

## Nebraska On-Farm Research Network

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

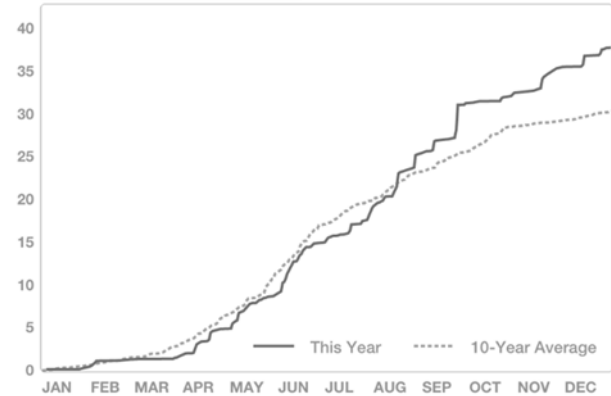
**Study ID:** 021125201501  
**County:** Nance  
**Soil Type:** Thurman loamy fine sand; Thurman-Ortello fine sandy loam; Loretto-Thurman complex;  
**Planting Date:** 5/7/15  
**Harvest Date:** 11/5/15  
**Population:** 29,500  
**Row Spacing (in.)** 30  
**Hybrid:** Dekalb 62-97  
**Reps:** 6  
**Previous Crop:** Soybean  
**Tillage:** No-till  
**Herbicides: Pre:** Bicep and Roundup **Post:** Unknown  
**Seed Treatment:** Poncho VOTIVO  
**Foliar Insecticides:** Unknown  
**Foliar Fungicides:** Headline AMP

Note: 0-36" Soil nitrate sample after 2014 crop was 6 ppm

Irrigation Water Nitrate: 13.5 ppm

**Irrigation:** Pivot, Total: 6.4

**Rainfall (in.):**



**Introduction:** This study compares crop canopy sensor based in-season N application to the grower's standard N management.

**Grower Nitrogen Treatment:** The grower initial N rate was 9 lbs N/acre applied at planting. Following planting 70 lbs N/acre was applied. A side-dress rate of 90 lbs N/acre was applied. Total grower N application was 169 lbs N/acre.

**Project SENSE Nitrogen Treatment:** For the SENSE treatment strips, 79 lbs N/acre was applied at or near planting. Crop canopy sensing and application occurred on 7/1/15 at the V10 growth stage. Across all project SENSE treatments, the average N rate applied in-season was 83 lbs N/acre with a minimum rate of 30 lbs N/acre, and maximum rate of 262 lbs N/acre.

**Results:** Data were analyzed using the GLIMMIX procedure in SAS 9.4 (SAS Institute Inc., Cary, NC). Mean separation was performed with Fisher's LSD.

	Total N rate (lb/ac)	Yield (bu/ac)†	Partial Factor Productivity of N (lb grain/lb N)	lbs N/ bu grain	Marginal Net Return‡
Grower N Management	169	238 A*	79 B	0.70 A	\$758.85
Project SENSE N Management	162	240 A	83 A	0.68 B	\$770.70
P-Value	N/A	0.2903	0.0204	0.0174	N/A

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

\*Values with the same letter are not significantly different at a 95% confidence level.

‡Marginal net return based on \$3.65/bu corn and \$0.65/lb N fertilizer. Cost of applicator and equipment is not included in this calculation.

**Summary:** At this site, the Project SENSE N application was 7 lb/acre lower than the grower's N application. There was no yield difference between the two treatments. Partial Factor Productivity of N was higher for the SENSE N treatment. Marginal net return looking at grain and N prices was favorable for the SENSE treatment this year due to saved N with no yield penalty.