Sulfur Applications to Corn

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Objective

Determine the effect of sulfur applications on leaf tissue analysis and corn grain moisture and yield.

Background

Crop Year: 2017
Location: 5 miles southeast of Wapakoneta
County/Town: Auglaize County
Soil Type: Mostly Blount, but some Pewamo
Drainage: Systematic Sub-Surface
Previous Crop: Soybean
Tillage: Spring field cultivation (twice)
Soil Test: pH = 6.7; P = 104 ppm; K = 143 ppm
Planting Date: May 19, 2017
Nitrogen: 180 pounds N/A
Seeding Rate: 33,000
Harvest Date: October 26, 2017

Methods

A sulfur on corn trial was established having three treatments with three replications in a randomized complete block design. Plot size was 6 rows by 819 feet. Treatments included

1. No sulfur
2. 20 pounds/acre of sulfur applied in a 2 X 2 band at planting
3. 40 pounds/acre total sulfur with 20 pounds applied at planting and 20 pounds at the time of the side-dress nitrogen application.

Ammonium thiosulfate was used as the source of sulfur for the trial.

The soil was field cultivated prior to the application of phosphorus and potassium and then field cultivated again just prior to planting. A soil sample was taken prior to any tillage work. Wellman 2310 corn was planted in 30-inch rows at a 2-inch depth. Forty pounds of nitrogen was applied at planting in the form of 28% Nitrogen in the zero sulfur treatment and in combination with ammonium thiosulfate in the sulfur treatments. One hundred and forty pounds of nitrogen was applied on June 28, 2017 to V7 to V8 corn in the form of 28% Nitrogen for the non-sulfur treatments and ammonium thiosulfate for the sulfur treatment. The side-dress applicator had a knife toolbar.

Ten ear-leaf samples were collected from the center four rows of each plot on July 24, 2017. Final stand counts were taken prior to harvest. Average final stand count was 28,111 plants per acre for 0 sulfur, 29,000 for 20 pounds of sulfur and 29,222 for 40 pounds of sulfur. All six rows per plot were harvested for the length of the plot. Grain moisture and weight were recorded for each plot.

Results

Table 1. Leaf Tissue and Corn Grain Moisture and Yield Response to Sulfur.

Pounds Sulfur/acre		Leaf Sulfur (%)	Moisture (%)	Yield (bushels/acre)
0		0.24	17.9	198.3
20 at plant		0.23	18.2	202.6
20 at plant + 20 sidedress		0.23	18.2	202.9
	LSD (0.05)	N.S.	N.S.	N.S.
	C.V.	3.82	2.1	1.54

Summary

From 2007 to 2009 60% of 47 research sites in Iowa showed a corn grain yield response to the application of gypsum (sulfur source). Because of this data Ohio corn growers are interested in applying sulfur to corn. However, most Ohio data does not support the application of sulfur to corn which is likely due to greater sulfur emissions in Ohio compared to Iowa. This study looked at one versus two applications of sulfur to corn. Based upon leaf tissue analysis and corn grain moisture and yield, there was no advantage to applying sulfur to the corn in this one trial in 2017.

Acknowledgement

The author expresses appreciation to cooperator Doug Fisher for the use of his land and equipment, especially for the time spent calibrating application equipment.

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