

# Corn Yield Response to Nitrogen Rates

Jeff Stachler, Ohio State University Extension Educator, Auglaize County

## Objective

To determine the response of corn yield to nitrogen rates

## Background

Crop Year: 2016

Location: Wapakoneta, Ohio

County/Town: Auglaize County

Soil Type: Blount SIL and Pewamo SCL

Drainage: Systematic

Previous Crop: Wheat

Tillage: Turbo till

Planting Date: May 24, 2016

Nitrogen: Various rates

Seeding Rate: 32,000 seeds/A

Harvest Date: November 7, 2016

## Methods

A nitrogen rate trial was established having five nitrogen rates with three replications in a randomized complete block design. Plots were 4 rows wide spaced 30 inch and field length of 682 feet. A John Deere Maxemerge planter equipped with liquid fertilizer coulters was used to plant the trial. Thirty-three pounds of nitrogen per acre was applied at planting in a 2 inch by 2 inch band to all plots except the 0 nitrogen rate. Anhydrous ammonia was applied on June 13<sup>th</sup> to V4 corn at rates of 70 to 220 pounds nitrogen per acre. A greenseeker was used to record NDVI values on July 6<sup>th</sup> at V8 to V10 corn. Plots were harvested with a commercial combine. Weigh wagon was used to measure the weight of the corn. Yield was adjusted to 15.5% moisture. Data were analyzed using the ANOVA procedure and means separated using LSD at  $\alpha=0.05$ .

## Results

Table 1. NDVI, Moisture, and Corn Yield Response to Nitrogen Rates.

Nitrogen rate (pounds/A)	NDVI	Moisture (%)	Yield (bu/acre)
0	0.548 B	14.4 B	130 B
100	0.658 A	16.8 A	182 A
150	0.622 A	17.3 A	176 A
200	0.632 A	16.9 A	187 A
250	0.633 A	18.6 A	187 A
	<b>LSD (0.05)</b>	<b>LSD (0.05)</b>	<b>LSD (0.05)</b>
	<b>0.04814</b>	<b>1.87</b>	<b>20.6</b>
	<b>C.V. = 4.1</b>	<b>C.V. = 5.9</b>	<b>C.V. = 6.3</b>

## Summary

Corn yield, moisture and NDVI were the same for treatments having 100 to 250 pounds of nitrogen per acre. Only the 0 nitrogen rate had a lower yield, NDVI reading, and moisture.



Rainfall was limited during most of the season, but it was not recorded. The corn plants visually showed moisture stress from time to time from just before sidedressing through R4. The lack of differences was likely caused by not having enough water available to differentially move nitrogen into the plant. The later planting date could have influenced the lower yields.

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For more information, contact:

Jeff Stachler

OSU Extension –Auglaize County

208 S. Blackhoof St.

Wapakoneta, OH 45895

stachler.1@osu.edu



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COLLEGE OF FOOD, AGRICULTURAL,  
AND ENVIRONMENTAL SCIENCES

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