# Results of the NY Starter Phosphorus Project's "Phosphorus Survey for Corn Growers"

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New York corn growers were surveyed between August 2003 and May 2004 to assess: 1) current phosphorus (P) starter fertilizer use for corn; 2) awareness of starter P research carried out over the past 3 years (the New York Starter Phosphorus Project funded by NESARE and others); and 3) the likelihood of growers reducing P application rates in the future. The actual survey is shown in Figure 1 and a summary of responses follows.

**Nutrient Management Spear Program**

*A collaboration among the Dept. of Crop and Soil Sciences, Cornell Cooperative Extension and PRO-DAIRY*

**Phosphorus Survey for Corn Growers**

How many acres of corn do you grow? _____ acres County: _____

Do you soil test your corn field(s) at least once every 3 years? ___ yes ___ no

What starter fertilizer blend do you use for corn? _____-_____-_____ _____ lbs/acre
or _____ gals/acre

What starter blend did you use 5 years ago? _____-_____-_____ _____ lbs/acre
or _____ gals/acre

Did you know that NY research shows no yield response to P if soils test very high for P?

___ yes ___ no ___ heard about this but wasn't sure

As a result of the information about the outcome of the NY Starter P trials, would you be more likely to soil test and change starter P rates? ____ yes____ no

Figure 1. Postcard-style questionnaire used to survey New York corn producers.

**How many farmers responded?**

Altogether, 379 surveys were filled out by producers representing 40 New York counties (there are 51 counties with significant corn production in New York as reported by the New York Agriculture Statistics Service[1]).

Three groups of producers were surveyed. The first group consisted of 75 corn growers (from 30 different counties) who visited the Cornell Nutrient Management Spear Program's booth at Empire

[1]New York Agriculture Statistics Service. 2004. Annual Bulletin 2003-2004, Table 101. CORN: Acreage, Yield, and Production, by County and District, New York, 2003; p. 83 (source: http://www.nass.usda.gov/ny/Bulletin/2004/Annp082-083-04.pdf )

Farm Days on August 5, 6, and 7, 2003. Another 274 corn growers (24 counties) filled out the survey at field crop extension meetings held during January, February and March of 2004 (see Appendix A). The third group consisted of 30 members of New York Corn Growers Association (18 counties) who returned survey postcards included with the Association's newsletter in March of 2004. The three groups will be identified as "Empire Farm Days", "2004 Winter Meetings", and "NY Corn Growers Association". Survey results will be presented for each of the groups individually and for all three groups combined.

Respondents did not always answer all of the questions, thus the data summarized below are based on the total number of responses to a particular question, not the total number of surveys cards turned in.

**How many corn acres are represented by the survey?**

The New York Agriculture Statistics Service estimated that 912,000 acres of corn (silage and grain) were grown in 2003 in the 40 counties represented in our survey. The 379 producers who responded to the survey jointly represented 86,803 acres of corn, almost 10% of the total corn acreage in the counties (Table 1).

Table 1. Number of surveys and acres of corn grown by survey participants.

| | Empire Farm Days | | 2004 Winter Meetings | | NY Corn Growers Association | | All Surveys | |
|---|---|---|---|---|---|---|---|---|
| Total number of surveys | 75 | | 274 | | 30 | | 379 | |
| Counties represented | 24 | | 30 | | 18 | | 40 | |
| Total corn acres | 19,908 | | 52,200 | | 14,695 | | 86,803 | |
| Average corn acres per farm | 265 | | 193 | | 507 | | 231 | |
| | | | | | | | | |
| Acres of corn grown | Responses | | Responses | | Responses | | Responses | |
| <100 acres | 28 | 37% | 115 | 42% | 2 | 7% | 145 | 39% |
| 100-200 acres | 19 | 25% | 89 | 33% | 7 | 24% | 115 | 31% |
| >200 acres | 28 | 37% | 67 | 25% | 20 | 69% | 115 | 31% |
| Number of responses | 75 | 100% | 271 | 100% | 29 | 100% | 375 | 100% |

There were differences among the groups of producers surveyed in terms of acreage of corn grown per farm (Table 1). The members of the New York Corn Growers Association that returned the survey mainly represented producers with large acreages of corn, averaging just over 500 corn acres per farm. Only 7% of this group reported growing less than 100 acres of corn and close to 70% cultivated more than 200 acres of corn. Those that filled out the surveys at the 2004 Winter Meetings tended to have smaller corn acreages with an average of just under 200 acres per farm. More than 40% of the producers from the 2004 Winter Meetings grew less than 100 acres of corn and only 25% grew more than 200 acres. The average corn acreage for the Empire Farm Days group was 265 acres per farm with a more equal distribution of corn acreage across the group; 37% reported growing less than 100 acres of corn and 37% reported growing more than 200 acres.

