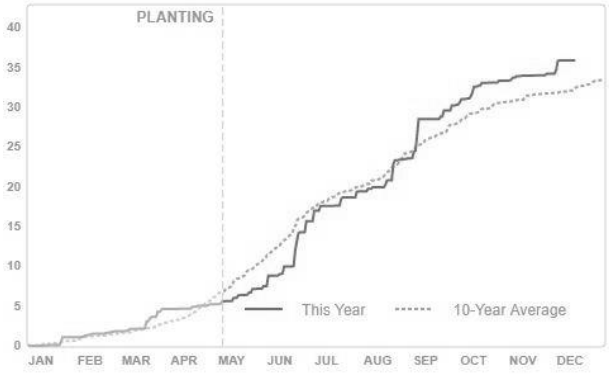
Project SENSE (Sensor-based In-season N Management)

Study ID: 0818055201801
County: Douglas
Soil Type: Gibbon-Wann complex
Planting Date: 5/4/18
Harvest Date: 10/30/18
Population: varied
Row Spacing (in): 30
Hybrid: Dekalb® D54VC52RIB
Reps: 6
Previous Crop: Soybean
Tillage: No-Till

Irrigation: Pivot, Total: 0”
Rainfall (in):



Introduction: A high clearance applicator was equipped with Ag Leader® OptRx sensors. UAN fertilizer was applied with drop nozzles as the crop canopy was sensed. This study compares crop canopy sensor-based in-season N application with the grower's standard N management.

Grower Nitrogen Treatment: The initial grower N rate was 100 lb N/ac applied at planting. An additional 64 lb N/acre was applied at V6 growth stage. Total N applied was 164 lb N/ac.

Project SENSE Nitrogen Treatment: For the SENSE treatment strips, 100 lb N/ac was applied at planting. Crop canopy sensing and application occurred on June 30, 2018 at V12-14 growth stage. Across all project SENSE treatments, the average N rate applied in-season, based on the sensor, was 53 lb N/ac. The average total N rate was 153 lb N/acre.

Results:

	Total N rate (lb/ac)	Yield† (bu/ac)	Partial Factor Productivity of N (lb grain/lb N)	lb N/ bu grain	Marginal Net Return‡ ($/ac)
Grower N Management	164	216 A*	74 B	0.76 A	640.20 A
Project SENSE N Management	153	217 A	80 A	0.71 B	648.13 A
P-Value	N/A	0.649	0.070	0.073	0.436

*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 $3.23/bu corn and $0.35/lb N.

Summary:

- The Project SENSE N application was 11 lb N/ac lower than the grower’s N application.
- The growers N management and the Project SENSE N management resulted in the same yield.
- Project SENSE had a higher partial factor productivity of N and used fewer pounds of N to produce a bushel of grain.
- There was no difference in profitability between the grower’s N management and Project SENSE N management.

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