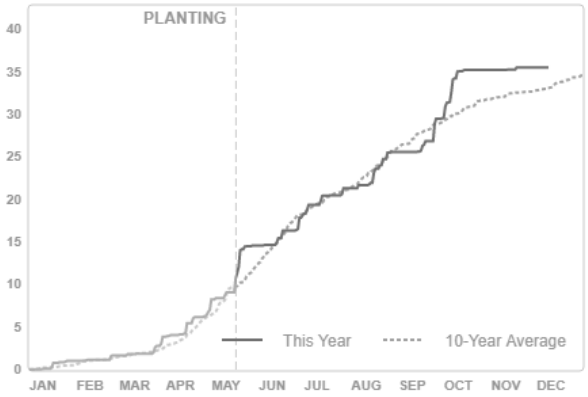
Nitrogen Rate and Timing on Corn

Study ID: 401155201701
County: Saunders
Soil Type: Aksarben silty clay loam 0-2% slope; Judson silt loam 2-6% slopes
Planting Date: 5/8/17
Harvest Date: 11/3/17
Population: 26,500
Row Spacing (in): 30
Hybrid: NK 59B-GTA
Reps: 4
Previous Crop: Soybean
Tillage: No-Till
Herbicides: ***Pre:*** 2.5 qt/ac Acuron™ and 1 qt/ac Roundup PowerMAX® on 5/10/17 ***Post:*** 1 qt/ac Roundup PowerMAX®, and 1 pt/ac Dual II Magnum® on 6/10/17
Seed Treatment: Avicta®, CruiserMaxx®
Foliar Insecticides: None
Foliar Fungicides: None

Fertilizer: 150 lb/ac of Phos Plus 36D (11-30-0-9S-2Zn) in Dec. 2016; 2 Ton/Ac Ag Lime (90% CCE) in Jan. 2017; 4 gal/ac 12-0-0-26S, 1.5 gal/ac 9% Zn, 1.5 gal/ac 10% Boron, 0.5 gal/ac 6% Mn on 5/9/17, in addition to N applied as treatments in this study
Note: Severe wind events in late October
Irrigation: None
Rainfall (in):



Soil Sample (Oct. 2016):

OM	P1	P2	K	Mg	Ca	Na	pH	Buffer pH	C.E.C.	K	Mg	Ca	H	Na	S	Zn	Mn	Fe	Cu	B
%	----------ppm----------									--% base saturation---					----------ppm----------					
3.1	11	17	213	356	2248	20	5.8	6.6	18.3	3	16.2	61.4	18.9	0.5	15	1	10	53	0.9	0.4

Introduction: The purpose of this study was to evaluate different N management strategies on corn. Applying a portion of the N fertilizer during the growing season allows fertilizer availability to better match the time the corn is uptaking N. The N in this study was applied as 32 percent UAN. There were four treatments: 1) 140 lb/ac N as pre-plant, 2) 100 lb/ac N pre-plant plus 40 lb/ac N sidedress, 3) 100 lb/ac N pre-plant plus 40 lb/ac N sidedress and Hydras-Hume humic acid at a rate of 3 gal/ac per 100 gal of 32 percent UAN, and 4) 100 lb/ac N pre-plant plus 75 lb/ac N sidedress. The pre-plant application was on 5/9/17. The sidedress applications were made on 6/20/17 with a homemade Y-Drop type applicator. There was a 1.25" rain on June 28. Stalk nitrate samples were taken from one replication in late September (because samples were not taken in each replication, statistics cannot be conducted).

Results:

	Test Weight	Moisture (%)	Stalk Nitrate (ppm)	Yield (bu/ac) †	Marginal Net Return‡ ($/ac)
140 lb/ac Pre-plant N	57 A*	13.5 A	665	185 A	517.73 A
100 lb/ac Pre-plant N + 40 lb/ac Sidedress N	57 A	13.6 A	427	183 A	503.29 A
100 lb/ac Pre-plant N + 40 lb/ac Sidedress N + Humic Acid	57 A	13.6 A	164	183 A	498.42 A
100 lb/ac Pre-plant N + 75 lb/ac Sidedress N	57 A	13.6 A	2,410	185 A	495.96 A
P-Value	0.874	0.983	-	0.820	0.205

*Values with the same letter are not significantly different at a 90% confidence level.
†Bushels per acre corrected to 15.5% moisture.
‡Marginal net return based on $3.15/bu corn, $1.46/gal 32% liquid fertilizer ($0.36/lb N), and $7/ac per application.

Summary:

- There was no difference in test weight, moisture, yield, or net return between the treatments studied.
- Statistics could not be conducted on the stalk nitrate samples; however, there are numeric differences between the samples.

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