**How many corn growers had heard about the NY Starter Phosphorus Project and its findings?**

Thirty-six percent of those responding at Empire Farm Days indicated they knew about the project's major findings. Another 22% had "heard" about the project but were not sure about the details, while 42% had not heard about the project at all prior to meeting us at the 2003 Empire Farm Days (Table 2). The survey at Empire Farm Days in 2003 took place after two years of field trials and the

distribution of two extension articles with preliminary findings, but before broader dissemination of results derived from the full three-year dataset.

In January of 2004, results from the three years of research were summarized and reported to extension educators, farmers, and crop consultants through articles in various media and at meetings. Following these outreach events, the survey was distributed by County Extension Educators at a number of Field Crop meetings in early 2004 and in a May 2004 mailing to members of the New York Corn Growers Association. Responses in these later surveys (Table 2) suggest increasing awareness over time due to greater penetration by extension outreach once the 3 year study was completed and more formally promoted: 72% (Winter Meetings) and 90% (New York Corn Growers Association) responded that they either knew about the outcomes of the project (50-63%) or that they had heard that work was being done but were not sure about the details (22-27%).

Table 2. Producer awareness of the results of starter phosphorus trials.

| | Empire Farm Days Aug 6-8, 2003 | | 2004 Winter Meetings Jan-Mar 2004 | | NY Corn Growers Association May 2004 | | All Surveys | |
|---|---|---|---|---|---|---|---|---|
| Did you know? | Responses | | Responses | | Responses | | Responses | |
| Yes | 26 | 36% | 129 | 50% | 19 | 63% | 174 | 48% |
| Heard, not sure | 16 | 22% | 58 | 22% | 8 | 27% | 82 | 23% |
| No | 30 | 42% | 72 | 28% | 3 | 10% | 105 | 29% |
| Number of responses | 72 | 100% | 259 | 100% | 30 | 100% | 361 | 100% |
| "yes" , "heard" combined | 42 | 58% | 187 | 72% | 27 | 90% | 256 | 71% |

**Have producers reduced their use of starter phosphorus in the past 5 years?**

Five years ago, 17% of the producers applied 0-25 lbs $P_2O_5$ per acre with starter fertilizer (Table 3). This is the recommended rate for soils testing high to very high in P in New York. According to the survey responses, the percentage of producers using 0-25 lbs $P_2O_5$/acre nearly doubled over the life of the New York Starter Phosphorus Project (currently 33% of the producers in the survey applying 0-25 lbs $P_2O_5$ per acre). Forty-one percent of respondents reduced P application rates while 17% increased applications (perhaps due to soil testing), resulting in a decrease in the average application rate from about 44 lbs per acre five years ago to 37 lbs $P_2O_5$ per acre in 2003. In 2003, a combined total of 377 tons *less* $P_2O_5$ was used than 5 years ago on the almost 30,000 acres of corn fields planted by respondents who reduced their rates of application (Table 4).

For the group of producers represented in the 2004 Winter Meetings and the New York Corn Growers Association, reductions in P starter use mainly occurred on farms whose application rates were less than 70 lbs $P_2O_5$ per acre (the equivalent of P removal by an average corn crop). The percentage of producers that applied more than 70 lbs of $P_2O_5$ per acre remained fairly constant over time (11% five years ago and 9% currently). The New York Corn Growers Association members responding to the survey, on average, apply more P fertilizer to corn (42 lbs $P_2O_5$ per acre) than the producers surveyed at the extension winter meetings (36 lbs of $P_2O_5$ per acre). However, there is insufficient information (no soil test P or manure application data) to determine whether or not the two groups differ in starter P use relative to soil test P values. The vast majority of the members of the NY Corn Growers Association, about 90%, are cash cropping corn[2] and most likely not

[2] Personal communication with Ann Peck, Executive Secretary of the New York Corn Growers Association (this is a rough estimate as the Association has not actually collected this kind of information from its members).

spreading manure (an important source of P on many farms) like the dairy farmers who produce forage and grain corn for their herds. Due to this, many of the Association respondents' corn fields are expected to have lower soil test P levels and therefore require greater applications of starter P for optimum yield.

