

Soybean Response to Nitrogen

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Objective

To evaluate the effect nitrogen may have on soybean yields

Background

Cooperator:	Glenn Karhoff	Soil test:	pH 6.5, P 70 ppm, K 180 ppm
County:	Putnam	Fertilizer:	None
Nearest Town:	Glandorf	Planting Date:	May 11, 2002
Drainage:	Tiled with 45 ft spacing	Seeding Rate:	180,000 seeds/acre
Soil type:	Clay loam	Row Width:	15-inch
Tillage:	No till	Herbicides:	Roundup Ultra 1 qt/A+AMS
Previous Crop:	Corn	Harvest Date:	October 8, 2002
Variety:	Dekalb 31-51		

Methods

Experimental design was a randomized complete block with three treatments replicated five times. Treatments included a zero N check and a 50-lb/ A N treatment from ureaammonium nitrate solution (28%) coultured-injected between rows (30-inch spacing) on June 20 and August 10. The plots were planted with a Kinze 2000 planter. Individual plot size was approximately 1/ 4 acre.

The soybeans were planted in 30-foot wide strips for a length of about 360 feet. Using a John Deere 6620, a 20-foot wide strip was harvested the length of the plot and weighed using a weigh wagon. Grain yield was adjusted to 14% moisture. Harvest population was approximately 120,000 plants per acre.

Results

Table 1. Soybean Yield and Harvest Moisture.^a

N application (month)	Yield (bu/A)	Harvest Moisture (%)
June	48.0 a	11
August	45.4 b	11
None	46.0 b	11
LSD (0.05)	1.6	NS
F-test	7.8	<1

^aMeans followed by the same letter in same column are not significantly different.

Summary

The test plot had a uniform stand. The growing season was droughty. There was some damage to the soybean stands caused by the nitrogen application equipment. The operator believes the damage can be minimized next year.

The two-bushel-per-acre yield gain from June-applied nitrogen was statistically different from the check. However, given the cost of the nitrogen applied and the operator's time and equipment, the yield gain did not appear to increase profits. The August applied nitrogen yield was not significantly different than the check. The operator plans to replicate the study next year to determine if statistically different yields occur in a normal (adequate rainfall) growing season.

Acknowledgment

The authors would like to thank Glenn Karhoff and Karhoff Farm Seeds for cooperating in this study.

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