



Comments on the use of Starter P Fertilizer

WSI staff has talked to a number of our program farmers about discontinuing the use of P in starter fertilizer for corn grown on high soil test P levels. To some we mentioned that we would get back to you with additional information. Below is a sampling of information which includes a brief summary of each item and a link to see the entire article. Also, all of these items and more will be posted on our website <http://www.waterstewardshipinc.org>.

Phosphorus at Planting?

Corn and Soybean Digest January 28, 2010
Art Latham, North Carolina State University

If your soils have ample P, you can skip the P in your pop-up corn fertilizer without sacrificing yield, according to new research by North Carolina State University.

“Overall, using only starter nitrogen (N) fertilizer would produce yields similar to those achieved with N and P starter fertilizer in soils that test very high for P,” says Deanna Osmond, North Carolina State University Extension soil scientist.

“Producers can reduce the cost of P fertilizer application and slowly decrease the amount of P in the soil by applying only N in their starter fertilizer,” Osmond says. “This will save money and help the environment at the same time.”

Corn yields were greater in the mountains than the coastal plain or piedmont, and cotton yields were greater in the coastal plain than in the piedmont. However, within each region there were no differences between the N-only and N+P corn and cotton treatments. Moreover, the data indicated no yield differences resulted from the different treatments.

<http://cornandsoybeandigest.com/ag-issues/phosphorus-planting/>

Nitrogen and Phosphorous Fertilization of Corn

Alley, Martz, Davis and Hammons
Virginia Tech - 2009

Phosphorus fertilizer recommendations are based on plant-available soil test P levels that have been established for many years. We recently conducted several experiments to determine responses to P fertilization ...of Virginia soils.

In summary, soil test P levels are adequate indicators of corn grain yield response to applied P. **The calibration of soil tests is such that no grain yield responses will be expected when soil test P levels are in the high (H) to very high (VH) range. All fields should be tested for plant-available P and applications made according to soil test levels.**

<http://www.pubs.ext.vt.edu/424/424-027/424-027.html>

Response of Corn and Cotton to Starter Phosphorus on Soils Testing Very High in P

Cahill, Johnson, Osmond and Hardy
North Carolina State University
Agronomy Journal 100:537-542 (2008)

Phosphorus from agricultural lands poses a problem in water resources. In 2003, more than 48% of soil samples submitted to the North Carolina soil testing laboratory tested *very high* in soil P. As soil test P increases, off-site P loss increases, through erosion, soluble P runoff, or leaching.

For production, environmental, and economic reasons, starter-P fertilizer is not warranted on North Carolina fields with *very high* soil test P values.

<http://agron.scijournals.org/cgi/reprint/100/3/537.pdf>

Reducing Phosphorous Fertilizer Inputs for Field Corn Production

Ketterings and Czymmek

Cornell University - 2005

Non Technical Summary: The addition of P fertilizer to soils testing high in P reduces farm profitability and increases the risk for P losses to the environment. In this project we implement P recommendations for corn on NY farms and research stations in different parts of the state...we aim to reach a large portion of NY corn growers and reduce the use of starter P fertilizer on farm fields where a response to P is very unlikely. Quote from a producer: It showed me that you can grow corn with less phosphorus in the starter and still get a good yield and spend a little less and be more environmentally friendly.

<http://www.reeis.usda.gov/web/crisprojectpages/194185.html>

Evaluation of Starter Fertilizers for Corn on Soils Testing High for Phosphorous

Roth, Beegle, and Antle

The Pennsylvania State University - 2003

Communications in Soil Science and Plant Analysis 34:1381-1392

Many soils are testing in the above optimum range for P in our region. The use of traditional starter fertilizers for corn that supply 20-36 kg P ha⁻¹ (18-30 lbs A⁻¹) on these soils may not be desirable. The objective of this study was to evaluate the response of corn to starter fertilizers.

Generally there was little benefit from the addition of P to the starter.

<http://www.informaworld.com/smpp/content~db=all~content=a713624353>

**Maize silage yield and quality response to starter phosphorus fertilizer
in high phosphorus soils in NY**

Ketterings, Swink, Godwin, Czymmek, and Albrecht

Cornell University

Journal of Food, Agriculture & Environment

Dairy producers are facing increasing pressure to reduce phosphorus (P) inputs in the form of concentrates and fertilizer. However, many producers are concerned about sacrificing corn yield and quality if starter P application are reduced or eliminated for fields testing beyond the agronomic critical level.

We conclude that on sites that test high in P and have no manure applications planned for the season, P starter applications can be reduced to less than 28 kg P₂O₅ ha⁻¹ while on sites that test very high in P or when manure is applied to high testing sites, P could be eliminated from the starter without a yield or quality penalty.

<http://www.cababstractsplus.org/abstracts/Abstract.aspx?AcNo=20053095107>