

# Southeast Dairy Producer's Check-Off Program Research Summary

## Effect of Nitrogen and Sulfur Applications on Silage Corn Yield and Quality

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### Executive Summary

This trial tested 3 rates of nitrogen (N) with or without late-season sulfur (S) application on silage corn. Overall, we were surprised to see that the higher N rate didn't provide yield or quality benefit and there was no interaction between the impact of N and late-season S. Our data also emphasizes the importance of late-season S applications (V10-R1) for silage corn produced on fields without dairy effluent application; on those fields that don't receive effluent and/or manure, there is a benefit to choosing N or K sources that contain S, or supplementing S using gypsum (calcium sulfate).

### Implications

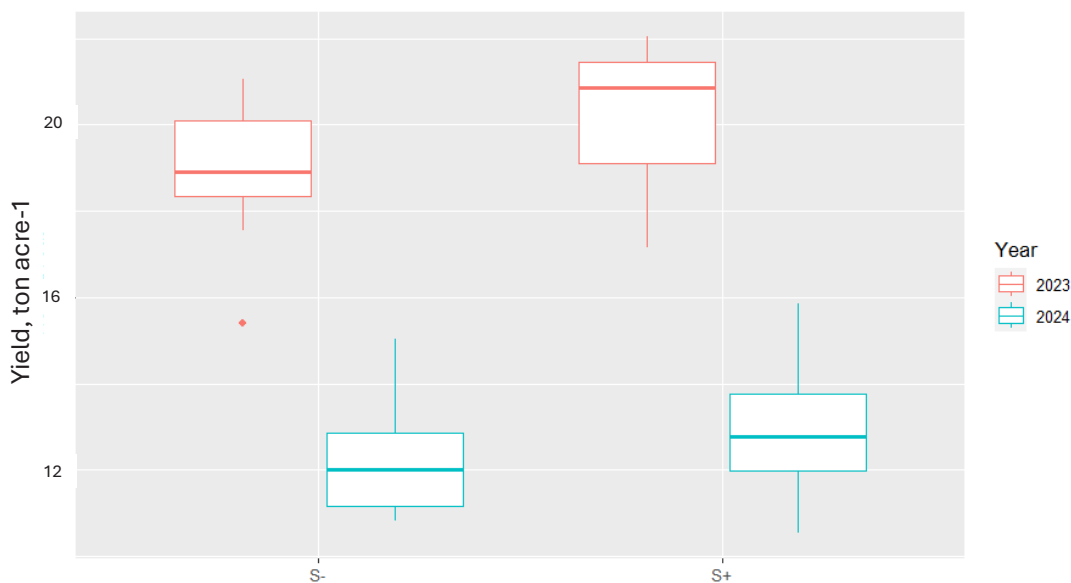
Increasing N rates above the current UF/IFAS recommendations is unlikely to increase yield or nutritive value. The strong impact of S on yield indicates the importance of late-season S applications (growth stages V10-R1) for silage corn produced on fields without dairy effluent application; on those fields that don't receive effluent and/or manure, there is a benefit to choosing N or K sources that contain S, or supplementing S using gypsum (calcium sulfate).

*Table 1: Treatments and their respective N and S rates, and timing of application.*

Treatment	Total N Rate	Total S Rate	At-Plant S	VT S	At-Plant N	V4 N (10%)	V8 N (15%)	V10 N (20%)	V12 N (25%)	VT N (20%)	R1-R2 N (10%)
Standard N	270	5	5	0	16	25.4	38.1	50.8	63.5	50.8	25.4
Reduced N	216	5	5	0	16	20	30	40	50	40	20
Elevated N	324	5	5	0	16	30.8	46.2	61.6	77	61.6	30.8
Standard N w/ S	270	20	5	15	16	25.4	38.1	50.8	63.5	50.8	25.4
Reduced N w/ S	216	20	5	15	16	20	30	40	50	40	20
Elevated N w/ S	324	20	5	15	16	30.8	46.2	61.6	77	61.6	30.8

## Methods

A small plot trial was established at the Plant Science Research and Education Unit in Citra, FL in 2023 and 2024. Treatments consisted of the recommended standard N rate (270 lbs of N/A throughout the season), reduced N rate (216 lbs N/A), and elevated N rate (324 lbs N/A). All tested N rates were tested both with and without late-season sulfur (0 or 15 lbs S/A). Plots were arranged in a complete randomized block design with 5 replicates in 2023 and 6 replicates in 2024. Yield and nutritive value were tested at the time of harvest, and samples were also ensiled to further measure forage characteristics.



**Figure 1.** Yield of silage corn at harvest, as affected by the main effect of S application (15 lb are-1 of gypsum) at tasseling during two growing seasons. No Sulfur: S-; With Sulfur: S+.

## Results

Yields were comparable between the standard and elevated N rate. Plots with sulfur had higher yields than plots without sulfur in both years. We are still waiting on nutritive value results from the lab for 2024, but in 2023 higher N rates resulted in slightly higher crude protein levels, and S application did not impact protein levels. Fiber, lignin, estimated milk yield, and other parameters did not vary based on N or S.

## References of Published Work

The 2023 data from this trial was presented by Dr. Angel Zubieta at the Tri-Societies Annual Meeting. A manuscript detailing all results is in preparation and will be submitted later this fall.