



## ISA Watershed Studies in Iowa

**Table 1: Buttrick Creek Stalk Sample Results**

Sample numbers	Fertilizer timing	N Rate (lb N/A)	Stalk Nitrate (ppm)	Grain Yield (bu/A)
164	Fall	162	2799	202
167	Spring	153	2774	185

**Table 2: Pike Run Stalk Nitrate Sample Results**

Sample Numbers	Fertilizer Timing	N rate (lb N/a)	Stalk Nitrate (ppm)	Grain Yield (bu/a)
63	Sidedress	135	2019	97
30	Spring	120	1034	102

**Table 3: South Fork Stalk Nitrate Sample Results**

Sample Numbers	Fertilizer Source	N rate (lb N/A)	Stalk Nitrate (ppm)	Grain Yield (bu/A)
120	NH3	183	2167	196
32	UAN	153	901	192
61	Manure	185	1691	198

for several years now. We've learned several things about production — chiefly among them that through on-farm evaluation farmers can more efficiently manage N. So these ongoing evaluations certainly have a role in overall farm management.

But concerns over the loss of N from corn fields has motivated producers to examine N management alternatives that exist to see how effective they can be in managing N for its environmental impact on water quality. As time goes on and more data is collected, it is time to introduce a new paradigm — the idea that improved agronomic and economic performance can be linked to environmental performance with real-world data.

So now that the construction of a database of agronomic performance is underway, there is a logical series of questions to begin asking the data to explore next. In order to find the environmental implications of the agronomic data, farmers need to ask:

- Could changes in farming practices have environmental impact — specifically, is there an opportunity to demonstrate

that new N management strategies can have a positive environmental impact?

- Through existing data, can we hypothesize about the impact of management change, and test for it in the real world?
- What are the economic implications to farmers who manage for the environment, and what are the environmental implications of farmers who manage for economics?
- If we do undertake management change, what would it be, and what impact are we trying to attain, and how can we make certain we capture relevant data?

We are testing specific questions, on specific farms for specific answers, and finding that environmental response to the actions taken and treatments applied are different across watersheds. That means we need to ask very specific questions to identify specific actions needed for environmental impact in a given watershed. In other words, while controlled drainage may work as an answer in the Boone River watershed, it could mean nothing in the Pike Run Creek watershed.

Obviously, there are many questions to be answered. But the key idea is that there is now beginning to be enough data to form several serious hypotheses about the relationship between agronomics and environmental impact, and to look at testing them. It's the foundation of serious research that's going to take farmers beyond best management practices.

Look for more information coming in the future about 'paired watershed design' — which includes testing the impact of management change by comparing a demonstration watershed to a control watershed. Also, there will be more intensive study on the micro scale — monitoring and measuring the environmental impact on the field scale. The Iowa Soybean Association will also be focusing additional effort on the watershed planning model to help advance environmental performance.

In the end, it seems intuitive that management change could be linked to improved water quality. What the Iowa Soybean Association's environmental programs will be doing in the near-term future is looking for hard links between them. ■

## Watershed evaluation tools

- **Stalk test** — removing an 8-inch segment from 6 inches to 14 inches above the ground, and sending them to a laboratory to be analyzed for nitrate content. The result will show if the corn plant had enough nitrogen available to maximize production or not.

- **Guided sampling** — using soil characteristics, topography, remote sensing and other information to gather production data under a wide range of conditions to help improve productivity and profitability.

- **Replicated strip trials** — testing a variable practice by comparing it in strips, across the entire field, with the control practice.