

On-Farm Demonstration Trial: Growth Promoter Studies Humic Acid on Soybean Trials

Mike Witt—on-farm trials coordinator and agronomist, ISU Extension and Outreach

Zachary Koopman—agricultural specialist, Agricultural Engineering Research Farm

Gary Thompson—agricultural specialist, McNay Memorial Research and Demonstration Farm

Objective

Determine the effects of humic acid treatments on corn and soybean yields.

Introduction

All cropping systems require fertilizer inputs to maintain crop yields. Micronutrients are required for all crops; however, these do not need to be consistently added to most fields. Humic acid is a group of molecules that bind to, and help plant roots receive, water and nutrients. These are responsible for assistance in uptake of nutrients and not physical growth mechanisms. Humic acid has been known to increase microbial activity in the soil, which could assist in root stimulation. The purpose of these trials was to investigate the effect of humic acid on corn and soybean yields.

Materials and Methods

Crop Year–2021

Trial	210004	210005	210506
Trial County	Lucas	Lucas	Boone
Soil Type	Haig, Grundy	Haig, Grundy	Webster, Clarion
Previous Crop	Soybean	Corn	Corn
Tillage	Vertical Till	Conventional	No-Till
Current Crop	Corn	Soybean	Soybean
Hybrid–Variety Number	P1380AM	P33A53X	P31T64E
Hybrid–Variety Company	Pioneer Corteva	Pioneer Corteva	Pioneer Corteva
Row Spacing	30 in.	18 in.	30 in.
Seeding Rate	30,000/ac.	140,000/ac.	120,000/ac.
Planting Date	4/25/2021	4/25/2021	4/28/2021
Harvest Date	10/14/2021	9/29/2021	9/29/2021
Experimental Type	On-Farm Demo	On-Farm Demo	On-Farm Demo
Replications	3	3	4
Product	Humic Acid	Humic Acid	Humic Acid
Application Rate	8 oz./ac. per application	8 oz./ac. per application	8 oz./ac.
Application Timing	V2-6/8/2021 V5-6/17/2021	V2-6/8/2021 V5-6/17/2021- Pre R1	V6-Pre R1

Results

Trial Number	Treatment	Yield (bu./ac.) ^a	P-value ^b
210004	Humic Acid	220.1 a	0.55
	Untreated Control	221.8 a	
210005	Humic Acid	49.2 a	0.77
	Untreated Control	51.7 a	
210506	Humic Acid	60.9 a	0.98
	Untreated Control	60.8 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.

Key Takeaways

- There was no statistical difference between treatments for yields in all experiments.
- The humic acid did not have a detrimental effect on either corn or soybean yields.
- 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.