

Evaluation of Commence®, Generate® and Bio-Sure Grow in Corn

Study ID: 011035201701

County: Clay

Soil Type: Butler silt loam; Crete silt loam; Fillmore silt loam

Harvest Date: 9/21/17

Population: 24,000

Row Spacing (in): 30

Hybrid: DKC 63-55

Reps: 5

Previous Crop: Soybean

Tillage: No-Till

Herbicides: Pre: Acuron® Herbicide, AATrex®, and Touchdown Total®

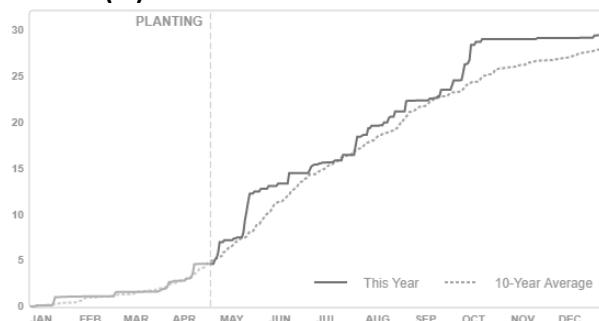
Foliar Insecticides: None

Foliar Fungicides: None

Fertilizer: 125 lb/ac N, 1 pt/ac Agrotain® Ultra; 3 gal/ac of 6-24-6 starter with 1 qt/ac zinc at planting

Irrigation: None

Rainfall (in):



Introduction: This study evaluated the impact of several microbial and nutrient products on corn yield and soil health tests. All treatments, including the check, received 3 gal/ac 6-24-6 non-salt starter and 1 qt/ac zinc. Three microbial and nutrient treatments were evaluated. Commence was applied to the seed prior to planting. Bio-Sure Grow was applied at a rate of 1 gal/ac in-furrow at planting. Generate was applied at a rate of 1 pt/ac in-furrow at planting. Product information is below.

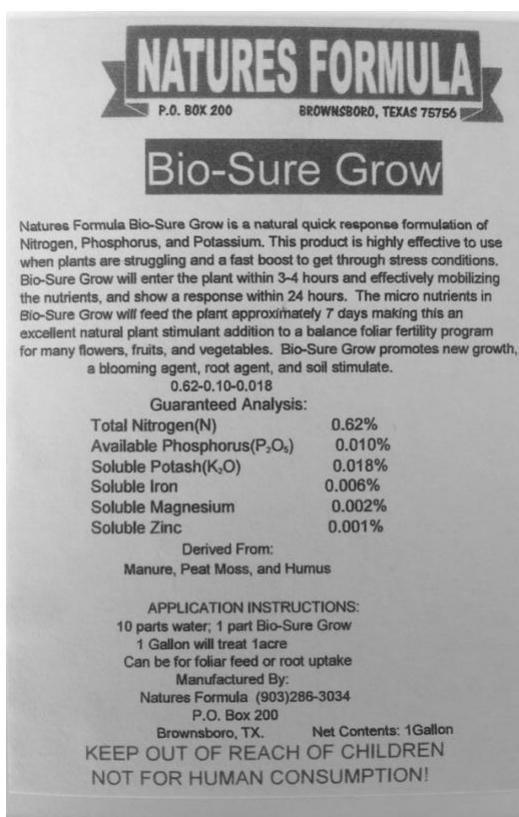
There were extreme drought conditions at this location, which impacted yield. Biological tests were collected for each treatment during the growing season.

Commence®

GUARANTEED ANALYSIS

Cobalt (Co).....	1.58%
Copper (Cu)	0.33%
Iron (Fe)	0.85%
Manganese (Mn).....	0.49%
Zinc (Zn)	0.27%

Product information from:
Agnition



Generate®

GUARANTEED ANALYSIS

Cobalt (Co).....	0.52%
Copper (Cu)	0.14%
Iron (Fe)	0.28%
Manganese (Mn).....	0.11%
Molybdenum (Mo).....	0.001%
Sodium (Na).....	0.11%
Zinc (Zn)	0.11%

PLANT NUTRIENT DERIVED

FROM: Cobalt Carbonate, Iron Oxide, Manganese Oxide, Copper Sulfate, Zinc Sulfate, Molybdc Acid, Sodium EDTA

Product information from:

http://www.kellysolutions.com/erenewals/documents/submit/KellyData/ND/Fertilizer/Product%20Label/GENERATE_STARTER_2_25_2013_1_34_39_PM.pdf

Results:

	Harvest Stand Count	Stalk Rot (%)	Moisture (%)	Test Weight	Yield† (bu/ac)	Marginal Net Return‡ (\$/ac)
Check	20,500 A*	18.50 A	14.9 A	59 A	148 A	466.96 A
Commence	20,500 A	14.50 A	14.4 B	58 A	149 A	463.60 A
Commence + Bio-Sure Grow	21,800 A	21.50 A	14.7 AB	58 A	150 A	449.80 B
Commence + Bio-Sure Grow + Generate	22,000 A	26.50 A	14.6 B	59 A	149 A	440.04 B
P-Value	0.054	0.403	0.009	0.488	0.906	0.001

*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, \$6/ac for Commence Seed Treatment, \$8/ac for Generate, and \$15/ac for Bio-Sure Grow,

	PLFA Total	PLFA Func Group Index	PLFA Total Bacteria	PLFA Gram +	PLFA Gram -	PLFA Total Fungi	PLFA Total Arbus Myc
Check	1,593 A	2 A	733 A	511 A	223 A	146 A	21 A
Commence	1,171 A	2 A	569 A	376 A	193 A	115 AB	16 AB
Commence + Bio-Sure Grow	801 A	1 A	401 A	337 A	63 A	27 B	2 B
Commence + Bio-Sure Grow + Generate	1,669 A	2 A	676 A	464 A	212 A	125 A	15 AB
P-Value	0.232	0.006	0.109	0.188	0.110	0.04	0.086

	PLFA Saprophytes	PLFA Protozoa	PLFA Undifferentiated	Haney pH	Haney OM	Haney Solvita	Haney Soil Health
Check	125 A	1 A	714 A	5 A	3 A	48 A	8 A
Commence	99 AB	0 A	487 A	7 A	3 A	33 A	6 A
Commence + Bio-Sure Grow	25 B	0 A	374 A	5 A	3 A	39 A	6 A
Commence + Bio-Sure Grow + Generate	110 A	0 A	869 A	5 A	3 A	39 A	7 A
P-Value	0.038	0.455	0.370	0.087	0.514	0.527	0.394

Summary:

- Of the soil quality measures, PFLA functional group index, PFLA total fungi, PFLA saprophytes, and Haney pH were significantly different between some of the treatments.
- None of the products tested resulted in increased yield compared with the starter alone check.
- The Commence® seed treatment and Commence® + Bio-Sure Grow + Generate® treatment had drier grain moisture at harvest compared with the check.
- None of the products had reduced stalk rot compared with the starter alone check.
- The addition of Bio-Sure Grow and Generate® resulted in decreased net return compared with the untreated check and the Commence® treatment.

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