Table 3. Changes in starter phosphorus applications since initiation of the NY Starter P Project.

| | Empire Farm Days | | 2004 Winter Meetings | | NY Corn Growers Association | | All Surveys | |
|---|---|---|---|---|---|---|---|---|
| $P_2O_5$ application rate | Responses | | Responses | | Responses | | Responses | |
| 5 years ago | | | | | | | | |
| 0-25 lbs/acre | 11 | 24% | 36 | 17% | 3 | 11% | 50 | 17% |
| 25-45 lbs/acre | 14 | 30% | 92 | 43% | 12 | 43% | 118 | 41% |
| 46-70 lbs/acre | 15 | 33% | 65 | 31% | 8 | 29% | 88 | 31% |
| >70 lbs/acre | 6 | 13% | 20 | 9% | 5 | 18% | 31 | 11% |
| Number of responses | 46 | 100% | 213 | 100% | 28 | 100% | 287 | 100% |
| Average application | 44 lbs/acre | | 44 lbs/acre | | 47 lbs/acre | | 44 lbs/acre | |
| Current | | | | | | | | |
| 0-25 lbs/acre | 22 | 37% | 76 | 31% | 10 | 34% | 108 | 33% |
| 25-45 lbs/acre | 13 | 22% | 96 | 40% | 8 | 28% | 117 | 35% |
| 46-70 lbs/acre | 17 | 28% | 54 | 22% | 6 | 21% | 77 | 23% |
| >70 lbs/acre | 8 | 13% | 16 | 7% | 5 | 17% | 29 | 9% |
| Number of responses | 60 | 100% | 242 | 100% | 29 | 100% | 331 | 100% |
| Average application | 38 lbs/acre | | 36 lbs/acre | | 42 lbs/acre | | 37 lbs/acre | |
| Change in starter P use | | | | | | | | |
| Reduced starter P | 18 | 43% | 85 | 41% | 11 | 39% | 114 | 41% |
| No change | 21 | 50% | 81 | 40% | 13 | 46% | 115 | 42% |
| Increased starter P | 3 | 7% | 39 | 19% | 4 | 14% | 46 | 17% |
| Number of responses | 42 | 100% | 205 | 100% | 28 | 100% | 275 | 100% |

Table 4. Total change in $P_2O_5$ applied over combined corn acreage of respondents.

| | Empire Farm Days | | 2004 Winter Meetings | | NY Corn Growers Association | | All Surveys | |
|---|---|---|---|---|---|---|---|---|
| | US Tons | Acres | US Tons | Acres | US Tons | Acres | US Tons | Acres |
| Total reduction in $P_2O_5$ | 94.7 | 6905 | 238.5 | 17960 | 44.1 | 5020 | 377.3 | 29890 |
| Total increase in $P_2O_5$ | 5.2 | 805 | 31.8 | 4870 | 17.7 | 1900 | 54.6 | 7570 |
| Unchanged | 0 | 7160 | 0 | 13660 | 0 | 7180 | 0 | 27990 |
| Total acres | | 14870 | | 36490 | | 14100 | | 65450 |
| Number of responses | 44 | | 203 | | 27 | | 274 | |

Fifty percent of the corn producers that knew about the project and its findings reduced the amount of P starter fertilizer as compared to rates used five years ago (Table 5). In addition, of those who indicated familiarity with the project but still used the same amount of P starter fertilizer as five years ago, a large proportion (38%) were already applying P at low rates (0-25 lbs $P_2O_5$/ acre).

