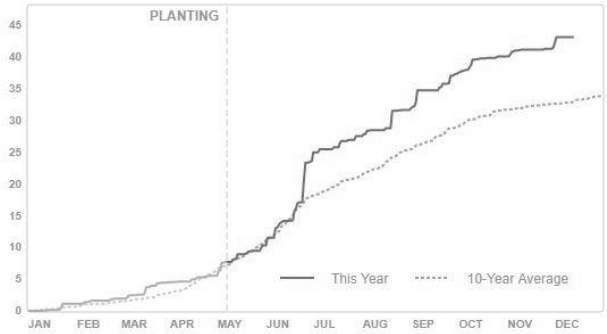
Project SENSE (Sensor-based In-season N Management)

Study ID: 0103053201801
County: Dodge
Soil Type: Moody silty clay loam; Nora silty clay loam
Planting Date: 5/7/18
Harvest Date: 10/21/18
Population: 31,000
Row Spacing (in): 30
Hybrid: Fontanelle® 11D637
Reps: 6
Previous Crop: Soybean
Tillage: No-Till

Irrigation: None
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 14 lb N/ac as 11-52-0 and 35 lb N/ac applied at planting. An additional 70 lb N/ac was applied at V6 growth stage. Total N applied was 119 lb N/ac.

Project SENSE Nitrogen Treatment: For the SENSE treatment strips, 14 lb N/ac was applied as 11-52-0 and 35 lb N/ac was applied at planting. An additional 35 lb N/acre was applied at V6 growth stage. Crop canopy sensing and application occurred on July 3, 2018 at V12 growth stage. Across all project SENSE treatments, the average N rate applied based on the in-season sensing was 47 lb N/ac. The average total N rate was 131 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	119	214 A*	101 A	0.56 B	648.78 A
Project SENSE N Management	131	211 A	90 B	0.62 A	635.21 A
P-Value	N/A	0.231	0.0001	0.0001	0.104

*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 management was 12 lb N/ac higher than the grower's N management.
- There was no yield difference between the Project SENSE N management and the grower's N management.
- Project SENSE had lower partial factor productivity of N and took more 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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