On-Farm Demonstration Trial: Crop Protection Studies Corn Rootworm Trait Trial

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

Andrew Weaver—agricultural specialist, Northwest Research and Demonstration Farm

Dordt University, Agriculture Department

Objective

Determine the effects of insecticides and genetic traits on corn rootworm management to define best management practices.

Introduction

Farmers are faced with many decisions for pest management options as new technologies are introduced. Pests, such as corn rootworm, are persistent and economically important pests in Iowa. Rotating corn with soybean usually reduces corn rootworm pressure, although rotation-resistant populations can occur in limited areas of Iowa. As resistance issues arise with insects and in Iowa, it is important to investigate alternative methods of suppression. The objective of this trial was to investigate what effect corn genetic traits alone have in comparison to traits with an insecticide present in the suppression of corn rootworm damage. Both yield and root ratings were observed. This location is considered to have high corn rootworm pressure.

Materials and Methods

Crop Year–2021

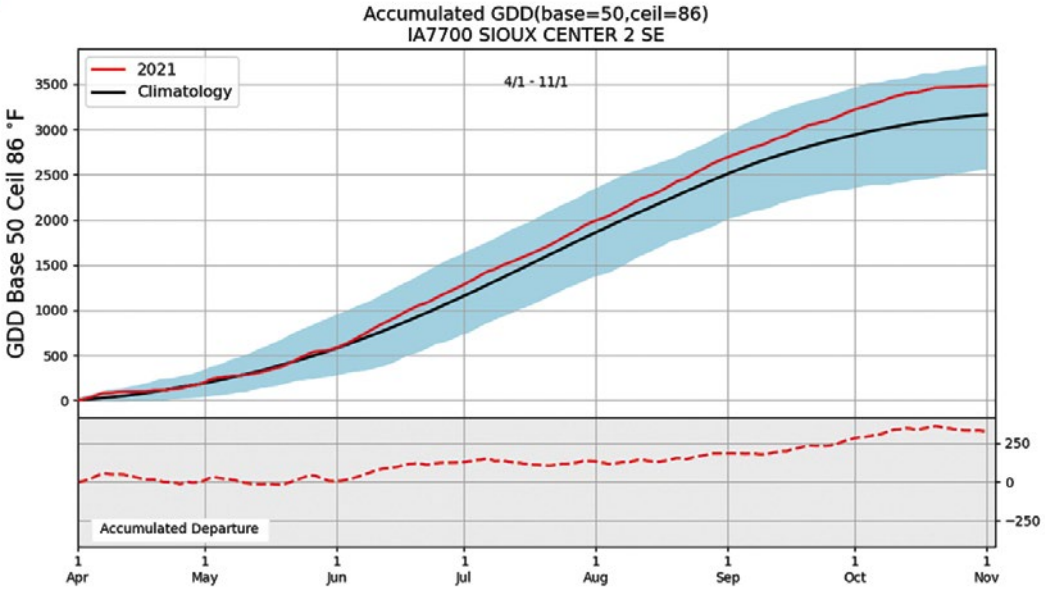
Trial	210110
Trial County	Sioux
Soil Type	8B, 31, 91, 91B, 133, 310B, 310B2, 310C2, 428B
Previous Crop	Soybean
Tillage	Conventional
Current Crop	Corn
Hybrid–Variety Number	DKC 58-34 RIB (Smartstax) DKC 58-35 RIB (VT Double Pro)
Hybrid–Variety Company	Dekalb
Row Spacing	30 in.
Seeding Rate	34,000/ac.
Planting Date	May 30
Harvest Date	October 12
Experimental Type	On-Farm Demo
Replications	4
Insecticide Treatment	Counter 6oz./ac.

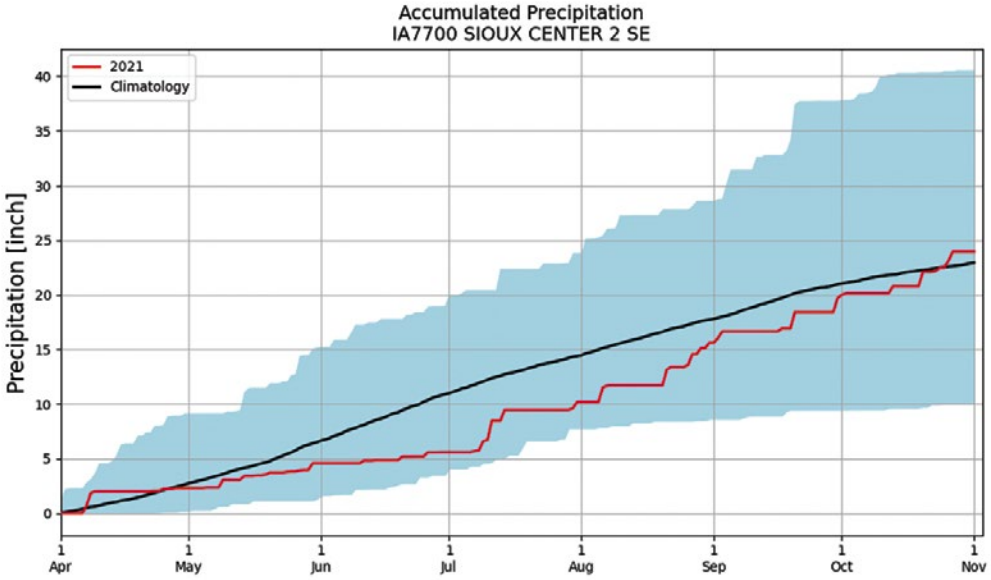
Results

Trial Number	Treatment	Yield (bu./ac.)[a]	P-value[b]	Root Ratings[c]	P-value[b]
210110	DKC- 58-34 (SmartStax) With Insecticide	221.8 a	<0.01	0.2 a	<0.01
	DKC- 58-34 (SmartStax) No Insecticide	212.8 a		1.6 bc	
	DKC- 58-35 (VT DoublePro) With Insecticide	196.4 b		1.1 b	
	DKC- 58-35 (VT Double Pro) No Insecticide	183.4 c		2.0 c	

[a]Values denoted with the same letter within a trial are not statistically different at the significance level of 0.10.
[b]P-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.
[c]Iowa State Node-Injury scale (0–3). Number of full or partial nodes completely eaten.

Location Climate Analysis





Key Takeaways

- There was a significant difference between the yields of the two different hybrids.
- There also was a significant yield difference between the DKC 58-35 treatments with and without insecticide, with no insecticide yielding less.
- There was significant difference observed in the corn rootworm root feeding based on the root ratings.
- This high corn rootworm pressure location displayed the difference in feeding damage within each hybrid based on the insecticide treatment. Within each hybrid the treatment with insecticide had significantly less root damage.

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.