

Nitrogen Response in Corn Study

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Objective

To determine the effects of nitrogen rates on corn yields and provide data for nitrogen response curves.

Background

Crop Year: 2016	Soil Test: pH 6.6, P 23 ppm M III, K 141 ppm
Location: Allen Township	Planting Date: April 27, 2016
County/Town: Darke/Bradford	Nitrogen: Varied
Soil Type: Celina Silt Loam	Seeding Rate: 33,000
Drainage: Not patterned	Harvest Date: September 23, 2016
Previous Crop: Soybeans	Rainfall: 16.98 in. - 4/15-9/23
Tillage: No-Till	

Methods

Five nitrogen rates were replicated three times in a randomized complete block design. Treatments were planted with a 12 row Kinze planter. All treatments received the same tillage and herbicide applications. Seed used was Dekalb 6067. Planting included a 2x2 application of 28% at a rate of 35 pounds of actual N. The other treatments were side-dressed with the appropriate rates of 28% to reach the treatment levels outlined below. Stand counts were taken at V6 by obtaining 2 counts per treatment and calculating the simple average. Plots were harvested with a commercial combine equipped with a 6 row corn head. Yields and moistures were obtained by using a calibrated yield monitor. Yields were verified using a grain cart. Yields were adjusted to 15.5% moisture. Precipitation data was obtained from cocorahs.org and recorded daily.

Treatments

1. 100 lbs N/A
2. 150 lbs N/A
3. 200 lbs N/A
4. 250 lbs N/A



Results

Treatment #	Nitrogen Treatment (# Actual N)	Wet Moisture %	Treatment Average Yield (Bu.)	Return over N \$ of each increment treatment of N **
1	100	17.02	110.2	
2	150	17.8	120.7	\$ 14.41
3	200	16.7	108.1	-\$57.69
4	250	17.34	111.4	-\$8.24

CV 5.17; No Significant Difference in yield.

**(Increased Yield over previous treatment of N X \$3.11) – Cost of additional N

Summary

Corn yield was not influenced by nitrogen rates. There was no significant difference in yield of the corn as affected by the rate of nitrogen. An economic comparison between the nitrogen rates revealed a return on additional nitrogen up to 150 pounds per acre. Assumptions were nitrogen cost of \$.37 per pound and corn at \$3.11 per bushel.

Acknowledgement

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