

Corn (Sweet): *Zea mays* L. 'Jubilee'
European corn borer (ECB); *Ostrinia nubilalis* (Hübner)
Corn earworm (CEW); *Helicoverpa zea* (Boddie)

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**TIMING OF PYRETHROIDS FOR CONTROL OF EUROPEAN CORN
BORER AND CORN EARWORM IN MINNESOTA SWEET CORN, 2000:**

'Jubilee' was planted 5 Jun at the University of Minnesota Research and Outreach Center at Rosemount, MN. Plots were arranged in a RCB design with 4 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. Treatment applications were made using a CO₂ pressurized backpack sprayer with a single-nozzle wand and an XR-Teejet 8002 flat fan nozzle and no screen. 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 (green tassel), 2) 2 applications, one each at row tassel and early silk, 3) 3 applications, one each at row tassel, early silk (≈15%) and late silk (≈90%), 4) 2 applications, one each at early and late silk. Treatment applications were made on the following dates 3 Aug (row tassel), 7 Aug (early silk), and 11 Aug (late silk). The 3 Aug date coincided with the onset of the 2nd generation ECB moth flight, while the 11 Aug date coincided with a significant increase in the CEW moth flight. Twenty-five primary ears per plot were harvested and evaluated 28 Aug. Total number of ECB and CEW larvae, larval size and location, and feeding damage (cm²) were recorded.

In the untreated check, mean ECB and CEW larval densities were 0.89 and 0.44 per ear, respectively. All treatments provided significant control of ECB compared with the untreated check. Only Capture with 3 applications and Warrior with 2 applications (early and late silk), provided significant control of CEW compared with the untreated check. All treatments, except Capture (1 application) and Warrior (1 application), provided significantly higher percentages of marketable ears for both fresh market and processing compared with the untreated check. 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 ²) ^e
		Total ECB ^a	Total CEW ^b	Fresh market ^c	Processing ^d	
Capture 2EC (1 app) ¹	0.04	0.54 b	0.49 a	36 d	73 bc	1.01 ab
Warrior T (1 app) ¹	0.025	0.17 c	0.44 ab	53 cd	89 abc	0.57 ab
Capture 2EC (2 apps) ²	0.04	0.05 c	0.34 abc	66 bc	95 ab	0.37 b
Warrior T (2 apps) ²	0.025	0.02 c	0.39 abc	66 bc	95 a	0.39 b
Capture 2EC (3 apps) ³	0.04	0.02 c	0.11 c	90 a	99 a	0.14 b
Warrior T (3 apps) ³	0.025	0.03 c	0.16 bc	80 ab	98 a	0.52 ab
Capture 2EC (2 apps) ⁴	0.04	0.08 c	0.17 bc	75 abc	92 ab	0.58 ab
Warrior T (2 apps) ⁴	0.025	0.03 c	0.13 c	85 ab	95 ab	0.21 b
Untreated Check	--	0.89 a	0.44 ab	34 d	68 c	1.46 a

Means within columns followed by the same letter are not significantly different ($P=0.05$), Ryan-Einot-Gabriel-Welsch multiple range test (REGWQ). Mean percentage of marketable ears for fresh market and processing were transformed using the arcsin transformation to obtain mean separations using REGWQ ($P=0.05$); back transformed means are presented.

¹ One application starting at row tassel (green tassel).

² Two applications, one each at row tassel and early silk.

³ Three applications, one each at row tassel, early silk and late silk.

⁴ Two applications, one each at early and late silk.

^a Includes all ECB instars in the husk, silk, tip, side, butt, or shank of the ear.

^b Includes all CEW instars in the tip, side, or butt of the ear.

^c Percentage of ears with no kernel damage or larvae present.

^d 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.

^e Total kernel area damaged/ear in the tip, side, or butt by ECB and/or CEW.

Part II. Materials Tested for Arthropod Management

TIMING OF PYRETHROIDS FOR CONTROL OF EUROPEAN CORN BORER AND CORN EARWORM IN MINNESOTA SWEET CORN, 2000

Capture 2EC, (2-Methyl-1(1,1'-biphenyl)-3yl)methyl cis-3-(2-chloro-3,3,3-trifluoro propenyl)-2,2dimethyl cyclopropane carboxylate), bifenthrin, FMC

Warrior T 1CS, (3-(2-Chloro-3,3,3-trifluoro-1-propenyl)-2,2dimethylcyclopropanecar-boxylate (S),(S)-cis-Z isomers, lambdacyhalothrin, Syngenta