

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

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Introduction

Organic sweet corn can be successfully grown in Iowa, based on our agricultural resources and our extensive experience with field corn production. With the continuing growth of organic consumers in the U.S., premium prices can be obtained for organic sweet corn from Iowa. With the potential for major markets across the U.S. 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 and the efficacy of the naturally occurring soil bacterium, *Bt* (*Bacillus thuringiensis*), for improved pest management of the corn earworm at the N-K Farm.

Materials and Methods

Compost (8 tons/acre) was applied to the field site on April 27, 2001. Two varieties of sweet corn, Ambrosia and Incredible, were planted in 30 in. rows on May 18, 2001, at 26,000 plants per acre. Plots were harrowed on May 21, and row cultivated on June 11, July 8, and July 13. Stand counts were taken on July 12. A split plot design permitted the application of three treatments to two rows of each variety. The treatments were as follows: 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' ears were sprayed on July 31 and again on August 6. 'Incredible' ears were sprayed on August 6 and August 13. 'Ambrosia' was harvested on August 13 and 'Incredible' on August 20, 2001. A sample from 100 ft. of row was harvested from two rows of each treatment and the 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

No significant differences were found in stand counts between varieties at 54 days after planting (Table 1).

Table 1. Sweet corn stand count, 2001.

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

Greater numbers of ears were harvested from ‘Ambrosia’ than ‘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. The *Bt* alone appeared to reduce earworm populations in the ‘Incredible’ planting, while *Bt* plus oil appeared to offer greater protection in the ‘Ambrosia’ planting. Earworm damage was also reduced with applications of *Bt*: from 25% in the controls to 0% with Dipel®, and 3% with Dipel® plus oil. Greater smut populations were recorded in ‘Ambrosia’ ears than ‘Incredible,’ with no infestation found in Dipel® sprayed rows.

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

Organic sweet corn can provide a lucrative market for Iowa growers. In another ISU-USDA trial in Treynor, Iowa, in 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 per dozen, a 100% premium over conventional wholesale sweet corn prices. Neely-Kinyon organic sweet corn was served at Field Days and we received many remarks on the excellent taste. This trial will be repeated in 2002 with additional sweet corn varieties.