pollution to flow directly into deep groundwater.

Nutrients

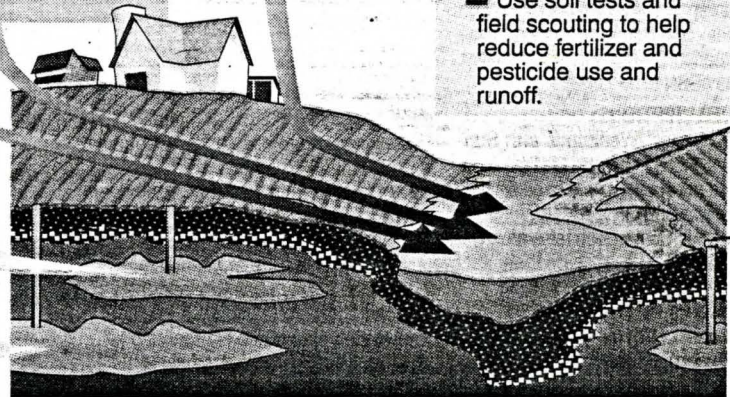
Increase growth of aquatic plants; decomposing plants deprive fish of vital oxygen.

Pollution management

■ Use filter strips, grass waterways and reduced tillage to control soil and soil-borne pollution.

■ Use modern well construction practices and cap old wells.

■ Use soil tests and field scouting to help reduce fertilizer and pesticide use and runoff.



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About nitrate pollution

■ Where do nitrates come from?

Nitrates dissolve in water and are carried through the soil when it rains. Any source of nitrogen can produce them: fertilizer, decaying plants, septic tanks, feedlots, and municipal wastewater are a few examples. Nitrates can pass quickly into groundwater through direct channels like sinkholes and untapped wells.

■ How common is nitrate pollution?

An estimated 16 percent of private farm wells in Iowa have unsafe nitrate levels. Approximately 35 percent of wells that are less than 50 feet deep had high nitrate levels, according to a 1989 statewide survey. A survey of 807 rural Black Hawk county wells found 66 with unsafe nitrate levels.

■ How dangerous is nitrate pollution?

Nitrates are dangerous to babies under age 1. They impair the blood's ability to carry oxygen, causing "blue baby syndrome."

■ Can nitrates be removed by boiling, filters, or water softeners?

No.

■ What can I do if I find a nitrate problem?

Arrange another temporary source of drinking water. Have more samples taken. Try to locate the source of contamination and remove it. Faulty construction or a cracked well casing can provide a direct route for contaminants to get into groundwater. If high levels persist, a new source, for example a deeper well, may be necessary.

■ Where can I get water tested?

Waterloo City Lab, 291-4553; National Environmental Testing, Cedar Falls, 277-2401; N.E. Iowa Water Lab, Waterloo, 235-4440; University Hygienic Lab, Iowa City, 335-4500.

Source: Black Hawk County Health Department

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Eroded soil is the main problem — it clouds water and can cover fish spawning grounds with silt. Surface water also is contaminated with excess nutrients from fertilizer and some farm pesticides.

Farm chemicals can also filter into groundwater that is tapped by private and municipal wells — particularly the shallow ones.

In groundwater, a key problem is nitrates — nitrogen compounds that come from natural organic matter in the soil and the fertilizers farmers add to their fields.

According to a 1989 statewide survey, 18 percent of rural, private wells have unsafe levels of nitrates. Thirty-five percent of wells less than 50 feet deep had high nitrate levels.

Iowa's approach to controlling farm runoff differs from other states in its emphasis on research and education, rather than strict regulation, according to Kristie Thorp, conservation and environment leader at the Center for Rural Affairs, a Nebraska farm and environmental research center.

"When Iowa passed the '87 groundwater act, it was one of the first states to aggressively pursue research and education on groundwater pollution related to nitrate contamination," Thorp said.

Highlights of the education effort included the Butler County Integrated Crop Management project, which helped 50 farmers cut their use of fertilizer nitrogen and increase profits.

As part of the project, farmers assessed their soil's capability to produce, set goals for how large a crop they could raise based on the soil fertility, regularly tested nutrient levels and scouted their crops regularly.

