

# EVALUATION OF DRENCH AND FOLIAR INSECTICIDE APPLICATIONS FOR SUPPRESSION OF SILVERLEAF IN SQUASH

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## Introduction

The silverleaf whitefly, *Bemisia tabaci*, is a key pest of cucurbit crops grown in the fall in Georgia. Systemic insecticides, applied at or shortly after planting or transplanting, are a key component of whitefly management. Insecticide resistance has been detected with some of these products. This test was conducted at the Tifton Vegetable Park to evaluate insecticidal suppression of silverleaf in squash with preventive applications of systemic insecticides. In addition, two foliar insecticides were evaluated for efficacy and potential effects of rain or irrigation shortly after application.

## Materials and Methods

Squash (var. Destiny III) was direct seeded for this test, with one row per six foot bed. Experimental plots were one row (treated as a 36 inch row) by 23 feet, with four replications in a randomized complete block design.

Drench treatments evaluated were Durivo (13 oz/ac), Venom (6 oz/ac), Admire Pro (10.5 oz/ac), Platinum (11 oz/ac), and Coragen (6.5 oz/ac). Foliar treatments evaluated were Voliam Flexi 40WG (7 oz/ac) and Voliam Xpress 1.25ZC (9 oz/ac). Foliar treatments were evaluated with and without an overhead “wash-off” applied shortly after application.

Drench treatments were applied as an over-the-row drench in three liters of water per plot immediately after planting (19 Sept.). Foliar treatments were applied with a CO<sub>2</sub> pressurized backpack sprayer (60 psi), in 40 GPA, with three hollow cone nozzles per row (one over-the-top, 2 on drops). The foliar treatments without the wash-off were applied on 30 Sept. and 8 Oct., 2009. The wash-off treatments were applied a single time on 30 Sept. After application, each wash-off plot was watered over the row with three liters of water to attempt to wash the treatment into the root zone. No silverleaf was observed on the day of the wash off treatment (the foliar treatments, with and without wash-off, were applied prior to any silverleaf symptoms).

All plants in each plot were visually observed for silverleaf ratings. Plots were assigned a rating as follows:

0 = no silverleaf

- 1 = light silverleaf on less than half of the plants in the plot
- 2 = light silverleaf on more than half the plants in the plot
- 3 = moderate silverleaf on less than half of the plants in the plot
- 4 = moderate silverleaf on more than half the plants in the plot
- 5 = heavy silverleaf on less than half of the plants in the plot
- 6 = heavy silverleaf on more than half the plants in the plot

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 heavy at the beginning of this test and dropped off near the end. All drench treatments reduced or delayed silverleaf development. Admire showed the shortest residual, with moderate silvering at 20 days after treatment (6 Oct.); however, all of the drench treatments had signs of moderate silvering by 23 days after treatment. (9 Oct.). Admire and Platinum showed severe silvering by 26 days after treatment, while the remaining drench treatments never reached a full 6 ratings (possibly due in part to reduced pest pressure).

While both foliar insecticides reduced silverleaf symptoms, Voliam flexi provided better suppression than Voliam xpress. Comparison of the foliar and wash-off treatments are difficult (foliar applied twice, wash-off a single time), but it is apparent that the wash-off did not harm performance.

Squash - Silverleaf management test, Tifton Vegetable Park, Tifton, Georgia, 2009.

Treatment	Silverleaf ratings						
	6 Oct.	9 Oct.	12 Oct.	15 Oct.	19 Oct.	23 Oct.	28 Oct.
Check	4.25 a	5.88 a	6.00 a	6.00 a	6.00 a	6.00 a	6.00 a
Admire Pro	3.00 c	5.50 a	6.00 a	6.00 a	6.00 a	6.00 a	6.00 a
Platinum	1.63 d	4.88 ab	6.00 a	6.00 a	6.00 a	6.00 a	6.00 a
Venom	0.75 d	2.88 de	4.75 b	5.13 ab	5.13 ab	5.63 ab	5.63 ab
Coragen	0.75 d	3.63 cd	4.13 bc	4.63 ab	4.50 bc	4.88 abc	4.75 bc
Durivo	1.25 d	3.63 cd	4.13 bc	4.38 b	4.25 bc	4.50 bc	4.50 bc
Voliam flexi	1.25 d	2.25 ef	1.63 d	0.75 c	0.00 d	0.75 e	0.75 e
Voliam xpress	4.00 ab	5.13 ab	4.38 bc	4.13 b	3.63 c	4.13 c	3.75 c
V. Flexi + wash-off	1.38 d	1.38 f	0.75 d	0.75 c	1.13 d	2.00 d	2.25 d
V. Xpress + wash-off	3.25 bc	4.13 bc	3.25 c	4.50 b	4.75 abc	4.88 abc	5.50 ab
Days after transplanting	20	23	26	29	33	37	42
Days after foliar app.	6	1	4	7	11	15	20
Days after wash-off	6	9	12	15	19	23	28