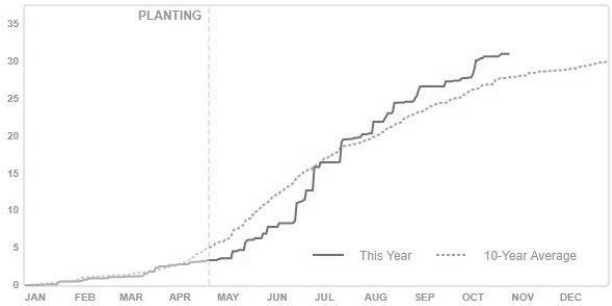
Impact of Potassium Application on Irrigated Corn

Study ID: 0718185201803
County: York
Soil Type: Hastings silt loam 0-1% slope; Hastings silty clay loam 7-11% slopes, eroded
Planting Date: 4/26/18
Harvest Date: 10/22/18
Population: 32,000
Row Spacing (in): 30
Hybrid: Pioneer® P1366AMXT
Reps: 6
Previous Crop: Corn
Tillage: Ridge-Till
Herbicides: ***Pre:*** 3 pt/ac Weedmaster® in December 2017; 1 qt/ac Staunch® II and 1 qt/ac Atrazine on 4/26/18 at planting ***Post:*** 32 oz/ac Durango®, 1 oz/ac Impact®, and 1 pt/ac Atrazine in June 2018
Seed Treatment: None

Foliar Insecticides: 8 oz/ac Brigade® on 4/26/18 with planting
Foliar Fungicides: 6 oz/ac Aframe™ and 3 oz/ac Onset® on 7/31/18
Fertilizer: 150 lb/ac 11-52-0, 100 lb/ac AMS, and 215 lb N/ac as anhydrous ammonia in Nov. 2017; 3 gal/ac 10-34-0 on 4/26/18 with planting
Note: Light hail and wind
Irrigation: Pivot, Total: 1.5"
Rainfall (in):



Soil Test (Nov. 2017):

Soil pH		Soluble Salts 1:1	Excess Lime	Organic Matter	Nitrate – N	Nitrate lb N/A	Mehlich P-III ppm	Ca-P Sulfate	Ammonium Acetate (ppm)					CEC	% Base Saturation				
1:1	BpH	mmho/cm	Rating	LOI %	ppm N	0-10"	P	ppm S	Zn (ppm)	K	Ca	Mg	Na	me/100g	H	K	Ca	Mg	Na
7.0	-	0.18	NONE	3.2	6.4	19	35	10.2	2.19	470	2247	276	47	14.9	0	8	75	15	1
5.8	6.3	0.22	NONE	3.1	5.8	18	19	12.7	0.84	375	2608	596	58	26.3	27	4	49	19	1

Introduction: The purpose of this study was to determine if the addition of potash would improve corn production. Potash was applied at a rate of 118 lb/ac using the modified insecticide blower in Figure 1. The soil test potassium (K) levels for this field were 375 and 470 ppm. The Nebraska Extension NebGuide *Fertilizer Suggestions for Corn* (EC117) indicates that potassium levels greater than 125 ppm K are considered high and do not warrant additional potassium application. Yield, grain moisture, stand counts, stalk rot percent, and marginal net return were evaluated.

Figure 1. Modified blower used to apply potash.

Results:

	Harvest Stand Count (plants/ac)	Stalk Rot (%)	Moisture (%)	Yield† (bu/ac)	Marginal Net Return‡ ($/ac)
Check	30,833 A*	2.92 A	17.4 A	242 A	561.14 A
118 lb/ac Potash	31,250 A	2.50 A	17.5 A	238 A	527.15 B
P-Value	0.486	0.867	0.110	0.203	0.003

*Values with the same letter are not significantly different at a 90% confidence level.
†Bushels per acre adjusted to 15.5% moisture.
‡Marginal net return based on $3.23/bu corn, $23/ac potash, and $2/ac application.

Summary:

- There was no difference in stalk rot, stand count, grain moisture, or yield where potash was applied.
- Due to the additional cost of potash product and application, marginal net return was $34/ac lower where potash was applied.

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