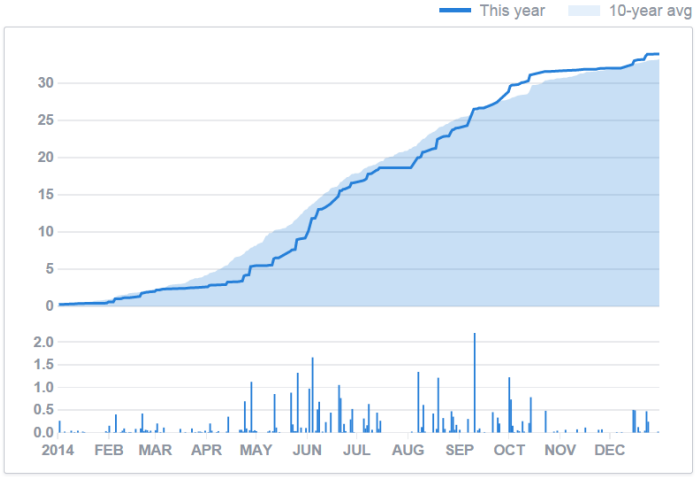
Nebraska On-Farm Research Network

In-Season Additional N on Deficient Corn – Small Plot

Study ID: 022127201401
County: Nemaha
Soil Type: Nodaway silt loam
Planting Date: 5/7/2014
Harvest Date: 10/6/2014 hand harvested, shelled and weighed
Population: 26,000 seeds/acre
Row Spacing: 30”
Hybrid: unknown
Reps: 4 – small plot
Previous Crop: Soybeans
Tillage: No-till
Soil Test Values: Not available
Herbicides:
Pre: 32 oz/acre Glyphosate + in April
16 oz/acre 2,4 -D in April
Post: 48 oz/acre Glyphosate in June
Insecticides/Fungicides: none

Fertilizer: 100 lb/acre Urea 46-0-0 in spring, pre-plant
50 lb/acre Urea 46-0-0 sidedress June
Irrigation: Not irrigated.
Rainfall: Apr: 3.04” May: 2.66” June: 8.43” July: 1.4” Aug: 2.85” Sept: 3.55” Oct: 3.86” Total: 25.79”



Introduction: This study is evaluating mid-season nitrogen application to nitrogen deficient corn. This past spring with some heavy rains, corn showed significant nitrogen deficiencies in the growing season during a critical period of development (R1-R6). This was due to saturated soils which lead to denitrification. Previous on-farm research conducted in Nebraska in 2013 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. In early July, the nitrogen deficient corn field was identified. On July 15th, nitrogen was applied at the rates of 0, 50, 75 and 100 lbs. N/ac. Nitrogen was applied in a dry form as urea (46-0-0). This method simulated nitrogen being top-dressed with a high clearance ground applicator or through aerial application. The experiment was designed as a complete randomized block design with 4 replications. Each plot was 20’ x 10’ (4-30” rows). At harvest time, 10’ of the 2 middle rows were hand-harvested. Corn was shelled, tested for moisture and yields were calculated on a 15.5% moisture basis.

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Results:

	Yield† (bu/acre)	Net Return ‡
0 lb N/acre	72 A*	$252.00
50 lb N/acre	72 A	$216.96
75 lb N/acre	83 A	$241.05
100 lb N/acre	97 A	$275.65
P-Value	*0.2981*	--

†Bushels per acre corrected to 15.5% moisture.

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

‡Net return based on $3.50/bu corn, $530/ton Urea 46-0-0 in July 2014, and $6.24 custom dry fertilizer application.

Summary: With variable yield results between replications, there were no significant differences between treatments, however there is a trend of increasing yield as N rate increases. Lack of response at the 50 lbs. N/ac may be due to lack of significant rainfall after surface application of urea resulting in nitrogen volatilization and loss to the atmosphere.

Note: In this analysis, N rate is treated as qualitative data; a quantitative data analysis may result in statistically significant yield response.

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