

## **TIMING OF INSECTICIDES FOR CONTROL OF EUROPEAN CORN BORER AND CORN EARWORM IN MINNESOTA SWEET CORN – 2003**

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‘Jubilee’ was planted 23 Jun at the University of Minnesota Research and Outreach Center at Rosemount, MN. Plots were arranged in a RCB design with 3 replications. Plots consisted of 2 rows 25 ft (7.6 m) long with 30 in (0.8 m) row spacing. Treatments were separated by 2.5 ft (0.76 m) alleys and 10 ft alleys (3.04 m) separated replications. Treatments were applied using a CO<sub>2</sub> pressurized backpack sprayer with a 3 ft, two-nozzle boom and XR-Teejet 8002 flat fan nozzles and no screens. The sprayer was calibrated to deliver 25 gpa (233.8 l/ha) at 35 psi (242 kPa). The ear zone of each row of the 2-row plot was treated using 4 different spray regimens, 1) 1 application starting at row tassel (no silk present), 2) 2 applications, one each at row tassel and early silk, 3) 4 applications, one each at row tassel, early silk (≈25%), late silk (≈95%) and brown silk, 4) 2 applications, one each at early and late silk. Treatment applications were made on the following dates 15 Aug (row tassel), 21 Aug (early silk), and 26 Aug (late silk) and 2 Sep (brown silk). Twenty-five primary ears per plot were harvested and evaluated 8 Sept. Total number of ECB and CEW larvae, larval size and location, and feeding damage (cm<sup>2</sup>) were recorded.

Mean total CEW larval density was 0.92 per ear in the untreated check. All treatments provided significant control of total CEW compared to the untreated check except Warrior with 1, 2 (early), and 4 applications; Capture with 1 application; and SpinTor with 1 application. A similar pattern of control was observed for large CEW and no treatment differences were observed for small CEW. Percentages of marketable ears for fresh market were significantly different for all treatments compared to the untreated check except Warrior with 1, 2 (early), and 4 applications; Capture with 1 application; and SpinTor with 1 application. The same pattern held for processing marketability except the Warrior with 2 (late) applications was also not significantly different compared to the untreated check. Kernel feeding damage was significantly lower in all treatments compared to the untreated check except for Capture and SpinTor with 1 application and Warrior with 2 (early) applications. Phytotoxicity was not observed among the treatments.

Treatment/formulation	Rate lb(AI)/ac	Mean number larvae per ear			Marketable ears (%)		Total kernel feeding damage / ear (cm <sup>2</sup> ) <sup>g</sup>	
		Total ECB <sup>a</sup>	Small CEW <sup>b</sup>	Large CEW <sup>c</sup>	Total CEW (% control) <sup>d</sup>	Fresh market <sup>e</sup>		Processing <sup>f</sup>
Capture 2EC (1 app) <sup>1</sup>	0.04	0.00	0.09	0.85 ab	0.95 (0) a	16 f	25 ef	4.90 a
Warrior 1CS (1 app) <sup>1</sup>	0.025	0.00	0.07	0.67 bc	0.73 (21) bc	37 cde	43 c-f	3.30 bc
SpinTor 2SC (1 app) <sup>1</sup>	0.094	0.01	0.04	1.01 a	1.05 (0) a	19 f	21 f	5.05 a
Capture 2EC (2 apps) <sup>2</sup>	0.04	0.00	0.07	0.47 cde	0.53 (42) cde	45 bcd	56 bc	2.33 cde
Warrior 1CS (2 apps) <sup>2</sup>	0.025	0.01	0.21	0.69 bc	0.91 (1) ab	17 f	39 c-f	3.84 ab
SpinTor 2SC (2 apps) <sup>2</sup>	0.094	0.00	0.11	0.40 def	0.51 (45) de	49 abc	59 bc	2.27 cde
Capture 2EC (4 apps) <sup>3</sup>	0.04	0.03	0.07	0.23 ef	0.29 (68) f	61 ab	75 ab	1.18 ef
Warrior 1CS (4 apps) <sup>3</sup>	0.025	0.01	0.16	0.56 cd	0.72 (22) bc	28 def	48 cde	2.61 bcd
SpinTor 2SC (4 apps) <sup>3</sup>	0.094	0.00	0.12	0.27 ef	0.39 (58) ef	63 a	73 ab	1.28 ef
Capture 2EC (2 apps) <sup>4</sup>	0.04	0.01	0.09	0.20 f	0.29 (68) f	65 a	84 a	0.98 f
Warrior 1CS (2 apps) <sup>4</sup>	0.025	0.04	0.16	0.53 cd	0.69 (25) cd	39 cd	49 cd	2.43 cde
SpinTor 2SC (2 apps) <sup>4</sup>	0.094	0.00	0.04	0.35 def	0.39 (58) ef	59 ab	68 ab	1.53 def
Untreated Check	--	0.04 NS	0.11 NS	0.81 ab	0.92 (-) ab	20 ef	27 def	4.81 a

Means within columns followed by the same letter are not significantly different ( $P > 0.05$ ), Protected Least significant difference Test (LSD). Mean percentage of marketable ears for fresh market and processing were transformed using the arcsin transformation to obtain mean separations using REGWQ ( $P=0.05$ ); untransformed means are presented.

<sup>1</sup> One application starting at row tassel (green tassel).

<sup>2</sup> Two applications, one each at row tassel and early silk.

<sup>3</sup> Four applications, one each at row tassel, early silk, late silk and brown silk.

<sup>4</sup> Two applications, one each at early and late silk.

<sup>a</sup> Includes all ECB instars in the husk, silk, tip, side, butt, or shank of the ear.

<sup>b</sup> Includes CEW that are 1-2<sup>nd</sup> instar.

<sup>c</sup> Includes CEW that are 3-6<sup>th</sup> instar.

<sup>d</sup> Includes all CEW instars in the tip, side, or butt of the ear.

<sup>e</sup> Percentage of ears with no kernel damage or larvae present.

<sup>f</sup> Percentage of ears with only small larvae (1-2 instar ECB and/or 1-2 instar CEW) and/or damage limited to the tip; no damage or larvae on the side or butt of the ear.

<sup>g</sup> Total kernel area damaged/ear in the tip, side, or butt by ECB and/or CEW.