

# **EFFICACY OF CORAGEN, VENOM AND HGW86, APPLIED AS ROW DRENCHES AND VIA DRIP CHEMIGATION, FOR MANAGEMENT OF SILVERLEAF IN SQUASH**

Alton N. Sparks, Jr., Extension Entomologist  
University of Georgia, Tifton Campus  
P.O. Box 748  
Tifton, GA 31794  
asparks@uga.edu

## Introduction

Silverleaf whitefly can be severe pests of cucurbit crops in the fall in Georgia. Squash is a favored host of this pest. The newly developed diamide insecticides with systemic activity, Coragen and HGW86, have shown promise for management of this pest. This test was conducted at the University of Georgia's Tifton Vegetable Park in Tifton, Georgia, to evaluate these products against silverleaf whitefly in squash. Venom was included as a whitefly standard insecticide and as a check for neonicotinoid resistance.

## Materials and Methods

Squash (var. Destiny III) was direct seeded on 3 Sept. 2008 in single rows on six foot beds. Experimental plots were established as single rows (treated as 3 foot rows) by 21 feet, with four replications in a randomized complete block design. Treatments evaluated were: HGW86 20SC (200 g AI/l) at 0.066, 0.134, and 0.176 lb AI/ac applied at-planting, Coragen SC at 5 oz/ac applied at-planting, Venom 70SG at 5 oz/ac applied at-planting, Coragen SC (1.67 lb AI/gal) at 0.044, 0.066, and 0.088 lb AI/ac applied through drip chemigation, and Venom 70SG at 5 oz/ac applied through drip chemigation. A non-treated control was included for comparison.

At-planting application were intended to simulate a drip chemigation, but were applied as a direct row drench. Each plot had insecticide applied over the row in 3 liters of water in a four inch band. After application, the entire test was watered over-the-row with a transplant rig at about 50 gallons per 500 foot of row. The at planting application was actually made on 8 Sept (5 days after planting, but pre-emergence).

Drip applications were made with a manifold set up to treat four plots at a time. The four lines from the manifold were attached to 21 foot sections of drip tape. The four drip lines were set next to the row of each replication of a treatment and all four plots were treated at once. The line was pressurized (irrigation turned on) and checked for leaks (ran for about 5 minutes). The treatment was injected (in 3 liters of water; about 5 minutes to inject) with the irrigation running, and the irrigation was then run for an additional 10 to 15 minutes to flush the lines. Drip applications were applied on 9 and 23 Sept. (all four drip treatments). On 7 Oct., the third applications of Coragen at 0.044 and 0.066 lb AI/ac treatments were made.

Plots were monitored periodically for silverleaf symptoms. Each plot was examined visually and rated on a 0 to 6 scale as follows: 0 = No silverleaf symptoms in plot, 1 = silverleaf light and spotty, 2 =

silverleaf light and evenly distributed, 3 = moderate spots within the plot, 4 = silverleaf moderate and evenly distributed, 5 = heavy spots of silverleaf, 6 = silverleaf heavy and evenly distributed. 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

All insecticide treatments suppressed (or delayed) silverleaf, with only minor symptoms in any treated plot at 13 to 14 days after the initial treatment (22 Sept). The Venom drench at planting and the lowest rate of HGW86 (also at planting) showed light silverleaf symptoms by 17 days after treatment and moderate to severe symptoms at 21 days. The Coragen drench and higher rates of HGW86 showed the first significant symptoms at 21 days after treatment. The drip applications extended the activity with Venom (as compared to the Venom drench). Drip applications of Coragen did not show clear rate effects; although, the highest rate was consistently rated with slightly less symptoms.

Table 1. Coragen/HGW86 Drip-Drench Test, TVP, Tifton, Georgia, 2008.

Treatment	Application method	Silverleaf Rating (0 to 6)						
		22 Sept.	25 Sept.	29 Sept.	3 Oct.	8 Oct.	14 Oct.	17 Oct.
		14 DAD*	17 DAD	21 DAD	25 DAD	30 DAD	36 DAD	39 DAD
		DADr2 =>	2	6	10	15	21	24
		DADr3 =>				1	7	10
Check		5.25 a	6.00 a	6.00 a	6.00 a	6.00 a	6.00 a	6.00 a
HGW86 0.066	Drench	0.13 c	2.00 bc	4.75 a	5.75 ab	5.75 ab	6.00 a	6.00 a
HGW86 0.134	Drench	0.00 c	0.50 de	3.25 b	4.75 abc	5.38 abc	5.50 ab	5.63 ab
HGW86 0.176	Drench	0.00 c	0.63 de	2.75 bc	4.38 cd	5.13 abc	5.25 ab	5.25 abc
Coragen	Drench	0.00 c	0.13 e	2.50 bc	4.63 bc	5.38 abc	5.38 ab	5.63 ab
Venom	Drench	0.00 c	2.75 b	5.38 a	6.00 a	6.00 a	5.75 a	5.88 a
Coragen 0.044	Drip (3x)	0.25 bc	1.38 cd	2.63 bc	4.13 cde	4.38 cd	4.88 bc	4.75 cd
Coragen 0.066	Drip (3x)	0.00 c	1.13 cde	2.38 bc	4.00 cde	4.75 bcd	4.88 bc	4.88 bcd
Coragen 0.088	Drip (2x)	0.13 c	0.75 de	1.50 c	3.00 e	4.00 d	4.13 c	4.13 de
Venom	Drip (2x)	0.50 b	1.50 cd	2.50 bc	3.13 de	3.75 d	4.13 c	3.75 e

DAD = Days after drench application (subtract one for days after first drip application).

DADr2 = Days after second drip application (for all drip treatments).

DADr3 = Days after third drip application (Coragen 0.044 and 0.066 only).