

An Evaluation of Starter Fertilizer in Corn Silage Production

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Reducing fertilizer costs may be one area dairy farmers can trim expenses without negatively impacting crop growth and development. Research has been conducted by Carlene Farms and Ohio State University Extension in Tuscarawas County Ohio evaluating the use of starter fertilizer in corn silage production. Similar research has been conducted at Cornell University looking at the use of starter nitrogen. Table 1 provides a summary of the findings of research conducted in Tuscarawas County, Ohio.

Table 1. Ohio data on effects of pop-up fertilizer on yield of corn silage.

Pop-up Fertilizer	Corn Silage Yield (lb/ac)
2005	
5-15-15	20,180
10-34-0	20,540
2006	
10-34-0	16,098
6-24-6	18,230
8-19-3 +Zn	14,150
0	12,081
2007	
6-24-6	19,520
10-34-0	20,110
8-19-3	18,750

Bottom Line Summary of Ohio Data

While some differences, very minimal, could be seen early in the growing season, there was relatively no difference in plant height or yield. In this study, there was very little potassium response because of adequate levels of K in the soils at this site.

In 2006, we evaluated the addition of Zinc (added from the 8-19-3) and found no yield benefit. Thus, if micronutrient deficiency has not been a problem in a particular field, application is not recommended.

In our study, the 10-34-0 was nearly half the cost of the 5-15-15. Additionally, the 6-24-6 was 30% higher and the 8-19-3 was 37% higher in price compared with the 10-34-0.

If you use starter fertilizer, carefully consider the cost of each available form and use the data from this study to evaluate options and in making management decisions.

Cornell University Study

In the Cornell study, data were collected from 16 sites. Of the 16 sites, 3 were Cornell University research facilities and 13 were on-farm trials. The locations were based on the following criteria:

- Corn grown for silage in the first year following alfalfa, alfalfa/grass, or sod;
- Field received no manure following the last harvest of the previous crop; and
- Field received no more than 30 lb N/acre in the starter fertilizer.

Table 2 describes the findings from the Cornell University Research Trials, and Table 3 describes the findings of the Cornell University Research Trials and the On-Farm Trials.



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The research station trials showed that although sods can supply a large amount of N, first year corn will still benefit from a small application (30 lb N/acre) of banded starter fertilizer. Yet, additional fertilizer beyond the small starter application did not increase yields of 1st year corn regardless of tillage, the timing of sod kill, or the amount of grass or legume in the sod.

Bottom Line: If you are using starter N fertilizer in excess of 30 lb/acre, you are probably wasting money and potentially causing negative environmental impacts. Consult with your local Extension Educator or agronomist to evaluate potential cost savings regarding starter N in your corn silage production.



Source:

What's Cropping Up? A Newsletter for New York Crops & Soils, Volume 17, Number 1, January – February 2007, Cornell University.

Additional DIBS are available on-line at <http://dairy.osu.edu>.

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Table 2. Addition of small N starter (30 lb N/acre) was sufficient for optimum yield.

Starter N (lb/acre)	Side – Dress N (lb/acre)	Silage Yield (35% DM; ton/acre)	Moisture Content (%)
0	0	19.6	58.8
30	0	21.1	58.6
30	50	21.5	58.2
30	100	22.6	58.8
30	100	22.1	58.6

Table 3. Additional N (beyond starter N) was not needed for 1st year corn silage production.

Side-Dress N (lb/acre)	Corn Silage Yield (35% DM; ton/acre)	Moisture Content (%)
0	21.7	62.1
50	22.2	61.9
100	22.4	62.3
150	22.4	62.1

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