



LEWIS DISTRICT, COMMISSION WORK TO REDUCE GROUND WATER NITRATE LEVELS

By Steve Stuebner

In 2002, a number of ground water well tests in Lewis County revealed high nitrate levels, creating concern about the over-application of fertilizer on farms and other factors that could cause the elevated levels, such as septic systems failing to work properly. High nitrates also are a public health concern for people drinking well water.

High nitrates are a concern for children under 6 months in particular, reducing ox-

xygen in the blood flow and causing “blue baby syndrome.”

As a result of the tests, the Idaho Department of Environmental Quality designated the Clearwater Plateau Aquifer area in Lewis County as a priority area for elevated nitrates -- the 6th area in the state to receive that designation at the time.

In the meantime, the Idaho Department of Agriculture expanded testing in the area to gauge the extent of the problem beyond Lewis County. By 2008, it was

clear that numerous wells in Idaho County and Lewis County had issues, but it was not a uniform problem. Some wells had no issues whatsoever.

Conservation officials with the Lewis County Soil Conservation District and the Idaho Soil and Water Conservation District worked on determining the scope of the problem and drilled down on solutions.

Initially, they recommended that producers split the application of fertilizers on

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farm fields from 100 percent in the fall, to 60 percent in the fall and 40 percent in the spring, following the advice of the University of Idaho Extension Service. They also looked for potential problems with septic systems, abandoned wells and moving potential sources of contamination away from well heads, such as moving cattle pens away from a shallow well.

In addition, Lewis County SCD and the Conservation Commission worked on outreach with farmers to promote no-till direct-seed farming as a key solution to the issue. Beginning in 2004, cost-share funds were available through IDEQ 319 funds, and over a seven-year period, more than 34,000 acres of farm ground were enrolled in the program. As of 2015, more than 80 percent of the farms in Lewis County have converted to no-till, direct-seed farming.

Follow-up tests in 2014 show that nitrate levels are decreasing in wells in the area. Other solutions have included implementing best management practices around riparian areas and water wells, capping abandoned wells, precision farming, the use of cover crops to invigorate microbes in the soil, which also can result in nitrate uptake by cover crop plants, and more.

From 2004 through the fall of 2015, the district received \$1.3 million in 319 grant funds to work on the nitrate issues in three different project phases.



Testing a ground water well.

“The trend is going in the right direction, so that’s a good thing,” says Eric Hasselstrom, chairman of the Lewis Soil Conservation District and a local farmer. “We’ve done a lot of work on this issue. We figured it took a lot of years to get into that situation, so it would take a lot of years to fix it.”

“I believe we are making progress,” adds Karol Holthaus, administrative assistant for the Lewis district.

Changing the fertilizer regimen to the split fall and spring applications was a good first step, Hasselstrom says. “The split fertilizer application really helps. Before people were applying all of the fertilizer in the fall. And with soil testing, people are reducing how much fertilizer they apply,” he says.

Converting to no-till, direct-seed farming makes a lot of sense in North Idaho’s Camas Prairie and that’s why so many producers are going in that direction, he says. “All of the farmers on the Lewis SCD board are using minimum-till, direct-seed farming. I’ve been doing it for over 20 years.”

To help farmers get started, Lewis County rented out a direct-seed drill to folks who wanted to try the new technique, much like districts in southern Idaho are renting them out today for the same reason. Nowadays, many farmers have their own seed drills in Lewis County, Hasselstrom says.

In the Lewis County area,



Truck used to spread lime on cropland.

it’s all dryland farming. One of the big benefits of no-till is that leaving crop residue on the surface helps the soil absorb and retain moisture. It also allows micro-organisms and earthworms to thrive and creates more organic material in the soil.

“Conserving moisture is critical,” Hasselstrom says. “Keeping the ground cover on the soil prevents the sun from drying it out as much, and that’s huge, too.”

No-till farming saves time and fuel because farmers don’t have to plow the soil before planting. “Your soil is a lot healthier, and it’s not as compacted,” he says.

There also are side benefits in terms of little to no soil runoff on the fields into ditch banks, saving topsoil and improving water quality overall. Over time, the soil builds up resistance to pests and less fertilizer is needed to grow good crops. “I’m using less fertilizer in the ground. With precision farming, we’re able to spoon-feed the crops with the right amount, and it’s placed right in the seed row,” Hasselstrom says

Lewis County farmers were ahead of the game in their conversion to no-till, direct-seed farming. Most of the farmers in the county had converted to that system well before the National Resources Conservation Service made Soil Health

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a national initiative in 2014. Lewis County stopped cost-sharing conversions to no-till after 2010, because most farmers were on board.

When local farmers were placed under contract to convert to no-till, the district required soil tests and the application of fertilizer to University of Idaho soil test standards. Splitting the timing for the application of fertilizer reduced the threat of it leaching into ground water during the wet winter months, officials said.

Another potential solution was the use of polymer-coated fertilizers to reduce the risks of nitrate leaching. The district partnered with UI Extension on a Polymer Coating Research Study to help producers identify which coatings were most effective.

