

Determining the Effects of Starter Fertilizers on Corn Yield

Study ID: 686035201701

County: Clay

Soil Type: Hastings silt loam; Crete silt loam

Planting Date: 5/8/17

Harvest Date: 10/19/17

Population: 34000

Row Spacing (in): 30

Hybrid: Pioneer 1257

Reps: 4

Previous Crop: Corn

Tillage: Strip-till

Herbicides: **Burndown:** 12 oz/ac 2-4-D LV6, 30 oz/ac Durango®, and 3.84 oz/ac Weatherguard Complete on 4/7/17 **Pre:** 40 oz/ac Acuron®, 16 oz/ac Atrazine, 32 oz/ac Durango®, and 3.84 oz/ac Weatherguard Complete on 5/9/17 **Post:** 40 oz/ac Acuron®, 16 oz/ac Atrazine, 32 oz/ac Durango®, and 3.84 oz/ac Weatherguard Complete on 6/3/17
Foliar Insecticides: 1 pt/ac Lorsban and 6.4 oz/ac War Hawk® (Bifenthrin) pivot applied on 07/28/17

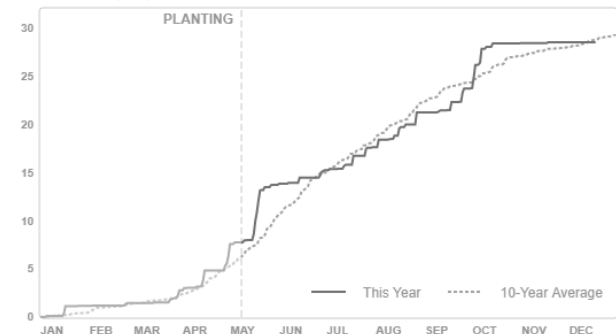
Foliar Fungicides: Quilt XL® aerial applied on 8/2/17

Fertilizer: 164 lb N/ac as anhydrous on 3/6/17 strip tilled; 15 gal/ac 32-0-0 on 6/7/17 coulters injected; 10 gal/ac 32-0-0 on 7/7/17 pivot applied; 5 gal 32-0-0 on 7/31/17 pivot applied

Note: Minor hail on 6/13/17

Irrigation: Pivot, Total: 7.73

Rainfall (in):



Soil Tests (May 2017):

Soil pH 1:1	Soluble Salts 1:1 mmho/cm	Excess Lime Rating	Organic Matter LOI %	Nitrate – N ppm N	Nitrate lb N/A	Mehlich P- III ppm P	Ca-P Sulfate ppm S
6.9	1.19	NONE	2.2	38.0	91	10	153

DTPA (ppm)				Ammonium Acetate (ppm)				CEC me/100g	% Base Saturation				
Zn	Fe	Mn	Cu	K	Ca	Mg	Na		H	K	Ca	Mg	Na
1.01	35.6	13.1	0.58	236	2824	661	255	21.3	0	3	66	26	5

Introduction: The producer was interested in evaluating numerous starter fertilizer products in-furrow (under the seed tube) because new formulations and products were being promoted as improving emergence and increasing yield. The producer evaluated several of these products and compared them with an untreated check that received no starter fertilizer. The soil phosphorus level was 10 ppm (Mehlich-P3 test). In order to evaluate the impact of the starter products on emergence, stand counts were taken repeatedly as the crop emerged. From day to day, counts were taken within the same premeasured area. Yield was measured by weighing strips with a calibrated grain cart scale.

Results:

	Stalk Rot (%)	Test Weight	Harvest Stand Count	Moisture (%)	Yield (bu/acre) [†]	Marginal Net Return [‡] (\$/ac)
Check	6.88 A*	58 A	35,125	17.7 A	285 A	897.11 A
3.5 gal 9-24-3	10.00 A	58 A	35,250	17.8 A	282 A	872.31 B
3.5 gal 9-24-3 + 46 oz Pro-Lock	20.63 A	58 A	35,000	17.5 A	284 A	865.97 BC
3.5 gal R8-24-3	13.75 A	58 A	34,875	17.7 A	283 A	873.40 B
3 gal Levitate + 1.1 gal 10-34-0	28.13 A	58 A	35,250	17.8 A	279 A	844.61 C
2.5 gal 10-34-0	15.63 A	58 A	34,875	17.3 A	280 A	873.49 B
2.5 gal 10-34-0 + 1qt Accomplish + 1pt ProZinc	10.63 A	58 A	35,500	17.3 A	281 A	866.86 B
P-Value	0.647	0.799	N/A	0.407	0.223	0.0002

*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 and starter fertilizer costs of \$17.15/ac for 3.5 gal 9-24-0, \$28.26 for 3.5 gal 9-24-3 + 46 oz Pro-Lock, \$18.76 for 3.5 gal R8-24-3, \$33.69 for 3 gal Levitate + 1.1 gal 10-34-0, \$9.83 for 2.5 gal 10-34-0, and \$19.61 for 2.5 gal 10-34-0 + 1 qt Accomplish + 1 pt ProZinc

Early Season Stand Count					
	5/16 AM	5/16 PM	5/17 PM	5/18 AM	5/22 AM
Check	30,875 A	35,125 A	35,250 A	35,250 A	35,375 A
3.5 gal 9-24-3	27,625 A	33,875 A	35,250 A	35,250 A	35,250 A
3.5 gal 9-24-3 + 46 oz Pro-Lock	26,500 A	34,125 A	35,750 A	35,875 A	35,875 A
3.5 gal R8-24-3	29,500 A	34,375 A	34,750 A	34,875 A	35,000 A
3 gal Levitate + 1.1 gal 10-34-0	29,625 A	35,125 A	35,250 A	35,250 A	35,500 A
2.5 gal 10-34-0	28,625 A	34,125 A	35,500 A	35,625 A	35,625 A
2.5 gal 10-34-0 + 1qt Accomplish + 1pt ProZinc	28,125 A	33,625 A	35,125 A	34,875 A	35,250 A
P-Value	0.229	0.644	0.801	0.508	0.778

% of Final Stand (Harvest Stand Count)					
	5/16 AM	5/16 PM	5/17 PM	5/18 AM	5/22 AM
Check	88 A	100 A	100 A	100 A	101 A
3.5 gal 9-24-3	78 A	96 A	100 A	100 A	100 A
3.5 gal 9-24-3 + 46 oz Pro-Lock	76 A	98 A	102 A	103 A	103 A
3.5 gal R8-24-3	85 A	99 A	100 A	100 A	100 A
3 gal Levitate + 1.1 gal 10-34-0	84 A	100 A	100 A	100 A	101 A
2.5 gal 10-34-0	82 A	98 A	102 A	102 A	102 A
2.5 gal 10-34-0 + 1qt Accomplish + 1pt ProZinc	79 A	95 A	99 A	98 A	99 A
P-Value	0.345	0.855	0.882	0.687	0.874

Summary:

- There was no difference in emergence between any of the starter fertilizer products tested or between the starter products and the untreated check.
- There was no difference in stalk rot, test weight, grain moisture, or grain yield between any of the starter fertilizer products and the untreated check.
- Marginal net return was significantly greater for the untreated check due to not having the starter fertilizer product input cost.

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