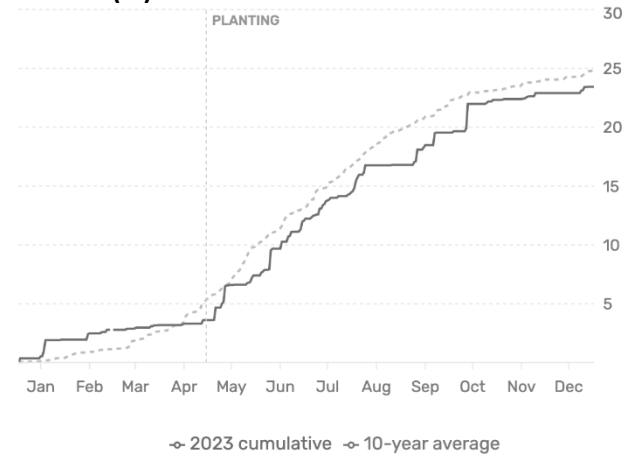


# Evaluating Adapt-N In-Season N Management on Irrigated Corn

**Study ID:** 0709047202306  
**County:** Dawson  
**Soil Type:** Cozad silt loam; Hord silt loam  
**Planting Date:** 4/29/23  
**Harvest Date:** 11/3/23  
**Seeding Rate:** 31,000 seeds/acre  
**Row Spacing (in):** 30  
**Hybrid:** Pioneer® P1353Q  
**Reps:** 7  
**Previous Crop:** Soybean  
**Tillage:** Strip-till  
**Herbicides:** **Pre:** 2.3 qt/ac Harness® Xtra 5.6, 22 oz/ac Roundup PowerMAX® 3, 8 oz/ac dicamba, 3 oz/ac mesotrione, 12.8 oz/ac Padlock® Plus on 5/16/23 **Post:** 1.5 qt/ac Harness® Xtra, 22 oz/ac Roundup PowerMAX® 3, 3 oz/ac mesotrione, 3 oz/ac Stinger®, 5 oz/ac Status®, 12.8 oz/ac Padlock® Plus on 6/5/23

**Foliar Insecticides:** None  
**Foliar Fungicides:** None  
**Irrigation:** Gravity, Total: 10"  
**Rainfall (in):**



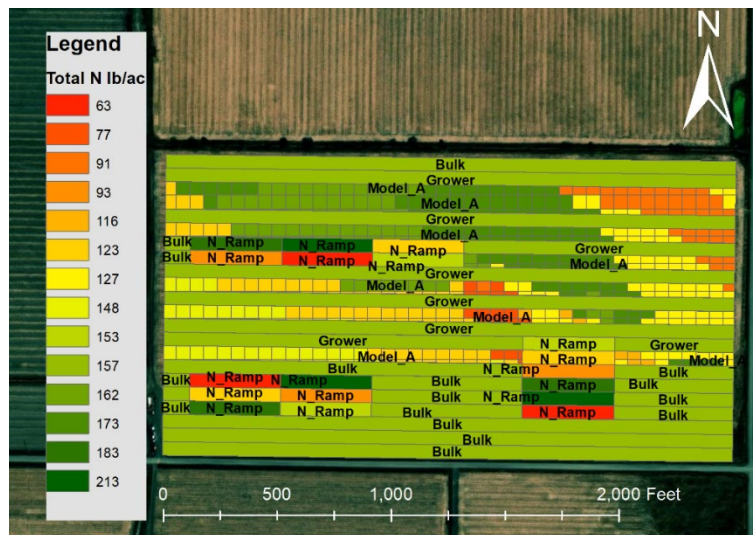
## Soil Samples, 0-6" (Nitrate: 4/9/2023 | Other: 4/2/2021)

pH	BpH	OM LOI %	Olsen P - ppm	Nitrate – N ppm N	Sulfate-S ppm S	-----Melich III-----				CEC me/100g	Sand (%)	Silt (%)	Clay (%)
						K	Ca	Mg	Na				
7.7	6.9	3.5	53	18.8	19	664	2215	459	102	17.0	28	51	20
8.5	6.9	2.0	17	20.3	57	351	1411	391	269	12.4	34	49	16
7.3	6.9	3.4	27	-	16	405	1805	304	61	12.9	30	55	14

**Introduction:** Nitrogen fertilizer is a significant input in corn systems. Additionally, N losses through leaching, volatilization, and denitrification pose environmental concerns and reduce profit. Several digital agriculture tools are available to provide site-specific, variable-rate, in-season N recommendations. This study used Adapt-N from Yara International, a crop model-based N tool for in-season N application and compared it to the grower's typical N management. The whole field received:

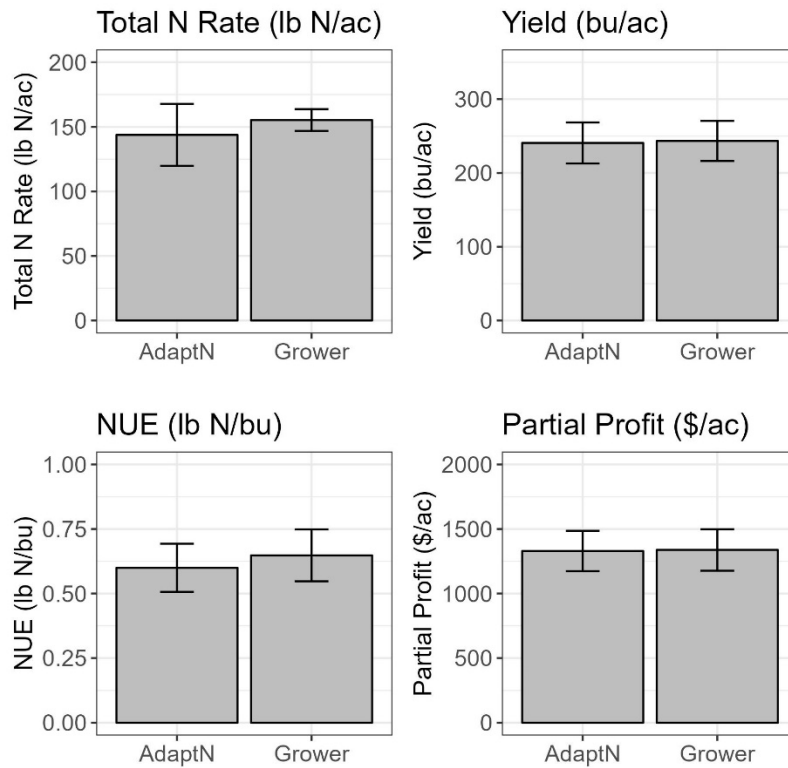
- 1) 15 gal/ac 32-0-0 and 5 gal/ac 12-0-0-26S applied with strip-till on April 25, 2023
- 2) 3 gal/ac LiftOff® (8-27-4-1.2S-0.19Zn) applied at planting on April 29, 2023.

On June 27, the variable rate prescription of UAN 32% and 12-0-0-26S was applied. This application brought the total N rates to the rates seen in figure 1. The grower's average rate was 92 lb N/ac and the Adapt-N average rate was 82 lb N/ac. Nitrogen rate blocks were established at rates ranging from 63-213 lb/ac for use in determining the economically optimum N rate (EONR).

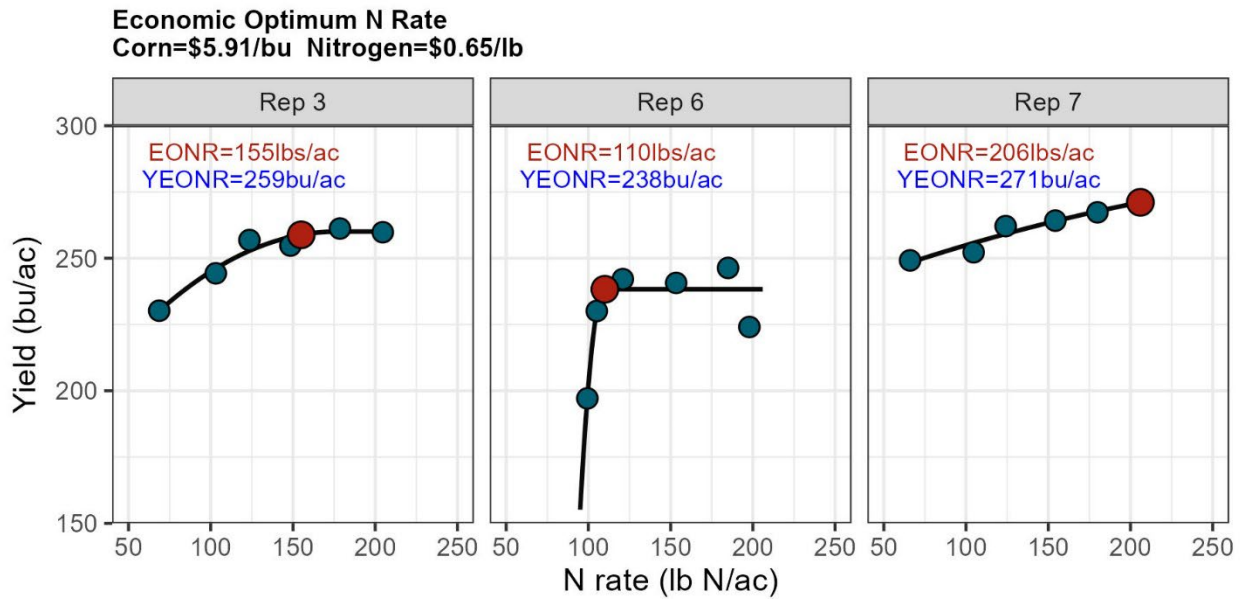


**Figure 1.** Sidedress prescription with target total N rates for Model and Grower strips.

**Results:**



**Figure 2.** Total N rate, yield, nitrogen use efficiency (NUE), and partial profit for Adapt-N model and the grower's traditional management.



**Figure 3.** Economical optimum nitrogen rate (EONR) and yield at EONR (YEONR) for three reps. Values were calculated using \$5.91/bu corn and \$0.65/lb N.

	Total N rate (lb/ac)	Yield (bu/ac)†	Nitrogen Use Efficiency (lb N/bu grain)	Marginal Net Return‡ (\$/ac)
Grower N Management	155 A	243 A	0.639 A	1,336 A
Adapt-N Management	145 B*	240 B	0.606 B	1,322 A
P-Value	0.017	0.073	0.044	0.186

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

†Yield values are from cleaned yield monitor data. Bushels per acre corrected to 15.5% moisture.

‡Marginal net return based on \$5.91/bu corn and \$0.65/lb N.

### Summary:

- The EONR for the field ranged from 110 lb N/ac to 206 lb N/ac indicating strategies which vary N rate spatially may have value in this field.
- The total N rate for the grower's traditional management was 10 lb/ac higher than the Adapt-N management.
- The lower N rate for the Adapt-N management resulted in a 4 bu/ac yield decrease.
- There was no difference in marginal net return between the grower's traditional management and the Adapt-N management.

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