This "integrated farm management" helps farmers cut down on excess fertilizing and spraying by knowing more about what their farm needs, according to Cedar Falls farmer John Miller.

"If your soil can only produce 100 bushels per acre, you don't want to be fertilizing for 200," he said.

Reducing excess fertilizer helps decrease the soil nitrates that might filter down to groundwater, but it also helps the bottom line, Miller said.

"I'm probably of the school that everybody should do it from an economic sense — but it's also important from an environmental sense," he said.

Other long-term research efforts focussed on modeling how nitrates travel through the soil, developing a test to help farmers see how much

In the federal Clean Water debate, the Farm Bureau has advocated locally developed best management practices combined with cost-sharing and technical assistance.

A recent study co-authored by Contant found a policy of research and education on farm runoff would produce the most improvements both in the environment and in farm profits.

The study used water quality models to see which of four policies would most improve the environment and the bottom line. The four policies were research and education, heavy taxes on farm inputs, strict regulations and integrated crop management.

However, many environmental groups argue that some regulations are needed to take care of the few farmers who do not or will not adopt the newest practices, according to Ann Robinson, agriculture specialist for the Izaak Walton League.

Although the League generally favors voluntary programs, they look for some regulation combined with cost-sharing in the case of groundwater, she said.

"You can have 10 farms in a watershed with eight doing a great job. Just two makes it hard to see any water quality improvement," said Robinson, who works for the IWL from a family farm in Decorah.

In some cases, regulations can help clear streams, according to Johnson. As part of the 1985 federal Farm Bill, farmers were required to develop conservation systems for their highly-erodible ground by 1995 or lose federal benefits.

"We've come a long way on that in the last five years and that is partly because of regulation," Johnson said, adding that he has not been pleased with the progress on overuse of pesticides, despite mandated training programs.

Conservation compliance has only made a difference because it is based on clear research, according to Jim Gulliford, director of the soil conservation division in the Iowa Department of Agriculture and Land Stewardship.

Soil conservation practices have now been well tested and their benefits are clear, Gulliford said.

"It was pretty readily accepted because it was based on good science," he said.

Gulliford acknowledged that "bad actor" regulations would eventually be necessary to catch the few farmers who refused to change. But he argued they would be more effective once the positive practices

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Other long-term research efforts focussed on modeling how nitrates travel through the soil, developing a test to help farmers see how much fertilizer their crops needed, and writing "best management practices" that could help control all types of non-point source pollution.

The research approach has worked to some extent, according to former state Rep. Paul Johnson, of Decorah, one of the main architects of the 1987 Groundwater Protection Act.

"It has changed practices in Iowa quite a bit," Johnson said. "From the numbers we have, it looks like we've turned the corner on nitrogen."

For example, in 1989 and '90, nitrogen use was cut by 440 million pounds in Iowa compared to 1985, according to the Iowa DNR.

Studies by the U.S. Department of Agriculture show that Iowa farmers have cut the average amount of nitrogen they use by 19 percent since 1985, with little effect on yields.

The report also showed that Iowa's cutback was sharper than that of any other of the nation's major corn producing states.

The results prove research and education can make a big difference, even in the absence of regulations, according to Jim Sage, a Waterloo farmer and member of the board of directors of the Iowa Farm Bureau.

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On the federal scene, two basic clean water proposals have been floated so far.

The first calls for whole farm management plans, which would take in all the federal farm management requirements in a single plan. The bill, introduced by Rep. Glenn English, D-Okla., requires plans that maintain a farm's economic strength.

The second proposal, a draft bill by Rep. James Oberstar, D-Minn., would require states to identify, threatened watersheds and develop strict plans — with regulatory backing — to address non-point source pollution in those priority areas.

Johnson said he fears overly strict federal regulation that would dictate practices to farmers. However, he added that the problem is not solved.

"Farmers should be proud of what they've done — but they shouldn't say we've come a long way, now leave us alone," he said.

"I would hope that as we move forward we don't regulate in a simple minded way," he said. "Farmers and families don't work that way — somehow we have to encourage flexibility and innovation and get them excited about it."