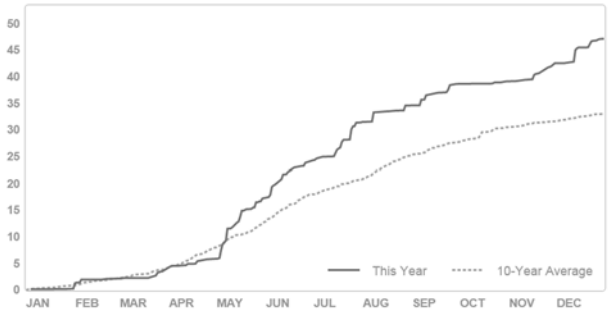
Nebraska On-Farm Research Network

Nitrogen Sidedress to Simulate Aerial N Application

Study ID: 215127201501
County: Nemaha
Soil Type: Wymore silty clay loam;
Planting Date: 04/25/15
Harvest Date: Unknown
Population: 24,400
Row Spacing (in.) 30
Hybrid: Fontanelle 156893
Reps: 4
Previous Crop: Unknown
Tillage: No-Till
Herbicides: ***Pre:*** Sure Start and 1 lb/ac Atrazine ***Post:*** Glyphosate
Seed Treatment: Unknown
Foliar Insecticides: None
Foliar Fungicides: 10.5 oz Quilt XL with Franchise surfactant on 8/10/15

Fertilizer: 60 lbs/ac P - Fall applied;
130 lbs/ac N (liquid), 1 lb/ac Zinc and 10 lb/ac Sulfur - Spring, pre-plant;
Foliar nutrient applied on 6/10/15
Irrigation: None, Total:
Rainfall (in.):



Introduction: This study is evaluating mid-season nitrogen application to nitrogen deficient corn. Heavy spring rains in 2015 resulted in nitrogen deficiency symptoms in corn. Previous on-farm research conducted in Nebraska in 2013 and 2014 and in Missouri in previous years indicated mid-season nitrogen application may be economically feasible. In Northwest Missouri in 2013, local ag suppliers were flying on urea to nitrogen deficient corn fields. This experiment was conducted to test the feasibility of this management practice. Dry urea (46-0-0) was applied on Aug. 8 at R1 at rates of 0, 50, 75, and 100 lbs N/ac. According to radar interpolated estimates, the next measurable rainfall at this location was on Aug. 27 and totaled 0.92 inches. This method simulated nitrogen being top-dressed with a high clearance ground applicator or aerial application. The experiment was designed as a randomized complete block design with 4 replications These plots were 25' x 15' (6 30" rows) located on-farm. At harvest, the 2 middle rows (5' x 15') were hand-harvested. Corn was shelled, tested for moisture and yields were calculated on a 15.5% moisture basis.

Results: Data were analyzed using the GLM and REG procedures in SAS 9.4 (SAS Institute Inc., Cary, NC). Stand count was tested as a covariate with yield to check if plant number influenced yield. Stand counts were not significant indicating that plant numbers did not influence yield. Yield had a significant linear response to N rate (p=0.0215) (Figure 1). Additional N rates are needed to determine at what N rate yield plateaus. At $0.51/lb N fertilizer, an application cost of $9.50/ac and $3.65/bu corn price, each additional pound of N applied would result in an increase in yield of $3.72/ac.

N Rate (lb/ac)	Harvest Stand Count (plant/ac)
0	23946 A
50	26268 A
75	22640 A
100	25252 A
P-Value	0.1142

*Values with the same letter are not significantly different at a 90% confidence level.

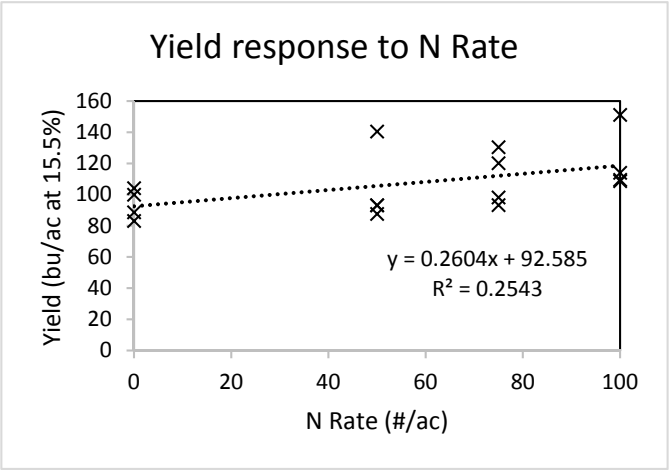


Figure 1: Linear relationship between corn yield and mid-season nitrogen rate.

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