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AERIAL SEEDING A COVER CROP IN THE BOONE RIVER WATERSHED
PHOTO BY BRUCE VOIGTS

Partners and Progress

By Emily Funk, Soil and Water Conservation District

The Boone River Watershed has had a long history of conservation work and this year was no different. This scale of work is only possible thanks to many different conservation and agricultural organizations from public, private and nonprofit sectors working together with local farmers to improve water quality.

In January of this year, the Boone River Nutrient Management Initiative (funded by Iowa's Water Quality Initiative) kicked off its three-year project in Humboldt, Hancock, Kossuth and Wright Counties. The farmers in both Prairie and Eagle Creek watersheds responded enthusiastically, diving headfirst into cover crop mixes, strip trials, guided stalk samples and water quality monitoring. This initiative, along with funding from the Environmental Protection Agency's (EPA) Clean Water Act and Coca-Cola, allowed producers to seed more than 5,300 acres of cover crops, such as cereal rye, oats, radishes and clover mixes. The Iowa Soybean Association is conducting replicated strip trials on 900 of the acres, guided stalk samples on 24 participants' fields and bi-weekly tile water samples on eight different landowner fields. A Conservation Reserve Enhancement Program (CREP) wetland and drainage water management system are being planned in Eagle Creek as well.

Oxbow restorations have been another big conservation practice in the Boone. Funding from the National Fish and Wildlife Foundation, Coca-Cola, and the EPA will allow us to restore eight new oxbows this fall, for a total of 13 restorations since 2011!

There are still incentives available for producers to try many different conservation practices. **If you are interested in learning more please contact Emily Funk (Prairie Creek Watershed) at 515-295-5156 x 119 / Emily.funk@ia.nacdnet.net or Bruce Voigts (Eagle Creek Watershed) at 515-532-2165 x 3 / bruce.voigts@ia.nacdnet.net.**

Knowledge for Adapting

By Dr. Chris Jones, Theo Gunther, Adam Kiel and Tony Seeman, Iowa Soybean Association

Uncertainty is part and parcel of farming. Even the most knowledgeable experts have a hard time predicting what the markets and the weather will do. Managing a system for profit, productivity and environmental performance in the face of constant uncertainty requires careful planning and flexibility.

One way to plan is to adhere to a philosophy of adaptive resource management. The crux of any adaptive management strategy is data. Logical decisions cannot be made without it. Undesirable outcomes can result from logical decisions based on good data, but their likelihood is greatly reduced compared to the alternatives – hunches, instincts and guesses. As we refine our methods and data collection processes and adjust our decision-making with every passing year, the system will become more resilient and productive and perform in a more environmentally sound way.

Managing nitrogen inputs is especially suited to adaptive management strategies. Here we are trying to meet two contradictory objectives: supply the crop root zone with sufficient nutrient and keep nitrate (N) out of streams. One approach might begin by looking at N in the tile water leaving a field. Figure 1 illustrates Nitrate-N results from tile water monitoring conducted by Iowa Soybean Association's laboratory during 2014. We know that corn N needs are probably being fulfilled when field tiles contain N in the 10-20 mg/L range. Figure 1 shows that out of the nearly 300 tile water samples collected in 2014, only about 1/3 are in that range. We also know that, as a general rule, soil N levels generated by the Late Spring Nitrate Test (LSNT) should be in the 10-25 part per million range. So if tile water contains more than 20 mg/L of N and the LSNT is greater than 25 ppm, it's likely crop N needs are less than what exists in that field. This is a scenario where the farmer may want to consider lower N rates if corn is to be grown next year, and planting fall cover crops to tie up nitrogen left behind by this year's crop. Research has shown that excess soil N does not necessarily produce high tile water N concentrations that year; rather, a buildup of N in the soil shows up in the tiles in subsequent years.

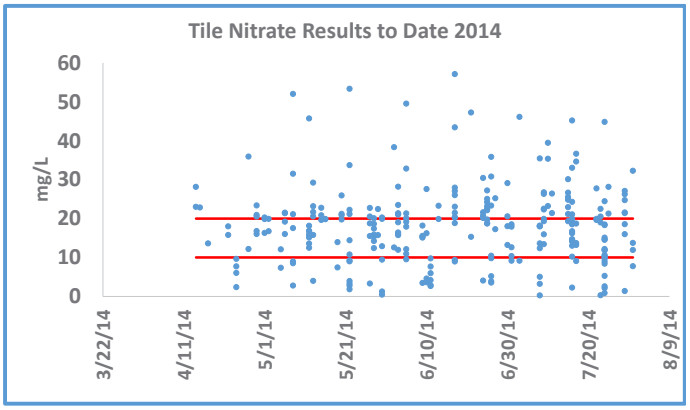

FIGURE 1: 2014 Tile Water Nitrate - N

Many types of measurements can be used to characterize the location and quantity of nitrogen within the system. RGB imagery to assess N deficiency or sufficiency, post-season stalk nitrate tests and soil nitrate tests all generate data that help quantify the different pools of N. Measurements combined with on-farm research like replicated strip trials is an approach that builds upon existing water quality, LSNT and crop yield data to enhance profits and environmental performance.

Growing and marketing a crop has never required more sophistication than now. Adaptive resource management is a flexible decision-making approach, stressing logic and the importance of data that can be applied to all facets of farm operation and crop production. **Contact Adam Kiel at 515-334-1022 / akiel@iasoybeans.com of the Iowa Soybean Association for more information about how you can incorporate adaptive management into your operation, and to learn about monitoring opportunities available in the Boone River Watershed.**

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Consider Wetlands to Improve Water Quality and Profit

By Marvin Hoffmann, Natural Resources Conservation Service

The landscape around the Boone River is an engineering marvel of subsurface tile and drainage ditches, which enables crop production on an area in which 60 percent of the soils are poorly drained. This system of drainage is also an efficient delivery system to transport leached nitrate-nitrogen downstream. Fields lose excess nitrate into the drain that directly enters neighboring streams.

Farmers have the challenge of remaining profitable in a time of reduced commodity prices, and reducing nitrate loss in the face of increased public scrutiny. Restoring poorly drained areas back to wetlands can remove unprofitable land from crop production and remove nitrate from surface water through a bacterial conversion process called denitrification. Strategically placed restored wetlands can reduce nitrate delivery up to 50 percent.

One particularly attractive option is the Farmable Wetlands Program (FWP) offered through the Farm Services Agency's Conservation Reserve Program. Land enrolled in FWP must have the wetlands restored to a practical level and the surrounding buffer area seeded down. These areas receive a competitive rental payment for 10 to 15 years and cost-share and incentive payments of up to 90 percent of the restoration costs. When restored, these areas also provide quality wildlife habitat and are reservoirs for runoff, which can reduce downstream flooding.

Contact your local Natural Resources Conservation Service to see if there are opportunities for wetland restoration, and review all resources on your farm.

STRATEGICALLY PLACED RESTORED WETLANDS CAN REDUCE NITRATE DELIVERY UP TO 50 PERCENT
PHOTO BY SOFIA JARAMILLO

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