

Sweet Corn Variety and Pest Management Trial at the Neely-Kinyon Farm, 2001

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Introduction

Because of Iowa agricultural resources and the extensive experience of Iowa farmers with field corn production, organic sweet corn can be grown successfully in Iowa. And because the U.S. organic consumer market continues to grow, premium prices can be obtained for Iowa organic sweet corn. The potential for major markets across the United States has been identified; research on production, harvesting, and processing protocols is needed to meet this demand. One of the key pests in organic sweet corn production is the corn earworm. Earworm control was improved through the addition of a certified organic spreader-sticker in preliminary tests in 2001. This project investigated variety selection for early markets as well as the efficacy of the naturally occurring soil bacterium, *Bt* (*Bacillus thuringiensis*), for improved pest management of the corn earworm.

Materials and Methods

Compost (8 tons/acre) was applied to the field site April 27, 2001. On May 18, two varieties of sweet corn, Ambrosia and Incredible, were planted in 30-inch rows, at 26,000 plants/acre. Plots were harrowed May 21, then row cultivated June 11, July 8, and July 13. Stand counts were taken July 12. A split plot design permitted application of three treatments to two rows of each variety. The treatments were control (no spray), Dipel® (*Bt*), and Dipel® (*Bt*)

plus soybean oil (to act as a surfactant). Dipel® was applied using a backpack sprayer to the corn ears at silking. The 'Ambrosia was sprayed July 31 and again August 6. Incredible was sprayed August 6 and August 13.

Ambrosia was harvested August 13 and Incredible August 20. A sample from 100 feet of row was harvested from two rows of each treatment, and total number of ears was recorded. Numbers of corn earworm found, evidence of earworm damage, and incidence of corn smut were recorded for each harvested ear.

Results and Discussion

Fifty-four days after planting, no significant differences among varieties were found in stand counts (Table 1). Greater numbers of ears were harvested from Ambrosia rows than from Incredible rows (Table 2). Earworms were reduced from a 37% infestation rate in the controls to 29% with Dipel® alone and 32% with Dipel® and oil (averaged over both varieties). *Bt* alone appeared to reduce earworm populations in the Incredible planting, while *Bt* plus oil appeared to offer greater protection to the Ambrosia planting. Earworm damage also was reduced with applications of *Bt*: from 25% in the controls, to 0% with Dipel®, to 3% with Dipel® plus oil. Greater smut populations were recorded in Ambrosia ears than Incredible ears, with no infestation found in Dipel® sprayed rows.

Organic sweet corn can provide a lucrative market for Iowa growers. In another ISU-USDA trial (Treyner, Iowa, 2001), organic sweet corn yields averaged 6,000 ears/acre, an excellent yield compared to national standards. The Hy-Vee grocery store in Council Bluffs, Iowa, purchased this sweet corn for \$3.00/dozen, a 100% premium over

conventional wholesale sweet corn prices. Neely-Kinyon organic sweet corn was served at field days and received many compliments on

excellent taste. This trial will be repeated in 2002 with additional sweet corn varieties.

Table 1. Sweet corn stand count, 2001.

Variety	Stand count (plants/acre) \pm SE
Ambrosia	18,600 \pm 1,503
Incredible	22,800 \pm 2,289
LSD	NSD

Table 2. Sweet corn harvest, earworm damage and incidence of corn smut, Neely-Kinyon, 2001.

Variety	Treatment	Mean number of ears harvested	Earworm (%)	Corn earworm damage (%)	Ears showing smut (%)
Ambrosia	Control	52	41.35	20.19	4.80
	<i>Bt</i>	13.5	33.34	0.00	0.00
	<i>Bt</i> & oil	55	25.45	2.72	7.27
Incredible	Control	29.5	32.20	5.08	1.69
	<i>Bt</i>	32	25.00	0.00	0.00
	<i>Bt</i> & oil	45	37.78	3.34	1.11