

The Effect of Three Sources of Sidedress Nitrogen on Corn Yield

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Objective

The rising cost of natural gas in the United States has caused costs of all forms of nitrogen to increase. Typically corn is sidedressed with either 28% N solutions or anhydrous ammonia. With the possibility of importing urea which is made from cheaper natural gas abroad, urea may be a less expensive form of nitrogen for producers to use. The objective of this study is to determine what effect the source of nitrogen has on corn yield.

Background

Cooperator:	County Home Farm	Soil Test:	pH = 7.0
County:	Morrow		P = 44 ppm
Nearest Town:	Mt. Gilead		K = 120 ppm
Drainage:	Moderately Drained	Fertilizer:	20 gal. of 7-22-5
Soil Type:	Centerburg Silt Loam		30 # of N with spray
Tillage:	No-till	Herbicides:	BicepII Magnum 2.3 qt.
Previous Crop:	Soybeans		Simazine 90 1.0 qt.
Variety:	DeKalb DKC 60-08		Gramoxone Max 1.3 pt.
	YieldGard CB	Planting Date:	May 7, 2005
		Planting Rate:	26,500 seeds/Ac.
		Row Width:	30-inch
		Harvest Date:	Nov. 25, 2005

Method

The study consisted of three replications in a randomized complete block experimental design. The treatments were 12-rows wide for the 28% and NH_4 treatments. The urea treatments were 18-rows wide to accommodate the application equipment. Twelve rows of each treatment were harvested and weighed with a weigh wagon. Each treatment was approximately 1/3 acre in size. The sidedress treatments were applied on June 17 and the corn was 6 collar and 16-18 inches tall. According to the tri-state fertility recommendation, 130 pounds of nitrogen should be applied for 140 bushel/acre yield following soybeans. A total of 135 pounds was applied (15 at planting, 30 at spraying, and 90 pounds of sidedressed nitrogen).

Results

Table 1. Effect of Source of Sidedress Nitrogen on Corn Yield

<u>Treatment</u>	<u>Nitrogen</u> <u>(Cost/Ac.) (a)</u>	<u>Application</u> <u>Cost/Ac. (b)</u>	<u>Yield (Bu/Ac.)</u>
28%	\$39.60	\$5.00	155.6A
Anhydrous Ammonia	\$33.30	\$7.20	157.1 A
Urea	\$39.60	\$3.70	155.3 A
			LSD (0.05) = 13.1 CV% = 3.72

(a) Cost of sidedressed nitrogen was calculated at quoted prices received in November 2005 for 90 pounds of nitrogen

(b) These are the reported rates from the Farm Custom Rates paid in Ohio, 2002

Summary

No significant difference in yields existed between the three nitrogen sources used when sidedressing. There was no rain for 12 days following the urea application and it was in the upper 80's – low 90's the entire period. Sufficient rains were received after June to provide a good crop (above yield goal for the field). There was minor leaf burn from the urea application.

This study should be repeated.

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