Evaluation of Sulfur on Wheat Yields (1999-2000)

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Objective

To evaluate the effect of sulfur on soft-red winter wheat yield.

Background

Cooperator:	Defiance Ag Research Assoc.	Soil test:	pH 7.1, P 36 ppm
County:	Defiance		K 250 ppm (08/11/99)
Nearest Town:	Defiance		Organic Mater 3.9%
Drainage:	Surface	Fertilizer:	*Material (N-P-K-S)*
Soil type:	Paulding Clay		Ammonium Sulfate (21-00-00-24)
	Roselms Silty Clay		Thiasol (12-00-00-24)
Tillage:	No-till		Urea (45-00-00-00)
Previous Crop:	Soybeans	Planting Date:	10/9/1998, 10/28/1999
Variety:	Pioneer 25R26	Row Width:	7.5-inch
		Harvest Date:	7/9/1999, 7/8/2000

Methods

Experimental design was a randomized complete block replicated three (3) times in 1999 and four (4) times in 2000. All plots received the recommended phosphorous (P) and potassium (K) applications based on Tri-State Fertilizer Recommendations, Bulletin E-2567. All plots, in both years received 40 lbs/A of nitrogen (N) in the fall and 60 lbs/A of N in the spring (one application). The source of fall applied sulfur (S) was ammonium sulfate in combination with urea to reach the 40 lbs/A of N application. The 1999 control and 1999 spring sulfur received urea as a fall nitrogen source where as the 2000 plots all received a fall application of liquid nitrogen solution (28%). Liquid nitrogen solution (28%) was used for all spring nitrogen applications. The source of all spring applied S was Thiasol. Thiasol was used in combination with a liquid nitrogen solution to achieve a total of 60lbs N/A.

<u>1999 Sulfur Treatments</u>
Fall Sulfur = 20 lbs/A of S applied in the fall
Spring Sulfur = 20 lbs/A of S applied in spring
Split Sulfur = 10 lbs/A of S in the fall followed by 10 lbs/A of S applied in the spring
Control = no sulfur applied

<u>2000 Sulfur Treatments</u>
Spring Sulfur = 20 lbs/A of S
Spring Sulfur = 10 lbs/A of S
Control = no sulfur applied

All plots were treated equally regarding herbicide and fungicide applications. Plot size was approximately 30ft X 500ft. All post applications were made with a Spra-Coupe with a 45 foot boom or a commercial applicator with a 90 foot boom. The center 22.5 ft was harvested from treatment. Yield was determined by a calibrated GPS combine yield monitor. All treatments were individually harvested with the same combine. Fifteen foot borders were maintained around the field perimeter.

Results

Table 1. Impact of sulfur application on wheat yield, 1999.

Variety 25R26	Average Yield (bu/A)
Fall Sulfur	62.9
Spring Sulfur	61.5
Fall + Spring Sulfur	63.6
Control (no sulfur)	61.2
LSD (0.05)	Not significantly different

Table 2. Impact of sulfur application on wheat yield, 2000.

Variety 25R26	Average Yield (bu/A)
Spring Sulfur 10 lbs/A	59.1
Spring Sulfur 20 lbs/A	57.5
Control (no sulfur)	59.9
LSD (0.05)	Not significantly different

Summary

The addition of sulfur had no significant effect on grain yield in either year studied. Significant effects from sulfur on wheat yields have be documented on coarse-textured, sandy soils and/or soils with low organic matter levels of 1.5 percent or lower. A high-yielding wheat crop will take up about ¼ lbs of sulfur for each bushel produced. Finer-textured, loam or clay soils or soils with higher levels of organic matter of 2.0 – 4.0 percent retain and provide the necessary sulfur for the wheat crop. It is also suspected that rainfall contains high enough levels of sulfur to contribute to sulfur needs of the wheat crop. Although Ohio farmers are solicited to add sulfur into their production practices for winter wheat, this study does not support the practice.

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