



Starter P Project Met a Need in Cayuga County

The Starter P Project couldn't have come at a better time, according to Shawn Bossard, a field crops Extension educator in Cayuga County, N.Y., at the time of the research. There was increasing public attention to environmental issues and growing concern about phosphorus reaching the county's lakes, said Bossard, who is now the executive director of Seneca County Cooperative Extension. "I knew of farms putting on more P than they needed."

That has changed for some farms. Bossard, who established on-farm trials each year of the three-year Starter P Project, saw a 15% decrease in overall P use over the life of the project. "I thought that was neat," he said.

Cutting phosphorus couldn't have come at a better time, given increasing fertilizer costs. "The Starter P Project reinforces the value of cutting rates," Bossard said. "Economics will help drive fertilizer tailored to individual field, and farming by the field, not by the farm."

The Starter P Project was started with the first 10 field trials in 2000 funded by the Natural Resources Conservation Service (NRCS). Its purpose was to evaluate and demonstrate the value of P starter application on soils testing high or very high in soil P.

"This project had a different style," said Bossard. "It was derived from pretty serious questions of Extension on what we needed."

The Starter P Project was field driven from the start. "Producers and their advisers asked us how much P they really needed for optimum crop production, and they were specifically interested in answering this question for soils that are classified as high or very high in P based on their soil test," said Quirine Ketterings, leader of the Nutrient Management Spear Program (NMSP) and a faculty member in the Cornell Department of Crop and Soil Science, College of Agriculture and Life Sciences.

"It is our mission in the Nutrient Management Spear Program to do applied research that addresses producer and industry questions about environmental management of farms. We also aim to extend the knowledge we gain through our research and have an impact. We want to work with the industry to achieve implementation of best management practices that increase farm profitability and protect environmental quality."

Widespread cooperation

"I was skeptical at first," said Jon Keller about lowering or eliminating P. But the head of the

Carovail sales force in a four-county region contributed ammonia sulfate to the project anyway. "When I saw the results of what Shawn did in the fields, I rethought how much P was needed," he said.

Fertilizer dealers at first thought the project would cut into their income, Bossard said. "But they began to see that if they developed a custom blend and charged for that, it could be a win-win, and they converted."

Keller continues to recommend phosphorus, just not as much. "I still feel you need some starter P but not nearly as much as recommended in the past. I backed off on my recommendations."

He presents the idea to his customers this way: "I tell my farmers they can cut their rate and go a lot farther on a good planting day. It's a win-win. Farmers are cutting rates but not affecting yields. Yes, we're in business to sell fertilizer, but we want to be there for the long term. We won't be if we sell farmers something they don't need." Keller also emphasizes soil testing. "We've probably done more now than ever before," he said.

Farmer adoption

Bill Kilcer, a Cayuga County dairy farmer, ended up dropping P completely out of his planter. "I had a question on whether I needed phosphorus in the starter," said the Genoa farmer who grows 120 acres of corn. "Before the project, I used a P-based starter for corn. I've changed to N-based."



Shawn Bossard, field crops educator at Cornell Cooperative Extension of Cayuga County at the time of the Starter P Project, worked with producers on on-farm research in each of the 3 years of the project. Shawn is currently the Executive Director of Cornell Cooperative Extension of Seneca County.

Some farmers with whom Brian Boerman works were initially skeptical when the senior management consultant for Agricultural Consulting Services (ACS) recommended changes in their corn starter P based on the project's research.

Several factors contributed to his clients becoming believers. The research was a main motivator. "With the right research behind the recommendations, farmers knew we weren't making them up," he said.

Boerman has seen a progression in phosphorus use by his farmer clients. They went from a one-product starter program with P starter to a two-product program, one for high and very high P fields and another for lower phosphorus fertility fields, he explained.

The final progression back to one starter has been "to remove P entirely from a dairy farms corn starters and supplementing fertility needs with manure," Boerman said. "Without the research, the progression farmers have made in their use of phosphorus would have taken more than five or six years. I really doubt if it would have happened at all without the Spear project."

Not only was the research critical to convincing farmers to change their starter program, but the fact that Ketterings, Czymmek and Greg Albrecht "make an effort to interact with the skeptics" was very helpful, Boerman said. "They built a level of confidence in research and backed it up with on-farm work. "This confidence will encourage farmers to collaborate with the Spear program and future research in nutrient management planning and also to understand the science behind that future research," Boerman added.

Team approach

Cornell University researchers, county Extension educators, farmers and their advisers such as Boerman and Keller worked as a team to accomplish a common goal – to identify P needs for optimum corn production, both in yield and quality, said Ketterings.

"This network approach was what made this project a success," she said. "Within three years, we were able to generate a database with a large number of trials covering a great variety of soil types and growing seasons, and we could demonstrate the impact of leaving P out of the starter fertilizer mix on yields and silage quality."

"The Starter P Project has a profound impact on how the company views and recommends P to our customers," Boerman added.

Being a statewide project created statistical relevance, Bossard said. "We're able to produce impacts far quicker than we've been able to do with traditional research."

It also gave the research greater exposure and publicity, magnifying its impact. "Producers can't say that this can't be done in their area because of the statewide trial," said Bossard. "It adds validity to the project."

The Starter P Project accomplished three additional goals for Bossard:

1. "It got me out on farms and involved in what farmers are doing in the field," he said.

2. The project is an ideal education model, Bossard said. "You can't make behavioral changes by simply talking about something. You have to go out and show people, and you have to show them in a way they approve of. Field-scale demonstration plots are what work for these guys. When they can see what's being done, that's what carries the weight."

3. The research project brought additional resources to the county and generated county-specific research.

Research and adoption of results don't "turn on a dime," as is said. "It takes a while for the adoption curve to start rising," Bossard says. "I assume it's going to be that way for phosphorus work."

"To do research right, projects such as the Starter P Project take at least three years of field plots and then another couple of years to extend the information before taking hold at the farm level," said Czymmek. "Impact occurs over years, not months or weeks!"

"It is for this reason that we need to convince funding agencies to support these projects for multiple years," Ketterings added. "We were very fortunate to get this kind of financial support from the Northeast SARE program and that so many other organizations donated funds or materials for the Starter P Project."

By Eleanor Jacobs



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The **New York Starter Phosphorus Project** was initiated to evaluate and demonstrate the value of P starter application on soils testing high or very high in soil P. Cornell University's Nutrient Management Spear Program (NMSPP) faculty and staff, PRO-DAIRY staff and Cornell Cooperative Extension educators worked together to conduct 65 on-farm and 13 research station trials between 2001 and 2003. The project was funded by a NESARE research and education grant (LNE02-173) and contributions from New York State Natural Resources Conservation Service, Agway, Carovail, Pioneer Hi-Bred International Inc., AgriCulver Seeds and the Northern New York Agricultural Development Program. Based on the results of these three years, we conclude that on sites that test *high* in P and have no manure applications planned for the season, no yield penalty is expected when P starter levels are *reduced* below 25 lbs P₂O₅ per acre. On sites that test *very high* in P or when manure is applied to high testing sites, there is a low probability of a starter P response, and P could be *eliminated* from the starter without a yield or silage quality penalty. For more information, visit: <http://nmsp.css.cornell.edu/projects/starterp.asp> or contact Quirine Ketterings at gmk2@cornell.edu or (607) 255-3061.