What do you need to know about managing nitrogen?

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Until five years ago, I was pretty comfortable with what I knew, or what I thought I knew. I'd farmed for more than 30 years, and following – more or less – the accepted guidelines for application of nitrogen on corn was working for me. I was using fall applied anhydrous ammonia at rates that I'll admit were on the high side of recommendations. But when nitrogen was cheap, you didn't want to be caught short. When we put nitrogen on in the fall, we never really thought about what might be lost.

The Iowa Soybean Association directors had been looking at the crop production decisions Iowa farmers were making to determine whether – or to what extent – we might be contributing to environmental quality issues, largely by sponsoring research. It was at that point that the board decided to put knowledge gained from precision farming technologies to work to study nitrogen management in watersheds and on individual farms – and the ISA watershed programs and On-Farm Network™ were born.

I got involved with the strip trial studies comparing nitrogen rates and timing and learned, to my surprise, that I really could produce as much corn on less nitrogen than I was using. I've dropped the amount I use following soybeans by about 20% and yields continue to improve.

That puts me in a better position economically. And it stands to reason that if we use less nitrogen, there'll be less lost into the water and the air, which should be good for the environment.

With higher nitrogen prices this year, many farmers are wondering what the economic rate for application really is. Fearing what might happen to supply and price in the spring, many covered as many acres with anhydrous as they could in the fall.

How economic is that? And now environmentally responsible is it? We don't know now how much of the nitrogen we put on in the fall might be lost. We've had less moisture to leach away nitrate this winter than in most recent winters. But we've also had some relatively warm days with the soil open. That could mean denitrification, which leads to formation of ammonium gas in the soil, and that can be lost to the atmosphere.

So, getting back to the economics of fall application, when prices are spiraling upward, it's too soon to tell how much nitrogen we might lose this winter, and what that might mean for corn yields.

We do know that we can measure this impact, though, using replicated strip trials with two different nitrogen application rates, providing the strips are marked with GPS or in some other way, so when they're harvested, location-specific yield data can be collected.

If you've not been involved in on-farm testing, I'd urge you to try some nitrogen management strips yourself.

Much research remains to be done in crop fertilizer management. Among the topics that must be studied in more depth is the nitrate/water pollution issue. We must learn how to keep the nitrogen we apply to the soil in place where the crop can use it without risking undue loss. Because soils are different and weather and other outside forces are involved, growers must learn to manage for their farms and field conditions.

The Iowa Soybean Association, through its watershed programming and the On-Farm Network, has been helping growers conduct the kind of research we need to learn both what the economic rate for nitrogen application is, and how our use of nitrogen may impact the environment.

So far, we've learned much more about economics than we have about the environment.

Because of the work done by ISA in watersheds and through the On-Farm Network, Iowa farmers have another benefit. ISA staffers have worked with national and state Natural Resources Conservation Service to make portions of On-Farm studies eligible for federal cost-sharing, through the Environmental Quality Incentive Program. Some Iowa farmers who have developed environmental management plans through ISA's CEMSA program are also finding they have much of the information and crop nutrient documentation they need to qualify for the Conservation Security Program already.

The ISA environmental and research programs were developed because of the vision of a board that saw a need and wanted to make a difference.

The ISA On-Farm Network is an avenue for producers to develop credible data for their farms and their area. Not only will this information improve profitability, but also this credible data will be used to develop better policy for farm and environmental programs. The future is in your hands. ISA will help you make a difference on your farm, your watershed and your state. ◆