

Evaluating Nitrogen Fertilizer Rates on Non-Irrigated Corn

Study ID: 0701147202301

County: Richardson

Soil Type: Marshall silty clay loam 2-6% slopes

Planting Date: 5/23/22

Harvest Date: 10/25/22

Seeding Rate: 27,500

Row Spacing (in): 30

Hybrid: DEKALB® DKC68-48

Reps: 5

Previous Crop: Soybean

Tillage: No-till

Herbicides: *Pre:* atrazine, Dual Magnum®, Roundup®, and 2,4-D *Post:* mesotrione and Roundup® applied in June

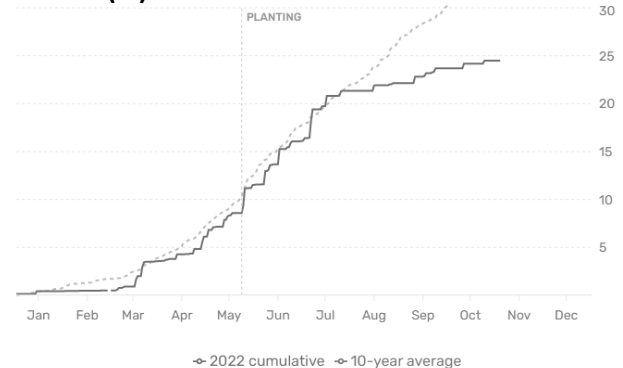
Seed Treatment: None

Foliar Insecticides: None

Foliar Fungicides: None

Irrigation: None

Rainfall (in):



Soil Tests, 0-8" (August 2022):

Soil pH	Soluble Salts 1:1	OM	KCl Nitrate	Nitrate	M-3 P	-Ammonium	Acetate-	-----DTPA-----	Sum of Cations	% Base ---Saturation---									
1:1	mmho/cm	LOI-%	ppm N	lb N/ac	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	me/100g	H	K	Ca	Mg	Na
7.3	0.19	3.4	18.8	45	38	600	3558	408	78	3.20	32.5	7.4	1.00	23.1	0	7	77	15	1

Introduction: The objective of this study was to evaluate the impact of nitrogen (N) fertilizer rate on corn yield and net return. Fertilizer was applied with the planter. The fertilizer blend was 19% 10-34-0, 77% UAN 32%, and 4% Thio-Sul®. The grower's standard rate was 48 gal/ac. This study evaluated rates of 42 gal/ac, 52 gal/ac, and 62 gal/ac, which contributed the following nutrients:

42 gal/ac: 126 lb N/ac, 4.8 lb S/ac, and 31 lb P₂O₅/ac

52 gal/ac: 156 lb N/ac, 6.0 lb S/ac, and 39 lb P₂O₅/ac

62 gal/ac: 186 lb N/ac, 7.2 lb S/ac, and 46 lb P₂O₅/ac

Stand counts were collected in the spring, and yield, grain moisture, and net return were evaluated at harvest.

Results:

	Early Season Stand Count (plants/ac)	Moisture (%)	Test Weight (lb/bu)	Yield (bu/ac)†	Marginal Net Return‡ (\$/ac)
42 gal/ac	27,733 A*	13.8 B	60 A	224 B	1,318 B
52 gal/ac	28,200 A	14.1 AB	60 A	235 A	1,354 A
62 gal/ac	28,200 A	14.4 A	60 A	232 A	1,297 B
P-Value	0.647	0.013	0.272	0.0004	0.002

*Values with the same letter are not significantly different at a 90% confidence level.

†Bushels per acre corrected to 15.5% moisture.

‡Marginal net return based on \$6.57/bu corn and \$3.64/gal of fertilizer (\$1.2/lb N).

Summary:

- There were no differences in stand counts or test weight among the treatments.
- Grain moisture of the 62 gal/ac treatment was 0.5% wetter than the 42 gal/ac treatment.
- The 52 gal/ac treatment resulted in a yield increase of 11 bu/ac compared to the 42 gal/ac treatment. There was no additional yield increase for the 62 gal/ac treatment.
- This resulted in the greatest net return for the 52 gal/ac treatment (\$36/ac better than the 42 gal/ac treatment and \$56/ac better than the 62 gal/ac treatment).