

## Evaluating N Rates for Corn with and without Pivot Bio PROVEN® 40

**Study ID:** 0709047202401

**County:** Dawson

**Soil Type:** Hord silt loam

**Planting Date:** 5/16/24

**Harvest Date:** 10/29/24

**Population:** 33,000

**Row Spacing (in):** 30

**Hybrid:** Pioneer® P1164AM

**Reps:** 9

**Previous Crop:** Soybean

**Tillage:** Strip-till

**Herbicides:** *Pre:* 8 oz/ac dicamba + 1.5 qt/ac Bridger™ ATZ + 24 oz/ac glyphosate + 3 oz/ac mesotrione.

**Seed Treatment:** None

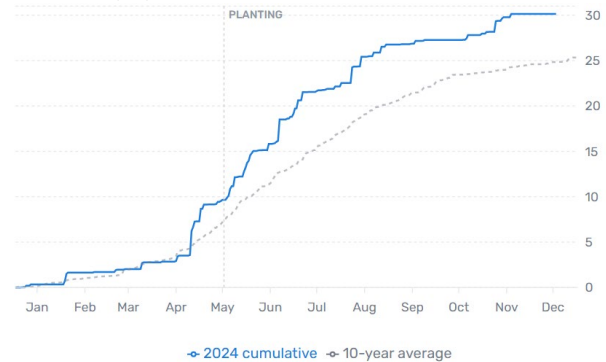
**Foliar Insecticides:** None

**Foliar Fungicides:** 10.5 oz/ac Azoxystrobin Xtra on 7/26/24

**Fertilizer:** 15 gal/ac 10-34-0, 2.5 gal/ac of 12-0-0-26S, 0.25 gal/ac zinc chelate applied during strip-till on 4/12/24; 3 gal/ac LiftOff (8-24-4-1.2S-0.19Zn) applied during planting on 5/16/24; 21 gal/ac of 32-0-0, 2.5 gal/ac 12-0-0-26S sidedressed on 6/26/24.

**Irrigation:** Gravity, Total:

**Rainfall (in):**



**Introduction:** Nitrogen fertilizer is a significant input in corn systems. Additionally, N loss through leaching, volatilization, and denitrification pose environmental concerns and reduce profit. Pivot Bio PROVEN® 40 is an N-fixing bacterial inoculant that is expected to fix 40 lb N/ac over the growing season. Biological N fixation for cereal crop has the potential to increase N efficiency and decrease N loss. The objective of this study was to evaluate Pivot Bio PROVEN® 40 on corn yield and net return, and the potential for N rate reduction. Pivot Bio PROVEN® 40 was applied on the seed at planting with 8-24-4 (2 lb N/ac) starter fertilizer and was compared to an untreated check under three sidedress nitrogen rates (40, 80 and 120 lb N/ac). All treatments received 15 gal/ac of 10-34-0 and 2.5 gal/ac of 12-0-0-26S, in a strip-till application on April 12, 2024. The total amount of N before sidedress application was 97 lb N/ac. The sidedress application occurred on June 26, 2024.

### Results:

Treatment:	Yield (bu/ac)†	Marginal Net Return‡ (\$/ac)
97 lb N/ac	150 D	653 D
97 lb N/ac + Pivot Bio PROVEN® 40	150 D	627 D
137 lb N/ac	180 C	765 C
137 lb N/ac + Pivot Bio PROVEN® 40	181 C	746 C
177 lb N/ac	210 B	876 AB
177 lb N/ac + Pivot Bio PROVEN® 40	210 B	851 B
217 lb N/ac	227 A	930 A
217 lb N/ac + Pivot Bio PROVEN® 40	231 A	922 A
P-Value:	<0.001	<0.001

\*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 \$4.35/bu corn, \$0.60/lb N, and \$24/ac for Pivot Bio PROVEN® 40

### Summary:

- There were significant differences for yield and marginal net return.
- There were no significant differences in yields between individual sidedress rates when comparing treatments with or without Pivot Bio PROVEN® 40.
- Both treatments of 120lb of N sidedressed with and without Pivot Bio PROVEN® 40 yielded the highest (227 and 231 bu/ac respectively) and had the highest net return (\$929.72, \$921.87).
- Marginal net return was the lowest in treatments that did not receive any additional sidedress N.