

EFFICACY OF SELECTED INSECTICIDES AND ACARICIDES AGAINST TWO SPOTTED SPIDER MITES ON CANTALOUPE, 2004

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Introduction

Spider mites are becoming a more consistent pest in a variety of vegetables grown in Georgia. In 2004, a spider mite outbreak in watermelons and cantaloupe was the worst in decades (County Agent testimonial). Little local information is available on efficacy of insecticides and acaricides against this pest. Additionally, reports of reduced efficacy of some of our more commonly used acaricides have been received from Florida and south Georgia. This experiment was conducted to evaluate the efficacy of selected acaricides against spider mites in south Georgia.

Materials and Methods

A small plot trail was conducted in a commercial cantaloupe field in Tift County, Georgia. Plots were established along three rows of cantaloupe on the western edge of the field. Experimental plots were three rows wide (6 foot centers) by 25 feet. The test was arranged in a randomized complete block with four replications. Acaricides tested included three products commonly used for mite control in vegetables (Agrimek at 12 oz/ac, Kelthane at 0.5 lb AI/ac, Capture at 6.4 oz/ac), one recently labeled product (Acramite at 0.75 lb/ac), and three products expected to receive registration in the near future (Oberon at 8.5 oz/ac, Zeal at 2 oz/ac, and Savey at 3 oz/ac). Kelthane, Oberon, and Capture were applied at high rates within their rate ranges as these are relatively inexpensive as compared to many acaricides. Agrimek, Acramite, Zeal and Savey were applied at low rates within their rate ranges as these products are, or are expected to be, relatively expensive resulting in grower use at reduced rates. All treatments were tank mixed with Flood (silicone surfactant) at 4 oz/100 gal. A single application of each treatment was applied on 14 May, 2004. Applications were made with a CO₂ pressurized backpack sprayer (60 PSI) in 30 GPA, with 4 hollow cone nozzles per row. The grower inadvertently oversprayed the test prior to the 7 DAT counts with Kelthane (mites at the 7 day count were obviously alive but not healthy).

Mite densities were monitored at 3 and 7 days after treatment. Five leaves were collected from each plot on each sample date. Leaves were selected based on the presence of typical 'infested' leaf appearance (yellow spots). Leaves were taken back to

the laboratory and examined under a dissecting scope. A single 'infested' microscope field of each leaf was selected and all live mites and mite eggs counted (sample area was the size of a dime). Efficacy ratings were conducted on the appearance of the plots at 7 and 13 days after treatment. Each plot was examined and a 1 to 5 rating assigned as follows: 1 = excellent control, little or no 'fresh' damage, 2 = good control, damage scattered through plot, 3 = suppression, obvious damage throughout plot, 4 = damage throughout plot, heavy damage in spots, 5 = heavy damage throughout plot. All data were analyzed with the PROC GLM procedure of PC-SAS. Where significant differences were detected ($P < 0.05$), means were separated with LSD ($P = 0.05$).

Results and Discussion

Mite densities. Mite densities were reduced by all treatments except Savey at 3 days after treatment, as compared to the check. At 7 days after treatment, Agrimek, Acramite, Kelthane, Zeal and Oberon were statistically similar with control ranging from about 75 to 88 percent reduction as compared to the check. At 7 days after treatment, Capture and Savey showed fair to poor control with reductions of about 55 and 32 percent, respectively.

Egg densities. The most interesting data in the egg counts is a consistent increase in egg densities in the Zeal treatment. Eggs in this treatment apparently were not hatching, as mite counts did not increase, but they did not appear dried up nor misshapen (visually, you could not tell anything was wrong with these eggs). This activity will have to be taken into consideration in grower evaluations of this product.

Efficacy Ratings. The efficacy ratings somewhat mirrored the mite counts. At both 7 and 13 days after treatment, all treatments except Savey were rated better than the check. At 13 days after treatment, Agrimek had the best efficacy rating, and all other pesticide treatments except Savey provided statistically similar ratings.

Overall, Agrimek appeared to provide the best control in this test (based on appearance of the plots). Oberon, Zeal, Kelthane, and Acramite provided good to excellent control of spider mites. Zeal showed increased egg production or accumulation as compared to the check (however, this did not appear to influence mite population). Capture provided fair to poor control of mites in this test. Savey provided very poor activity in this test; however, given its mode of action and the relative short duration of the test, this would be expected. Had this test not been oversprayed, more valuable data (particularly on Savey) may have been collected.

Table 1. Two-spotted spider mites densities, Cantaloupe efficacy trial, Tift County, 2004.

Treatment	<u>Mites per field</u>		<u>Eggs per field</u>		<u>Efficacy Rating*</u>	
	3 DAT	7 DAT	3 DAT	7 DAT	7 DAT	13 DAT
Check	52.8 a	43.3 a	14.1 b	9.3 b	4.25 a	4.00 a
Savey	54.3 a	29.2 b	13.0 b	7.7 bc	4.00 ab	3.88 a
Capture	28.2 b	19.6 c	12.1 b	2.6 cd	2.25 cd	2.13 b
Agrimek	27.2 b	11.3 d	10.5 b	2.3 cd	1.50 d	1.25 c
Acramite	25.9 b	10.3 d	7.8 b	1.0 d	2.50 cd	2.38 b
Kelthane	35.6 b	10.2 d	11.8 b	2.4 cd	2.50 cd	2.25 b
Zeal	33.4 b	7.0 d	23.6 a	16.4 a	3.25 abc	2.75 b
Oberon	27.5 b	5.0 d	14.2 b	6.1 bcd	3.00 bc	2.38 b

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