To assess the impact of the project, we need to compare the percentage of people that knew about the project (50%, Table 5) and reduced P starter use in the past five years with the percentage of people that reduced rates without knowing about the project. Of those that were unfamiliar with the project, 32% reduced starter P use (Table 6). Assuming that an equivalent percentage of the

respondents who knew about the project would have reduced rates regardless (i.e., 32% of the 134 "yes" responses in Table 5), the survey indicates that the New York Starter P Project convinced at least 18% or about 1 in 5 of the producers who heard about the research to reduce P starter use during the trial phase. It should be noted that five years ago, prior to the project, 17% of all producers surveyed were already applying starter P within the recommended range of 0-25 $P_2O_5$ lbs/acre for high to very high testing soils (Table 3) and that others may have soils that test low or medium for P (currently 47% of New York soils tested through the Cornell Nutrient Analyses Laboratory test low or medium in P).

Table 5. Relationship between starter P knowledge and change in application rates: responses from producers that knew NY research had shown no yield response to P if soils test very high for P.

| "Yes (I know)" | Empire Farm Days | | 2004 Winter Meetings | | NY Corn Growers Association | | All Surveys | |
|---|---|---|---|---|---|---|---|---|
| Change in starter P use since 5 years ago | Responses | | Responses | | Responses | | Responses | |
| Reduced starter P | 10 | 53% | 49 | 51% | 8 | 44% | 67 | 50% |
| No change | 9 (7*) | 47% | 36 (12*) | 37% | 8 (1*) | 44% | 53 (20*) | 40% |
| Increased starter P | 0 | 0% | 12 | 12% | 2 | 11% | 14 | 10% |
| Number of responses | 19 | 100% | 97 | 100% | 18 | 100% | 134 | 100% |

* already using less than 25 lbs $P_2O_5$ per acre.

Table 6. Relationship between starter P knowledge and change in application rates: responses from producers that did not know NY research shows no yield response to P if soils test very high for P.

| "No" | Empire Farm Days | | 2004 Winter Meetings | | NY Corn Growers Association | | All Surveys | |
|---|---|---|---|---|---|---|---|---|
| Change in starter P use since 5 years ago | Responses | | Responses | | Responses | | Responses | |
| Reduced starter P | 4 | 27% | 20 | 36% | 0 | 0% | 24 | 32% |
| No change | 9 (2*) | 60% | 26 (5*) | 46% | 2 | 67% | 37 (7*) | 50% |
| Increased starter P | 2 | 13% | 10 | 18% | 1 | 33% | 13 | 18% |
| Number of responses | 15 | 100% | 56 | 100% | 3 | 33% | 74 | 100% |

* already using less than 25 lbs $P_2O_5$ per acre.

**Do we expect further changes in the future?**

Lack of awareness and lack of soil test P information may be holding many producers back from making reductions. More than 80% of producers that heard about the project and its findings indicated that they are now likely to soil test regularly and change starter P rates as a result the project (Table 7). In addition, a large percentage of those producers who had little or no familiarity with the project prior to exposure at the time they received the survey indicated an increased willingness to change P starter management. Twenty-eight percent of all survey respondents indicated that they did not soil test regularly (at least once every 3 years). It is expected that many of these producers and others who are becoming aware of the results of the New York Starter Phosphorus Project due to greater extension outreach since completion of the study will now have their soil tested and make changes to their application rates based on the results.

So, do we expect further changes in the future? Yes! It is expected from the results of this survey that at least 18-50% of those newly aware of the New York Starter P Project results will make some reduction in their application of starter P based on this awareness, levels of manure use and the results of soil tests. Just how much more change occurs will likely depend on the ease and

economics of applying different starter blends and/or adjusting rates for fields with different P levels.

Table 7. Relationship between starter P research knowledge and responses to "Likely to change?".

