# Evaluating N Rates and Pivot Bio PROVEN® 40 in Corn

**Study ID:** 0085141202402
**County:** Platte
**Soil Type:** Janude fine sandy loam
**Planting Date:** 5/18/24
**Population:** Variable 27,000-34,000
**Row Spacing (in):** 30
**Hybrid:** DEKALB® DKC62-69
**Reps:** 3
**Previous Crop:** Corn
**Tillage:** No-till
**Herbicides:** ***Pre:*** 64 oz/ac of Degree Xtra®+ 3 oz/ac Balance® Flexx + 6 oz/ac Sterling® Blue + 28 oz/ac Roundup PowerMAX®
**Seed Treatment:** Acceleron®

**Fertilizer:** Preplan: 55 lb N/ac (3-18-24) At planting: 5 gal (6-24-6-1ZN) + pint of micronutrients
**Irrigation:** Pivot
**Rainfall (in):**


**Introduction:** This study evaluated the use of the Pivot Bio PROVEN® 40 as a replacement for commercial N fertilizer with and without cover crops terminated prior to planting. Prior to in-season N application, all treatments received 55 lb N/ac as urea (March 18) and 60 lb N/ac at planting (May 18). The treatments were established with the sidedress application on June 7. Soil samples were collected at 0-1' and 1-2' and soil N and organic matter content were assessed. Total N credit was used to calculate the total N applied using the UNL N recommendation calculator. The numbers are given in the tables below.

| Soil OM \| OM N Credit | Irrigation Water N Credit | Soil N Credit | Legume N Credit | Total N Credit | Yield Goal | UNL N Requirement Before Credits |
|---|---|---|---|---|---|---|
| % \| lb N/ac | Lb N/ac | Lb N/ac | Lb N/ac | Lb N/ac | (bu/ac) | Lb N/ac |
| 2.1 \| 73.4 | 5 | 26.5 | 0 | 104 | 250 | 335 |

| UNL Suggested N application | Applied N Pre Plant | Applied N at Planting | Required N at Sidedressing | Treatment1 | Treatment 2 | Treatment 3 |
|---|---|---|---|---|---|---|
| Lb N/ac | Lb N/ac | /ac | Lb N/ac | Lb N/ac | Lb N/ac | Lb N/ac |
| 231 | 55 | 60 | 116 | 120 | 80 | 80 + Pivot Bio |

**Results:**

| | Treatment | Moisture (%) | Yield (bu/ac)† | Marginal Net Return‡ ($/ac) |
|---|---|---|---|---|
| No Cover Crops | 195 lb N/ac | 16.2 ABC* | 203 A | 882 A |
| | 195 lb N/ac + Pivot Bio PROVEN® 40 | 15.9 BC | 202 A | 858 A |
| | 235 lb N/ac | 15.9 C | 208 A | 885 A |
| Cover Crops | 195 lb N/ac | 16.8 A | 203 A | 856 A |
| | 195 lb N/ac + Pivot Bio PROVEN® 40 | 16.7 AB | 198 A | 838 A |
| | 235 lb N/ac | 16.6 ABC | 210 A | 894 A |
| P-Value: | | 0.019 | 0.098 | 0.145 |

*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 $4.35/bu corn, and $22/ac for Pivot Bio, and $20.4/ac for 120 lb N/ac.

**Summary:**

- There was no significant difference in yield or marginal net return between the treatments. From this, the suggestion is to use the lowest rate of the tested N rates.
- The addition of cover crops (P:0.4) did not influence yield between N rates.
- The addition of Pivot Bio PROVEN® 40 did not influence yield when applying 195 lb N/ac (P:0.7).
- There were significant differences in moisture between treatments.
- Further testing should be done in future years to find the optimal N rate.