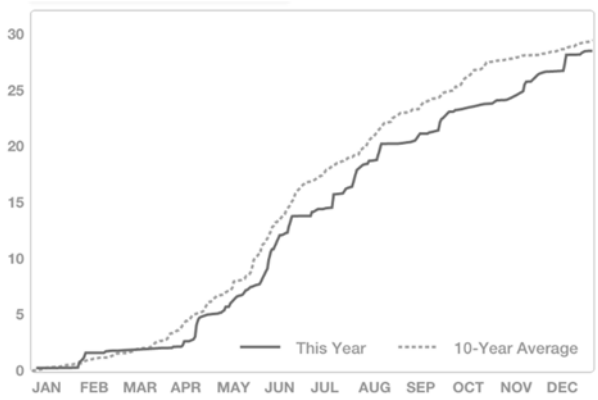
Nebraska On-Farm Research Network

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

Study ID: 205079201501
County: Hall
Soil Type: Hord silt loam;
Planting Date: unknown
Harvest Date: 10/20/15
Population: unknown
Row Spacing (in.) 30
Hybrid: unknown
Reps: 6
Previous Crop: unknown
Tillage: unknown
Herbicides: ***Pre:*** unknown ***Post:*** unknown
Seed Treatment: unknown
Foliar Insecticides: unknown
Foliar Fungicides: unknown

Note: Irrigation water nitrate: 10 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 mangement.

Grower Nitrogen Treatment: The grower initial N rate was 3.5 lbs N/acre applied at planting. A side-dress rate of 155 lbs N/acre was applied. Total grower N application was 158.5 lbs N/acre.

Project SENSE Nitrogen Treatment: For the SENSE treatment strips, 3.5 lbs N/acre were applied at planting with an additional 71.5 lbs N/acre added on 6/2/15. Crop canopy sensing and application occurred on 6/25/15 at the V11 growth stage. Across all project SENSE treatments, the average N rate applied in-season was 53 lbs N/acre with a minimum rate of 30 lbs N/acre, and maximum rate of 282 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	159	238 A*	84 B	0.67 A	$765.35
Project SENSE N Management	128	237 A	106 A	0.54 B	$781.85
P-Value	N/A	0.3960	0.0180	0.0051	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 31 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.

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