| Likely to change? | Empire Farm Days | | 2004 Winter Meetings | | NY Corn Growers Association | | All Surveys | |
|---|---|---|---|---|---|---|---|---|
| | Responses | | Responses | | Responses | | Responses | |
| Producers that had heard about the project and knew about its findings | | | | | | | | |
| Yes | 16 | 70% | 105 | 84% | 13 | 76% | 134 | 81% |
| Maybe | | 0% | 3 | 2% | 0 | 0% | 3 | 2% |
| No | 7 | 30% | 17 | 14% | 4 | 24% | 28 | 17% |
| Number of responses | 23 | 100% | 125 | 100% | 17 | 100% | 165 | 100% |
| Producers that had heard about the project but were not sure about the details | | | | | | | | |
| Yes | 14 | 100% | 46 | 88% | 4 | 50% | 64 | 86% |
| Maybe | | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| No | 0 | 0% | 6 | 12% | 4 | 50% | 10 | 14% |
| Number of responses | 14 | 100% | 52 | 100% | 8 | 100% | 74 | 100% |
| Producers that had not heard about the project until attendance of the field days or meetings | | | | | | | | |
| Yes | 23 | 79% | 52 | 75% | 3 | 100% | 78 | 77% |
| Maybe | | 0% | 3 | 4% | 0 | 0% | 3 | 3% |
| No | 6 | 21% | 14 | 20% | 0 | 0% | 20 | 20% |
| Number of responses | 29 | 100% | 69 | 100% | 3 | 100% | 101 | 100% |

**Summary and Conclusions**

During the past few years, 71% of the producers surveyed had heard about the New York Starter P Project. Fifty percent of these producers reduced P starter use over the past five years as compared to 32% of those who had no knowledge of the project. Current application rates across all farms averaged from 36 lbs $P_2O_5$ per acre for those that attended extension events in the winter of 2004 to 42 lbs $P_2O_5$ for members of the New York Corn Grower Association. Among those surveyed, 77 to 86% indicated they were more likely to soil test on a regular basis and to change rates if needed, hence further changes in starter P use are expected in the future.

More detailed surveys will be conducted among producers and field crops extension educators that participated in the project during the fall and winter of 2004. Final survey results will be compiled and presented in the spring of 2005.

## For Further Information

For further information contact your local Cornell Cooperative Extension office, contact Quirine M. Ketterings at (607) 255 3061 or qmk2@cornell.edu, and/or visit the New York Starter Phosphorus Project website: http://nmsp.css.cornell.edu/projects/starterp.asp.

**Nutrient Management Spear Program**
http://nmsp.css.cornell.edu/

A collaboration among the Department of Crop and Soil Sciences, Pro-Dairy, and Cornell Cooperative Extension.

**Appendix A.**

| Farm Shows: | | Participants | |
|---|---|---|---|
| Aug 5-7, 2003 | | 113 | Empire Farm Days – Starter P Project booth |
| Feb 26-28, 2004 | | 100 | NY Farm Show – Starter P Project booth |

| Aurora and Willsboro Field Days: | Participants | |
|---|---|---|
| 8/03/01 | | Willsboro Field Day |
| 8/15/01 | 80 | Aurora Field Day |
| 8/01/02 | 120 | Aurora Field Day |
| 8/01/03 | 85 | Aurora Field Day |

| Starter P Presentations: | Participants | |
|---|---|---|
| 1/25/01 | n/a | Winter Crop Meeting 2001. Janice Degni. Ithaca, NY |
| 11/6 and 11/7, 2001 | n/a | Field Days in Oneida County. Mike Dennis. |
| 3/01/02 | 15 | Presentation 2001 Starter P results. Mike Dennis. Waterville, NY |
| 2 and 12/2002 | 76 | Nutrient Management Workshops. Dale Dewing. Trout Creek, Delhi, Hobart, Prattsville, and Margaretville, NY |
| 9/18/02 | 10 | Summer's End Corn Plot Meeting at Teel Farm. Mike Dennis. Barneveld, NY |
| 9/26/02 | 25 | Feed/Fertilizer Meeting – Starter P update. Mike Dennis. Vernon, NY |
| 11/18/02 | n/a | Field Days in Oneida County. Mike Dennis. |
| 1/25/03 | n/a | Steuben County Crop Symposium. Bath, NY |
| 3/11/03 | 22 | Oneida County Crop Congress. Remsen, NY |
| 3/12/03 | n/a | 2003 NRCS Water Quality Symposium. Binghamton, NY |

