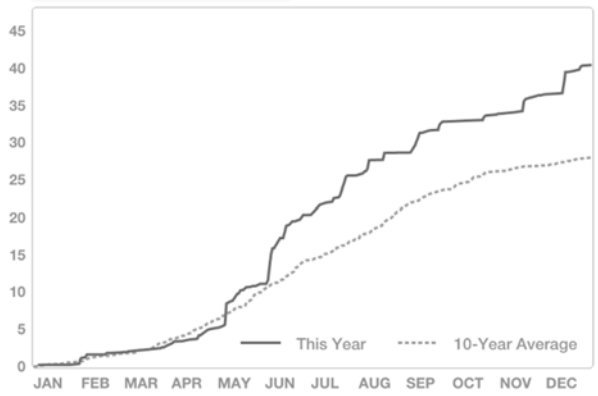
Nebraska On-Farm Research Network

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

Study ID: 213035201501
County: Clay
Soil Type: Hord silt loam; Hastings silty clay loam; Crete silt loam;
Planting Date: 5/1/15
Harvest Date: 10/13/15
Population: 33,000
Row Spacing (in.) 30
Hybrid: unknown
Reps: 5, One rep was removed due to compaction from pivot work in this area.
Previous Crop: Corn
Tillage: Reduced Tillage
Herbicides: ***Pre:*** unknown ***Post:*** unknown
Seed Treatment: unknown
Foliar Insecticides: unknown
Foliar Fungicides: unknown
Note: Irrigation water nitrate: 8.9 ppm
Irrigation: Pivot, Total: unknown
Rainfall (in.):



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

Grower Nitrogen Treatment: 268 lbs N/acre was applied at or prior to planting.

Project SENSE Nitrogen Treatment: For the SENSE treatment strips, 108 lbs N/acre were applied at planting. Crop canopy sensing and application occurred on 6/23/15 at the V10 growth stage. Across all project SENSE treatments, the average N rate applied in-season was 76 lbs N/acre with a minimum rate of 31 lbs N/acre, and maximum rate of 299 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 ($/ac)‡
Grower N Management	268	249 A*	52 B	1.08 A	734.65
Project SENSE N Management	179	227 B	73 A	0.77 B	741.40
P-Value	N/A	0.0165	0.0008	0.0002	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 84 lb/acre lower than the grower's N application. Yield was significantly lower for the Project SENSE treatment (20 bu/ac). Partial Factor Productivity of N was higher for the Project SENSE N treatment. Marginal net return for the SENSE treatment this year resulted in a loss of $18.40/ac compared to the grower treatment.

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