

On-Farm Demonstration Trial: Growth Promoter Studies Envita™ Corn and Soybean Trials

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Objective

Determine the effects of the Envita™ product on yields in corn and soybean studies.

Introduction

Nitrogen use efficiency is a major factor causing yield variation in corn. Many bacteria or biostimulant products are available that promote increased nitrogen availability and use efficiency in plants. Envita™ is a naturally occurring food grade bacteria marketed by Azotic, *Gluconacetobacter diazotrophicus*, that is promoted to form a beneficial relationship with the host plant and provides nitrogen to every cell in the plant, foliage and root system, throughout the growing season. The purpose of these trials was to investigate what effect Envita™ applied foliar or in-furrow has on corn yields.

Materials and Methods

Crop Year—2021

Trial	210002	210808	210813	210501	210502	210503
Trial County	Lucas	Chickasaw	Chickasaw	Boone	Boone	Boone
Soil Type	Haig, Grundy	Floyd, Kenyon, Clyde	Floyd, Kenyon, Clyde	Webster, Clarion, Nicollet	Webster, Clarion, Nicollet	Webster, Clarion, Nicollet
Previous Crop	Soybean	Soybean	Corn	Soybean	Soybean	Soybean
Tillage	Fall Deep Rip Field Cultivate	Field Cultivate	Field Cultivate	Conventional	Conventional	Conventional
Current Crop	Corn	Corn	Corn	Corn	Corn	Corn
Hybrid—Variety Number	P1082	DKC54-38	DKC54-38	P1366AM	P1366AM	P1366AM
Hybrid—Variety Company	Pioneer Corteva	Dekalb	Dekalb	Pioneer Corteva	Pioneer Corteva	Pioneer Corteva
Row Spacing	30 in.	30 in.	30 in.	30 in.	30 in.	30 in.
Seeding Rate	30,000/ac.	35,000/ac.	35,000/ac.	34,000/ac.	34,000/ac.	34,000/ac.
Planting Date	4/25/2021	4/28/2021	4/28/2021	4/26/2021	4/26/2021	4/26/2021
Harvest Date		10/26/2021	10/26/2021	10/15/2021	10/15/2021	10/15/2021
Experimental Type	On-Farm Demo	On-Farm	On-Farm	On-Farm Demo	On-Farm Demo	On-Farm Demo
Replications	3	8	4	4	4	3
Nitrogen	22-204-124 100 or 160 lbs./ac.	160 or 185 lbs./ac.	160 or 185 lbs./ac.	200 lbs. NH3	200 lbs. NH3	200 lbs. NH3
Envita Rate	3.2 oz./ac.	5.12 oz./ac.	5.12 oz./ac.	3.2 oz./ac.	5.12 oz./ac.	3.2 + 5.12 oz./ac.
Envita App.	In-Furrow	Foliar	Foliar	In-Furrow	Foliar	Infurrow +Foliar
Application Date	4/25/2021	6/3/2021	6/3/2021	4/26/2021	6/8/2021	4/26/2021 6/8/2021



Results

Trial Number	Treatment	Yield (bu./ac.) ^a	P-value ^b
210002	Envita in-furrow + 100 lb. N	170.0 b	<0.01
	Control + 100 lb. N	167.6 b	
	Envita in-furrow + 160 lb. N	190.2 a	
	Control + 160 lb. N	195.1 a	
210808	Envita Foliar 160 lb. N	200.3 a	0.91
	Control + 160 lb. N	196.0 a	
	Envita Foliar 185 lb. N	202.6 a	
	Control + 185 lb. N	196.2 a	
210813	Envita Foliar 160 lb. N	195.4 a	0.90
	Control + 160 lb. N	192.1 a	
	Envita Foliar 185 lb. N	196.3 a	
	Control + 185 lb. N	192.7 a	
210501	Envita In-Furrow	239.3 a	0.28
	Untreated Control	233.0 a	
210502	Envita Foliar	243.3 a	0.33
	Untreated Control	238.8 a	
210503	Envita In-Furrow + Foliar	227.1 a	0.32
	Untreated Control	236.9 a	

^aValues denoted with the same letter within a trial are not statistically different at the significance level of 0.10.

^bP-value = the calculated probability that the difference in yields can be attributed to the treatments and no other factors. For example, if a trial has a P-value of 0.10, there is 90% confidence the yield differences are in response to treatments. This is consistent for demonstration trials.

^cReturn on Treatment based on Seed prices at \$49.20 per 140,000 seeds. Cost from ISU Ag Decision Maker cost of production 2021. \$10.80 soybean commodity prices. (Yield x Price) - Costs. Commodity price is the 2020 national average cash price for corn.

Key Takeaways

- Trial 210002 showed significant differences between the two nitrogen treatments, but not between the Envita and the control.
- All trials, except 210503, had a yield advantage for Envita over the control, but none were statistically significant.
- There is no plant population that will consistently be the best yielding for soybean, as there are many other variables.
- NOTE: The results presented are from replicated demonstration trials. Statistics are used to detect differences at a location and should not be interpreted beyond the single location.