

# EVALUATION OF FOLIAR INSECTICIDES FOR CONTROL OF MELON APHID ON SQUASH

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## **Introduction**

Aphids are potential pests of a wide variety of vegetable crops. Several species of aphids may attack vegetables and efficacy of insecticides can differ with the species of aphid encountered. In cucurbit crops, one of the more common species is the melon aphid, also known as the cotton aphid. This test was conducted to evaluate the efficacy of selected foliar applied insecticides against melon aphid in squash.

## **Materials and Methods**

A small plot trail was conducted at the University of Georgia's Tifton Vegetable Park in Tifton, Georgia. A virus resistant yellow crookneck squash (Destiny III) was transplanted into one row plots, with 9 plants per plot on a one foot in-row spacing. Rows were on a six foot spacing. Treatments were arranged in a randomized complete block design with four replications of eight treatments.

Insecticides evaluated included one pyrethroid insecticide (Warrior), two organophosphate insecticides (Diazinon, Dibrom), three neonicotinoid insecticides (Provado, Assail, Venom), and one insecticide with an unknown mode of action (Beleaf). Insecticides, formulations and rates tested were:

<u>Insecticide/formulation</u>	<u>Amount per acre</u>	<u>Pounds AI per acre</u>
Assail 30SG	4.0 oz.	0.075
Provado 1.6F	3.8 oz.	0.0475
Beleaf 50SG	1.73 oz.	0.054
Dibrom 8EC	1 pt.	0.94
Diazinon 4EC	1 pt.	0.5
Warrior 1CS	3.84 oz.	0.03
Venom 20SG	14.32 oz.	0.179

A non-treated control (Check) was included for comparisons. The rate of Venom used in this test was slightly more than double the normal rate because of a calculation error. Insecticide applications were made with a CO<sub>2</sub> pressurized (60 PSI) backpack sprayer calibrated to deliver 30 GPA with three hollow cone nozzles per row (one over-the-top, two on drops). Insecticides were applied on 27 Oct. and 8 Nov., 2005.

On each sample date, five plants were randomly selected in each plot and all apterous (wingless) aphids were counted on one leaf of each plant. Aphid counts were analyzed using 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**

Significant treatment effects were detected on every sample date in this test (Table 1). Warrior generally resulted in increased aphid populations as compared to the check. This is not unexpected with melon/cotton aphid, as pyrethroids frequently 'flair' populations of this species. The organophosphate insecticides (diazinon, Dibrom) also performed as expected, with significant control as compared to the check, but with fairly rapid rebound of populations. Dibrom did provide significantly better control than diazinon the first two sample dates after each application. The neonicotinoid type insecticides (Provado, Venom, Assail) and Beleaf provided the best control of aphids in this study. Beleaf appeared to be slightly slower acting, with significantly higher populations on the first two sample dates after the first application, but all four products performed statistically similar thereafter. It was of some surprise that populations began rebounding in the neonicotinoid and Beleaf treatments by 11 days after the first application, as these treatments frequently are reported to provide longer residual control.

**Table 1. Melon/cotton aphid densities in a small plot efficacy trial on squash, Tifton, Georgia, 2005.**

Treatment	Number of apterous aphids per leaf								
	28 Oct.	31 Oct.	3 Nov.	7 Nov.	9 Nov.	11 Nov.	14 Nov.	17 Nov.	23 Nov.
	1 DAT-1	4 DAT-1	7 DAT-1	11 DAT-1	1 DAT-2	3 DAT-2	6 DAT-2	9 DAT-2	15 DAT-2
Check	48.75 bc	18.45 b	22.35 b	39.50 b	32.50 b	26.50 b	28.00 b	25.45 b	3.70 a
Warrior	67.65 a	45.25 a	30.25 a	54.50 a	56.75 a	48.00 a	64.00 a	59.00 a	3.95 a
Diazinon	40.25 cd	19.05 b	14.40 c	37.75 bc	34.50 b	23.60 b	20.45 bc	18.95 b	2.70 ab
Dibrom	17.40 e	5.30 cd	12.20 c	31.35 bc	13.00 c	9.10 c	13.15 cd	22.60 b	2.10 abc
Provado	30.30 de	1.40 d	2.00 d	24.50 cd	9.60 c	2.10 c	1.60 e	3.80 c	2.75 ab
Beleaf	59.65 ab	9.10 c	5.60 d	14.50 de	12.05 c	3.40 c	1.15 e	3.00 c	1.65 bc
Venom	18.95 e	0.85 d	4.30 d	32.50 bc	11.65 c	2.85 c	2.90 de	8.35 c	2.30 abc
Assail	29.25 de	0.40 d	0.95 d	9.20 e	2.35 c	0.10 c	0.75 e	0.70 c	0.40 c

Numbers within columns followed by the same letter are not significantly different (LSD, P=0.05).