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Corn Nitrogen Rate Comparison – Fulton County

Objective

To evaluate the agronomic and economic impacts of two nitrogen rate fertilizer applications.

Background

Crop Year: 2023 corn
Location: Fayette
County: Fulton
Soil Type: Haskins/Blount
Drainage: Pattern
Tillage: No-till
Previous crop: soybeans
Herbicides: Resicore, Glyphosate, 2,4-D
Planting Date: 5-11-23
Variety: Pioneer P0995-AM
Seeding Rate: 34,000
Fertilizers: see below
Harvest Date: December 4, 2023
Soil test : pH 4.8, P 27 ppm M3, K 81 ppm, CEC 13.4 , O.M. 2.0 %

Methods

Nitrogen fertilizer at two rates was applied when sidedress corn occurred. Treatments were replicated six times in a random block design. Treatments are 20 feet wide by 1,300 feet long. All treatments received the same inputs except for sidedress nitrogen fertilizer. . On September 15, 2022, cereal rye cover crop was flown on at a rate of 60 lbs./acre before soybean harvest. Yields and moistures were obtained by a calibrated yield monitor. Yields were adjusted to 15.5% moisture.

Fertilizers

28% UAN ; 81# at planting 2 x 2
12-0-0-26 thiosul ; 3 gal/acre at planting

Sidedress V6 growth stage; 28% UAN

Treatments

1. 28% UAN at 75 lbs/ac (25 gal.) sidedress
2. 28% UAN at 105 lbs/ac (35 gal.) sidedress

Results

Table 1. Impact of Nitrogen Fertilizer Rates

Sidedress N Rate (gal/ac of 28% UAN)	Corn Yield (bu/ac)	Value of Corn ($/ac)	Cost of Nitrogen ($/ac)	Return Minus N Cost ($/ac)
25	169.1 a	$760.95	$75.00	$685.95
35	171.7 a	$772.65	$105.00	$667.65

Significant Difference in yield. LSD (3.67), CV 1.68; P<.05.
Based on $4.50/Bu corn and $560/ton UAN N ($3.00/gal.)

Table 2 Weather Data

	2023 Local Rainfall Weather Link (Fayette)	Archbold Historic Rainfall www.weather-us.com
May	0.82 in.	2.28 in.
June	0.60 in.	2.60 in.
July	0.13 in.	2.17 in.
August	2.01 in.	2.13 in.
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Total	3.55 in.	9.18 in.

Summary

Corn yield was not significantly greater by the addition of 10 gal./ac 28% UAN extra fertilizer. A loss of $18.30 per acre was incurred when additional nitrogen fertilizer was applied (table 1).

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Data collection and reporting was conducted by the Conservation Action Project. (www.capofohio.org)

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