



ADVANCED AG SYSTEMS'

Crop Soil News

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"It is the crops that feed the cows that make the milk which creates the money."

Advanced Ag Systems
Research, Education, Consulting

When Phosphorous Makes You Money

With the price/supply squeeze coming tighter during spring fertilizer purchases, farmers are looking for options that will still support high yields. The November newsletter touched on soil testing to see what is needed in your soil, not what you guess it needs. It has been clear from looking at soil samples over the past 40 years, that fields with regular manure applications are testing high to very high in phosphorous. This is especially true for fields that are daily spread or spread without immediate incorporation. The nitrogen fractions volatilize and are lost while the phosphorous mostly remains. Thus, more manure is applied to meet the nitrogen needs of the corn and so excess phosphorous, above and beyond the maximum needs of the crop, accumulates. The high to very high soil test in phosphorous means that the odds of getting an economic return on starter phosphorous is nearly 0.



Phosphorous can achieve rapid early growth for high yields but **does not guarantee it**. If your soil is already high to very high in phosphorous, there is **no economic return** for applying in starter.

The farmer concern is that with planting in cold soils in early spring, the plants will not be able to get the available soil P and so will still respond to starter fertilizer P. Unfortunately, with a new generation on the farm, they have missed some critical work Dr. Ketterings of Cornell conducted 20 years ago to clearly answer this very question. That year May started warm and dropped as the month progressed. The deluge of cold rain on Mother's Day started the slide that culminated in 5 – 6 inches of snow at the end of May. Research on cold, wet, LOW to medium PHOSPHORUS tested soils, showed a response. For those fields you increased yield and made money with P banded.

The table at right shows the average corn silage yield on 16 on-farm trials conducted in nine New York counties the same year. These fields had the soil tests of high to very high in phosphorous. *Today's yields are 50% higher* than these but the **soil fertility principles remain the same**.

Treatment	Corn Silage Yield @35% Dry Matter
No starter	15.7
No P in starter (just Nitrogen)	16.2
10-25 lbs/A of P in starter	16.5
More than 25 lbs./A of P in starter	16.0

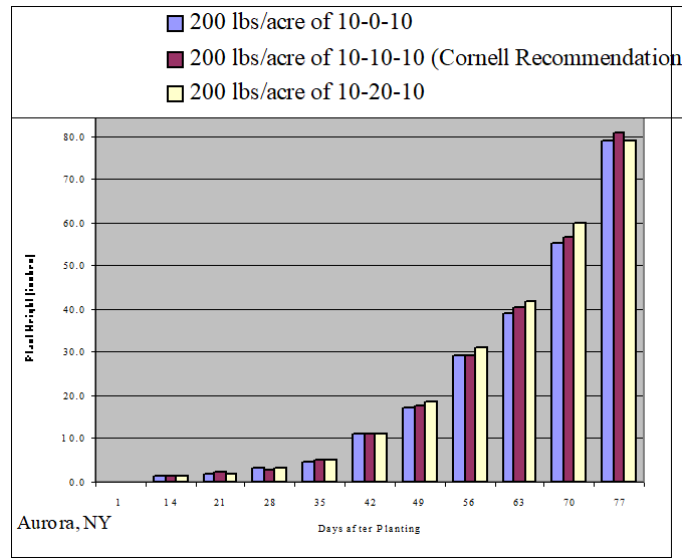
The question answered that year is, "Is there still a response to phosphorus on the **higher P level soils** because of cold wet conditions?" As can be seen in the table, there was a response to a starter fertilizer containing Nitrogen. Despite the **cold wet weather, there was NO response to P on these soils testing high in phosphorous**. This lack of response occurred in both silage and grain. If there are enough available nutrients in the soil to meet

the needs of the crop, there is **NO** economic response to adding more of that nutrient. With the price of fertilizer you can no longer buy from habit but must buy with purpose of assured economic return.

A farmer who followed the above recommendations using just nitrogen starter, found his field efficiency improved very much as he was able to plant nearly three times the acreage before having to stop and refill. Despite cold rainy temperatures and a major snowfall after emergence, his corn grew as well as it ever had. The only loss was the plants he pulled up and took to a neighbor farm, that planted the same time and used phosphorous fertilizer, so he could compare them. His corn was just as big or bigger but had a much deeper green color from banded nitrogen.

Will the lack of Phosphorus in the band delay maturity?

First, we must be clear that we are talking about high P levels from soil tests based on Cornell research. The definition of high means there is little to no response in crop improvement or yield to pay for that extra fertilizer. If your soil test is medium or low there will usually be a yield and maturity response to additional phosphorus in the band. The graph at right shows what occurred at one of multiple sites across the state. There was **NO** significant delay in plant height, and there was **NO** delay in maturity in the 0 phosphorous plots compared to those with P in the band. The early season growth was the same for each.



Should I still use starter: **DEFINITELY!**

We are still suggesting a **starter fertilizer of JUST NITROGEN**. A cold, wet soil has very slow organic matter breakdown and the crop will respond to nitrogen (plus sulfur) in the 2x2 band. Add 30 lbs./a of Nitrogen in the band (2 over 2 down) to carry the plant well into the end of June when the soils are assured to be warm and the root system big enough to get manure or side dressed nitrogen. For those who inject manure and plant over the injection zone, you already have banded fertilizer and more is not needed. Farms rarely have uniform soil tests across all fields. Utilizing a nitrogen starter on high phosphorous testing fields and a starter with phosphorous on medium/low test fields, may be a bit of a hassle but it can make a big difference on the cost of the crop you are growing this year. For those with liquid fertilizer systems, having two nurse tanks, one with P and one just nitrogen, allows you to make a mix for the field you are planting. It is not exact but it will get you the majority of the fertilizer savings.

As we wrote in the November 2021 newsletter, “If reducing fertilizer makes you nervous, the Cornell fact sheet [Starter Phosphorous for Corn](#) (click to open) gives some very conservative guidelines. Unless there is excessive P in the field they usually recommend sufficient starter to meet crop removal. With the very high prices and potential supply issues, the suggestion is to just use starter N on high fields and mine some of the excess P to get you through this next cropping season.”

Sincerely,

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