

# **CONTROL OF CATERPILLARS IN EARS WITH FOLIAR INSECTICIDES APPLIED TO SWEET CORN DURING SILKING**

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## **Introduction**

The primary pests of sweet corn in Georgia are the corn earworm and the fall armyworm. While both species can survive on sweet corn foliage and can damage the crop through most of the season, the greatest concern is for direct damage to the ears. Additionally, once inside of the ear, the caterpillar is protected from insecticides and is allowed to feed and grow. Thus, sweet corn typically receives multiple insecticide applications during the silking period to prevent infestation of ears by these caterpillars. Pyrethroid insecticides are frequently used in these applications because of their efficacy and relatively minor costs. However, when fall armyworm is present, alternative chemistries are usually needed as the pyrethroid insecticides are not as efficacious against this pest. Additionally, concerns have arisen in the last few years with potential pyrethroid resistance in the corn earworm. This test was conducted to evaluate the efficacy of selected insecticides against these two pest species in sweet corn.

## **Materials and Methods**

Sweet corn (var. Double Up) was direct seeded in 36 inch rows on 30 July, 2007, at the UGA Tifton Vegetable Park in Tifton, Georgia. The test was conducted in the fall to increase the probability of good pest pressure. Plots were established in a RCB design with three replications. Experimental plots were 4 rows by 25 feet. The entire test was treated weekly with Rimon prior to silking to prevent foliar damage by fall armyworm. The insecticides evaluated were applied on Mondays, Wednesdays and Fridays during silking.

Treatments evaluated were Warrior 1SC at 0.03 lb AI/ac, Lambda-cyhalothrin 1EC at 0.03 lb AI/ac, Dipel DF at 1 lb/ac, SpinTor 2SC at 3 oz/ac, and Lannate 2.4EC at 0.45 lb AI/ac. A non-treated Check was included for comparison. Insecticide applications were made on 10, 12, 14, 17, 19, 21, and 24 Sept. 2007. Applications were made with a CO<sub>2</sub> pressurized backpack sprayer (60 PSI) in 40 GPA with 4 hollow-cone nozzles per row (two on each side of the row aimed at ear zone). Actual application was made with a boom with four nozzles, with two pointed toward the ear zones of adjacent rows. The row middles of each plot were walked; thus the two middle rows were treated on each side and the outside rows were treated only from the interior of the plot.

For evaluation, twenty five ears were harvested from the middle two rows of each plot. Ears were shucked and examined for presence of caterpillars (identified to species and counted). Ears were rated for damage by caterpillars on the 0 to 3 scale, with 0 = no damage, 1 = minor damage (generally less than 5 kernels damaged at tip), 2 = tip of ear with severe damage, but less than 1 inch down the ear, and 3 = significant damage extending more than 1 inch down the ear.

All data were analyzed with the PROC ANOVA procedure of PC-SAS. Where significant differences were detected ( $P < 0.05$ ), means were separated with LSD ( $P = 0.05$ ).

## **Results and Discussion**

Pest pressure was very heavy in this test. Sample taken at the end of the field on 21 Sept. consisted entirely of corn earworm. However, fall armyworm were also collected at harvest time. Larvae collected in the check were approximately 75% corn earworm and it is assumed this species contributed most of the damage.

All of the insecticide treatments, with the exception of Dipel, significantly reduce corn earworm densities and ear damage. There were no significant differences in ear damage among these insecticide treatments. SpinTor appeared to be slightly weaker on corn earworm than the other insecticides, but was the only insecticide treatment with no fall armyworm.

None of the insecticides in this test provided adequate suppression of damage. This is undoubtedly a result of the heavy pest pressure and the extended application frequency (3 days between applications on weekends).

Table 1. Damage ratings and caterpillar collections, Sweet Corn Efficacy Trial, Tifton Vegetable Park, Fall, 2007.

Treatment	Number of ears (of 25) damaged by caterpillars (by damage category)					Number of larvae per plot	
	Rating 0	Rating 1	Rating 2	Rating 3	Rating 2-3	CEW	FAW
Check	1.7 b	0.0 a	1.7 a	21.7 a	23.3 a	11.3 a	4.3 a
Dipel	1.3 b	0.0 a	6.7 a	17.0 b	23.7 a	13.3 a	3.7 a
Lannate	12.0 a	2.3 a	4.7 a	6.0 c	10.7 b	4.0 c	2.0 a
SpinTor	10.7 a	0.7 a	6.3 a	7.3 c	13.7 b	9.7 ab	0.0 a
Warrior	9.0 a	0.3 a	7.3 a	8.3 c	15.7 b	2.7 c	3.7 a
Lambda-cy	13.0 a	1.0 a	5.0 a	6.0 c	11.0 b	5.3 bc	2.7 a