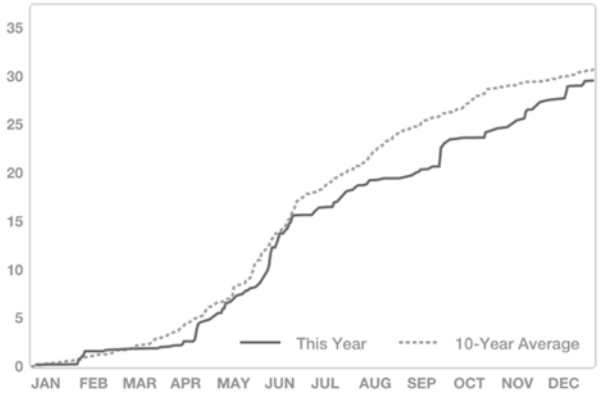
Nebraska On-Farm Research Network

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

Study ID: 209079201501
County: Hall
Soil Type: Jansen fine sandy loam;
Planting Date: 5/06/15
Harvest Date: 10/30/15
Population: 33,000
Row Spacing (in.) 30
Hybrid: 713 Nutec Triplestack
Reps: 6
Previous Crop: Corn
Tillage: Ridge-Till and Cultivate
Herbicides: ***Pre:*** ***Post:*** Post emerge: 0.75 oz/ac Armezon and 1 qt/ac Atrazine
At V4: 22 oz/ac Roundup
Seed Treatment: Herculex Xtra
Foliar Insecticides: 11 oz/ac Headline Amp applied with pivot at tassel
Foliar Fungicides: unknown

Note: Very wet June, water ponded in field, leaching, yellow corn.
Irrigation water nitrate: 2.8 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: The grower initial N rate was 85 lbs N/acre applied near planting. A side-dress rate of 140 lbs N/acre was applied. Total grower N application was 225 lbs N/acre.

Project SENSE Nitrogen Treatment: For the SENSE treatment strips, 85 lbs N/acre were applied near planting. Crop canopy sensing and application occurred on 6/30/15 at the V9 growth stage. Across all project SENSE treatments, the average N rate applied in-season was 119 lbs N/acre with a minimum rate of 31 lbs N/acre, and maximum rate of 209 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	225	239 A*	60 A	0.94 A	$726.10
Project SENSE N Management	204	234 A	64 A	0.87 A	$721.50
P-Value	N/A	0.3276	0.0648	0.0595	N/A

†Wet bushels per acre. Moisture data not available to correct to standard 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 21 lb/acre lower than the grower's N application. There was no statistical difference in yield between the two treatments. There was no difference in nitrogen use efficiency.

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