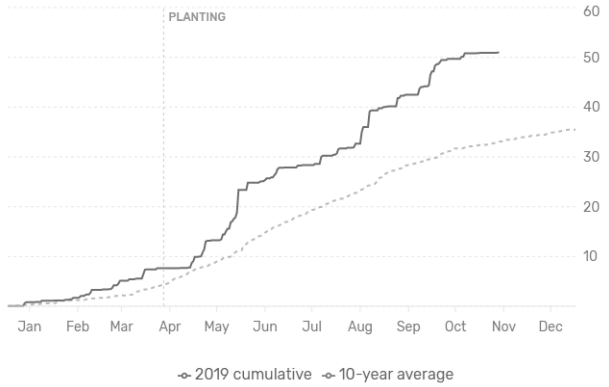
Starter Fertilizer on Non-irrigated Corn

Study ID: 0701147201901
County: Richardson
Soil Type: Marshall silty clay loam, 6-11% slopes, eroded; Pohocco silty clay loam, 6-11% slopes, eroded; Zook silty clay loam, occasionally flooded; Marshall silty clay loam, 2-6% slopes; Judson silt loam, 2-6% slopes
Planting Date: 6/11/19
Harvest Date: 11/15/19
Seeding Rate: 27,512
Row Spacing (in): 30
Variety: Pioneer® P1244
Reps: 7
Previous Crop: Soybean
Tillage: No-Till

Fertilizer: 170 lb N/ac as anhydrous ammonia applied prior to planting
Irrigation: None
Rainfall (in):



Soil Tests (July 2019 – 3 samples were collected in the study area at 0-8" depth):

Soil pH		Soluble Salts 1:1	Excess Lime	Organic Matter	Nitrate – N	Nitrate lb N/A	Mehlich P-III	Ammonium Acetate (ppm)				M-2 Sulfate	DTPA (ppm)				CEC	% Base Saturation				
1:1	BpH	mmho/cm	Rating	LOI %	ppm N	(0-8")	ppm P	K	Ca	Mg	Na	ppm S	Zn	Fe	Mn	Cu	me/100g	H	K	Ca	Mg	Na
5.9	6.9	0.36	None	2.2	34.8	84	16	120	2804	376	8	5.5	2.02	39.1	21.6	1.16	18.5	5	2	76	17	0
5.3	6.9	0.26	None	1.8	38.7	93	7	86	1137	158	6	7.3	1.14	28.0	22.9	0.47	8.0	10	3	71	16	0
5.4	6.7	0.20	None	2.9	19.2	46	7	77	1750	287	7	8.3	1.02	42.8	16.9	0.69	14.7	23	1	60	16	0

Introduction: The objective of this study was to evaluate starter fertilizer in non-irrigated corn production. Previous on-farm research starter fertilizer studies showed minimal yield and economic gains if soil test phosphorus levels were 10 ppm or greater in corn and soybean rotation (https://go.unl.edu/starter).

The starter fertilizer used in the study was 5 gal/ac 10-34-0 and 1 qt/ac Zn. The starter fertilizer treatment was compared to a no starter fertilizer check. For this field location, soil P values ranged from 7 to 16 ppm Mehlich 3 P and zinc soil test values ranged from 1.02 to 2.02 ppm. Due to the low P values in portions of the field, a yield response to 10-34-0 might be expected.

Results:

	Early Season Stand Count (plants/ac)	Test Weight (lb/bu)	Moisture (%)	Yield (bu/ac)†	Marginal Net Return‡ ($/ac)
Check	28,053 A*	54 A	17.0 A	151 B	579.69 A
Starter (5 gal 10-34-0 + 1 qt Zinc)	27,867 A	54 A	16.9 A	158 A	590.77 A
P-Value	0.796	0.280	0.366	0.024	0.234

*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 $3.83/bu corn, $11.17/ac ($385/ton) for 5 gal/ac of 10-34-0, and $2.88/ac ($11.50/gal) for 1 qt/ac zinc.

Summary:

- Using starter fertilizer resulted in a 6.6 bu/ac yield increase. Grain moisture, test weight, and stand counts did not differ between the starter fertilizer treatment and the untreated check.
- Marginal net return was not significantly different between the treatments.

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