



# Nebraska On-Farm Research Network

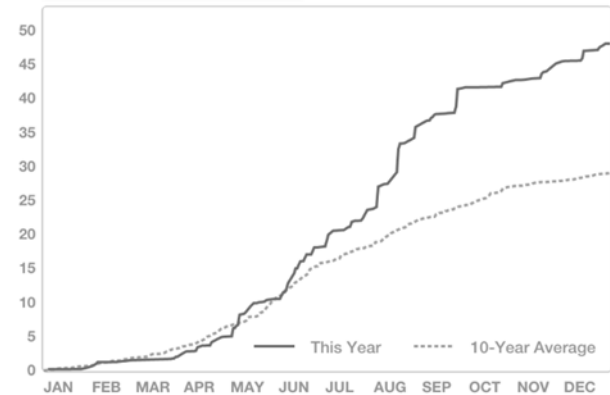
## Project SENSE (Sensor-based In-season N Management)

**Study ID:** 211023201501  
**County:** Butler  
**Soil Type:** Muir silt loam; Zook silt loam; Gibbon silty clay loam; Ovina-Thurman complex;  
**Planting Date:** 4/28/15  
**Harvest Date:** 11/5/15  
**Population:** 32,000  
**Row Spacing (in.)** 30  
**Hybrid:** Mycogen 2V709  
**Reps:** 6  
**Previous Crop:** Soybean  
**Tillage:** Ridge Till  
**Herbicides:** *Pre:* Surestart *Post:* Durango  
**Seed Treatment:** CruiserMax 250  
**Foliar Insecticides:** None  
**Foliar Fungicides:** None

Note: Irrigation water nitrate: 30 ppm

**Irrigation:** Pivot, Total: 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 91 lbs N/acre applied at planting. A side-dress rate of 106 lbs N/acre was applied on 6/9/15. Total grower N application was 197 lbs N/acre.

**Project SENSE Nitrogen Treatment:** For the SENSE treatment strips, 91 lbs N/acre were applied at planting. Crop canopy sensing and application occurred on 7/1/15 at the V12 growth stage. Across all project SENSE treatments, the average N rate applied in-season was 62 lbs N/acre with a minimum rate of 30 lbs N/acre, and maximum rate of 127 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	198	212 A*	60 B	0.93 A	\$645.10
Project SENSE N Management	153	207 B	76 A	0.73 B	\$656.10
P-Value	N/A	0.0388	0.0002	<.0001	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 45 lb/acre lower than the grower's N application. Yield was significantly lower for the Project SENSE treatment (4 bu/ac). Partial Factor Productivity of N was higher for the Project SENSE N treatment. Marginal net return looking at grain and N prices was favorable for the SENSE treatment this year because N savings outweighed the loss in yield.



In Partnership with:



Extension is a Division of the Institute of Agriculture and Natural Resources at the University of Nebraska–Lincoln cooperating with the Counties and the United States Department of Agriculture. University of Nebraska–Lincoln Extension educational programs abide with the nondiscrimination policies of the University of Nebraska–Lincoln and the United States Department of Agriculture.