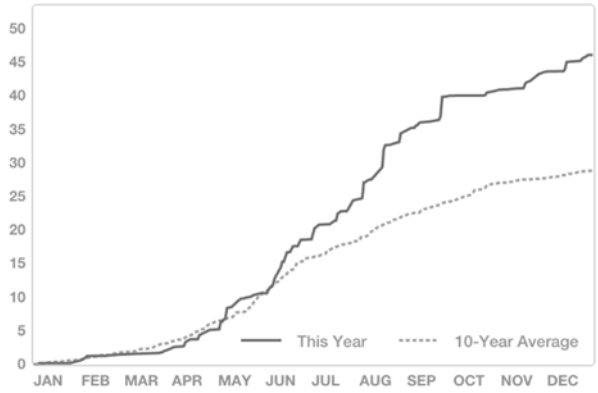
Nebraska On-Farm Research Network

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

Study ID: 212023201501
County: Butler
Soil Type: Thurman loamy fine sand; Gibbon silty clay loam;
Planting Date: 4/16/15
Harvest Date: 11/4/15
Population: 34,000
Row Spacing (in.) 30
Hybrid: Mycogen 2C799
Reps: 6
Previous Crop: Corn
Tillage: Ridge-Till
Herbicides: ***Pre:*** Surestart ***Post:*** Durango
Seed Treatment: CruiserMax 250
Foliar Insecticides: None
Foliar Fungicides: None

Note: Irrigation water nitrate: 28.8 ppm
Irrigation: Pivot, Total: 1"
Rainfall (in.):



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

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 V10 growth stage. Across all project SENSE treatments, the average N rate applied in-season was 74 lbs N/acre with a minimum rate of 31 lbs N/acre, and maximum rate of 214 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	197	178 A*	51 A	1.11 A	$521.65
Project SENSE N Management	165	158 B	54 A	1.05 A	$469.45
P-Value	N/A	0.0010	0.0747	0.0960	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 32 lb/acre lower than the grower's N application. This resulted in a statistically significant yield loss (20 bu/ac). Partial Factor Productivity of N was not different between the two treatments. Marginal net return for the SENSE treatment this year resulted in a loss of $52.20/acre compared to the grower treatment.

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