Field Crop Educator On-Farm Field Days:

| | | Participants | |
|---|---|---|---|
| 7/24/03 | Mike Hunter | 15 | J. Williams Farm, Carthage, Lewis Co |
| 8/19/03 | Mike Stanyard | 15 | Maxwell Farms, Geneseo, Livingston Co |
| 8/19/03 | Pete Carey | 13 | ForageTour – Sykes Farm, Sullivan Co |
| 8/27/03 | Pete Barney | 4 | Harvest Dairy Farm, Madrid, St. Lawrence Co |
| 8/27/03 | Pete Barney | 4 | Heiden Farm, Madrid, St. Lawrence Co |
| 9/03/03 | Aaron Gabriel | 7 | Greenwich Central School, Washington Co |
| 9/12/03 | Pete Carey | 25 | Corn Days – Hughson Farm, Sullivan Co |
| 9/18/03 | Jeff Miller | 30 | Pohls Feedway, Vernon, Oneida Co |
| 10/03/03 | Jeff Miller | 15 | R. Williams Farm, Waterville, Oneida Co |

Cornell Field Crop Dealer Meetings: Participants

| | | | |
|---|---|---|---|
| 2001 | 10/30 | 72 | Clifton Park, NY |
| | 10/31 | 94 | New Hartford, NY |
| | 11/1 | 57 | Batavia, NY |
| | 11/2 | 63 | Auburn, NY |
| 2002 | 10/22 | 92 | Clifton Park, NY |
| | 10/23 | 88 | New Hartford, NY |
| | 10/24 | 61 | Batavia, NY |
| | 10/25 | 73 | Auburn, NY |
| 2003 | 10/21 | 78 | Clifton Park, NY |
| | 10/22 | 82 | New Hartford, NY |
| | 10/23 | 57 | Batavia, NY |
| | 10/24 | 63 | Waterloo, NY |

2004 Winter Field Crop Extension Meetings:

| | | Participants | (Event/Location) Counties represented |
|---|---|---|---|
| 1/08/04 | Lisa Fields | 270 | (Dairy Day) Montgomery, Schenectady, Schoharie |
| 1/23/04 | Janice Degni | 116 | Broome, Cayuga, Chemung, Cortland, Onondaga, Schuyler, Tioga, Tompkins |
| 2/10/04 | Jeff Miller | 24 | (Presentation at Gromark Meeting/ New Hartford, Oneida Co) Herkimer, Oneida, Ostego |
| 2/11/04 | Pete Barney | 10 | St. Lawrence |
| 2/12/04 | Shawn Bossard | 70 | (Crop Day 2004/Cayuga Co) Cayuga, Onondaga, Oswego, Schuyler, Tompkins, Wayne |
| 2/18/04 | Jeff Miller | 9 | (Nutrient Management Workshop I, Oriskany, Oneida Co) Oneida, Herkimer, Madison |
| 2/23/04 | Jeff Miller | 9 | Oneida, Herkimer, Madison |
| 3/03/04 | Jeff Miller | 67 | (Forage Conference/Clinton, Oneida Co) Oneida, Herkimer, Madison, Chenango |
| 3/10/04 | Jeff Miller | 21 | (Presentation at Seedway Meeting/Quacks Diner, Madison Co) Oneida, Madison |
| 3/18/04 | Mike Hunter | 85 | (North Country Crop Congress/Carthage, Lewis Co) Jefferson, Lewis, St. Lawrence |
| 3/19/04 | Pete Barney | 55 | (Crop Congress/ Canton, St. Lawrence Co) Franklin, St. Lawrence |
| 3/18/04 | Jeff Miller | 25 | (Presentation at Monsanto/Dekalb Meeting) Madison, Oneida |
| 3/27/04 | Kathy Evans | 10+ | Chenango, Madison |
| 3/31/04 | Janice Degni | 3+ | Steuben, Tompkins |

Publications:

Farm Journals and Magazines

1. Northeast Dairy Business. "P restraint won't shrink yields". Susan Harlow. December 2003, p. 69.
2. Farming – The Journal of Northeast Agriculture. "What's new in field crops for 2004." Ev Thomas. January 2004, p. 26.
3. American Agriculturalist. "Save on corn starter: Farm-based New York trials show where starter phosphorus fertilizer can be reduced or eliminated." John Vogel. March 2004, p. 26.
4. Country Folks. "New York State Starter Phosphorus Project". Submitted by Dean Sprague. March 22, 2004. Section A – Page 6.