A related issue that farmers have grappled with in Lewis County is acidic pH levels in the soil. Farmers have been applying lime to the soil to increase pH, which also releases some nutrients into the soil, where it's needed. Farmers also have been using nitrogen stabilizing agents such as Agrotain or Nutrisphere to help ensure that the fertilizer is released into the soil, increasing yields for crops and reducing leaching into ground water, Hasselstrom says.

"The use of these stabilizers is becoming the norm with many producers," he says.

In Phase II of the grant cycle, conservation professionals worked on isolating nitrate problems that were linked to failing septic systems. "Well-testing isotope data showed that one of the primary nitrate sources in the Camas Prairie wells was from waste," said Eileen Rowan, water quality resource conservationist for the Conservation Commission in Orofino. "Failing septic systems were thought to be a large part of this contamination. Septic repairs and replacements of failing systems were encouraged. The local health department was a partner in accomplishing this best management practice."

From 2010-2103, nine septic systems were repaired, she said.

The nitrate isotope data also led to the focus on livestock around well heads. BMP's such as fencing, water facilities, and



Cover crops are popular with farmers who have livestock to graze them, generating income.

spring developments reduced contaminations near wells and in shallow groundwater areas, Rowan said. About 2,000 feet of fence was installed, along with three new watering facilities and three spring developments, she said.

Abandoned wells, especially shallow wells, also can be a direct conduit for nitrates to contaminate groundwater. The district promoted properly decommissioned wells that were no longer being used to reduce contaminations from fertilizer applications, livestock contaminations and other sources, Rowan said. But a number of landowners were unwilling to permanently decommission wells, fearing they might need them later. Still, three wells were decommissioned as part of the nitrates project.

No-till direct-seed farmers also are experimenting with cover crops to further enrich the soil, and some of the cover crops such as turnips and radishes can help with the uptake of nitrates from deep in the soil column. The cover crops are applied after wheat has been harvested to provide a soil cover in between cash crops and help invigorate the soil.

Cover crops are proving to be most pop-

ular with farmers who have livestock to graze the cover crops and realize some income from them, Hasselstrom says. "There's more incentive if a guy can make some revenue from the cover crops by putting some pounds on a calf," he says. "Plus, you need to knock down that residue somehow so you can drill seed through it when it comes time to plan the next cash crop."

Cost-share funds for cover crops are available from NRCS. A quick study in Lewis County on cover crop utilization by cattle showed that cows can gain an average of two pounds per day when feeding on cover crops, raising the value of the crops to \$300 per acre, Rowan said.

"The biggest gains in our area for cover crops are when the cover crop can be grazed," she says. "Cover crops provide good quality, late season forage. In 2015, several producers with cover crops were able to graze the cover crops, while their neighbors were forced to sell cattle due to lack of forage from drought conditions and wildfires." □

Steve Stuebner is a regular contributor to Conservation the Idaho Way, writing voluntary conservation success stories.

NEW RCRDP LOAN RATE, TERMS ANNOUNCED

Loans are available through the Commission that carry a rate and term designed to help farmers and ranchers improve their cash flow while implementing conservation measures. The new loan category has an interest rate of 2.75%, a term of 10 years, and is secured with new equipment or real estate.

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The process to develop a new loan category began with a resolution by the Idaho Association of Soil Conservation Districts (IASCD), encouraging the Commission to develop a loan rate tailored to the needs of “beginning” farmers and ranchers (as defined by the USDA).

During a listening session in November of 2015, it became apparent that the struggle of young farmers is often one of cash flow, and it was hoped that a minimal interest loan would encourage new producers to implement conservation projects that may otherwise be beyond their financial reach in the early years of farming or ranching.

After careful research, Commission staff determined that requiring farmers to prove their “beginning” status according to USDA guidelines would add significant time and paperwork to the loan application process. Additionally, developing a new program requires legislative rulemaking, delaying any new program availability for up to a year. Timeliness is an important factor when processing Resource Conservation and Rangeland Development loans, explains Commission Loan Officer Terry Hoebelheinrich.

Instead, alternatives were investigated that would improve the speed and simplicity of a beginning farmer program proposed by the IASCD, with the additional goal of providing a cash flow benefit to farmers and ranchers of all experience levels seeking to fund conservation projects.

Calculations demonstrated that the minimal interest loan suggested by the IASCD would result in an increased cash

flow to borrowers of approximately \$700 per year, based on an average loan amount of \$50,000 over a 7 year period. Instead, loan staff recommended providing increased cash flow by creating a new interest rate and loan term.

With the recommended rate and terms, the same \$50,000 loan, extended over a 10 year period with a 2.75% interest rate, would provide a cash flow of almost \$1,500 per year more than the proposed rate.

Further, the new loan category requires no additional paperwork on the part of applicants, avoids legislative rulemaking, and is available to all farmers and ranchers.

Commissioners embraced the proposal of a streamlined approach that would benefit all applicants, and unanimously endorsed the recommendation, making the new loan term and interest rate available immediately. They have requested district comments and will review them at their April meeting to consider any necessary adjustments.

For more information, contact Terry Hoebelheinrich, terry.hoebelheinrich@swc.idaho.gov, or Cheryl Wilson, Cheryl.wilson@swc.idaho.gov, at the Conservation Commission, 208-332-1790. □

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