County Extension Newsletters

1. Crop-Soil News (Rensselaer, Albany, Schenectady, and Columbia Counties). "Are you limiting corn yields with your starter fertilizer?" Thomas Kilcer. March 2001.
2. Farm Flashes (Oneida Co). "Starter fertilizer preliminary results are in…". Mike Dennis. January 2002, pp. 6-7.
3. Crop-Soil News (Rensselaer, Albany, Schenectady, and Columbia Counties). Thomas Kilcer. February 2002.
4. Farm Flashes (Oneida Co). Title? (Starter P highlighted in fertilizer recommendation article. Mike Dennis. May 2002.
5. The Ag Program News (Schoharie Co). "Clippings from the Miner Agricultural Institute Farm Report, Oct. & Dec. 2002: Starter P trial results." Vol. 10, No. 1. February 2003, p. 8.
6. The Ag Program News (Schoharie Co). "Nutrient management: Phosphorus Starter Project – results of the 2002 growing season." Vol. 10, No. 2. April 2003, pp. 4-6.
7. Steuben County Agricultural News. Article on 2002 Starter P results. Vol. 85, No. 2. February 2003.
8. Crop-Soil News (Rensselaer, Albany, Schenectady, and Columbia Counties). Thomas Kilcer. February 2003.
9. Jefferson County's Extension Connection - Agriculture and Natural Resources. Vol. 5, Issue 6. October, 2003. (included Starter P Project article.)
10. Ag Viewpoint (Cayuga, Onondaga, Oswego Counties). Various short articles on Starter P by Shawn Bossard in 2003.
11. Farm and Garden News (Sullivan Co). Various short articles on Starter P by Pete Carey in 2003.
12. Farm Flashes (Oneida Co). "Crop shorts: Effect of starter P on corn yields in fields with high or very high soil test P." Jeff Miller. December 2003/January 2004, p. 1.
13. AgFocus (Genesee, Livingston, Monroe, Niagara, Ontario, Orleans, Seneca, Wayne, and Yates Counties). "Small investments in nutrient planning yield dividends!" Nate Herendeen. Vol 13, No. 1. January 2004.
14. Crop-Soil News (Rensselaer, Albany, Schenectady, and Columbia Counties). Insert: NMSP Postcard "Does your corn need starter phosphorus?". February 2004.

15. Lewis County AG Digest. “Phosphorus Starter Project – results of the 2003 growing season.” March 2004.
16. Farm Flashes (Oneida Co). “Can you save $$$$ by reducing or omitting Phosphorus (P) fertilizer in the band for corn?”. April 2004, p. 10.
17. Jefferson County’s Extension Connection - Agriculture and Natural Resources. “NYS Starter P Project results.” Mike Hunter. April 2004.

What’s Cropping Up? articles (Cornell field crops newsletter)

1. Ketterings, Q.M., G. Albrecht, M. Hunter, P. Carey, S.N. Swink, and K.J. Czymmek (2004). Whole farm starter phosphorus fertilizer imports. What’s Cropping Up? 14(6): x-xx.
2. Ketterings, Q.M., S.N. Swink, G. Godwin, K.J. Czymmek, G. Albrecht (2004). New York Starter Phosphorus Project – Does starter P fertilizer impact silage quality? What’s Cropping Up? 14(5): 1-2.
3. Ketterings, Q.M., S.N. Swink, G. Godwin, K.J. Czymmek, A. Durow, and G.L Albrecht (2004). New York Starter Phosphorus Project – Results of the 2003 growing season. What’s Cropping Up? 14(1): 1-3.
4. Ketterings, Q.M., T. Byron, G. Godwin and K.J. Czymmek (2003). Phosphorus Starter Project – Results of the 2002 growing season. What's Cropping Up? 13(1): 4-6.
5. Byron, T.M., Q.M. Ketterings, and K.J. Czymmek (2002). Phosphorus starter demonstration project. Results of the 2001 growing season. What's Cropping Up? 12 (2): 4-5.
6. Czymmek, K.J., J. Degni and Q.M. Ketterings (2001). Phosphorus starter demonstration project. Results of the 2000 Growing Season. What’s Cropping Up? 11(3): 4-6.