Efficacy of Foliar-Applied Insecticides against Thrips on Processing Tomatoes

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Introduction

Thrips, primarily Western flower thrips, *Frankliniella occidentalis*, are a very common and numerous insect tomatoes. Insecticides have been used to reduce thrips levels when population densities were very high in this crop, but usually, processing tomatoes would not be treated due to direct feeding damage caused by this insect. Within the last three years, a thrips-transmitted virus, *Tomato spotted wilt virus*, has caused substantial losses in tomatoes in Fresno County. Therefore, more attention has been focused on control of these insects.

Methods

In 2007, a study to compare efficacy of insecticides against Western flower thrips *F. occidentalis* was conducted at University of California West Side Research and Extension Center at Five Points, California. On 8 Mar, 'H9997' processing tomato seeds were sown on a Panoche clay loam and irrigated with sprinklers. Treatments are listed in the table below. Each plot consisted of three 66-inch beds 25 feet long. Treated areas were separated by 5 feet between plots within a row. The experimental design was a randomized complete block with four replications. On 1 June, materials were applied in the equivalent of 25 gallons of water per acre with a CO_2-pressurized backpack sprayer at 30 psi. All materials were applied with the adjuvant, Induce 0.25% v/v. A spray boom with three Teejet 8002 flat fan nozzles spaced 18-inches apart was used for all applications. Four, 7 and 11 days after treatment, 10 randomly selected flowers from the center bed of each plot were collected and placed in vials containing 70% denatured ethanol. The number of thrips per vial was recorded. Log transformed data was subjected to analysis of variance. Least Significant Difference on transformed data ($P \leq 0.05$) was use for mean separation. Non-transformed means are presented as number of thrips per 10 flowers.

Results

Four days after treatment, thrips counts were lower than the untreated control in plots treated with Lannate SP, Radiant, and Mustang with Beleaf ($P \leq 0.05$). Counts from plots treated with Assail 30SG, Dimethoate 4EL Mustang, Success and Success with Ecozin Plus were not different than the best performing materials. While there were differences observed among treatments 7 days after the applications were made, none of the treated plots had significantly lower counts than the untreated control. No differences among treatments were observed 11 days after the applications were made.

The best performing insecticides only reduced thrips counts by 38 to 41%, which was only observed in the samples collect 4 days after the treatment was made. While greater initial reduction in thrips population densities would be very desirable, the lack of duration of control or activity of an insecticide does not necessarily negate the potential utility of an insecticide treatment as a component of a TSWV management program.

Trade name (rate of formulated product/acre)	Thrips counts/10 flowers[z]				
	4 DAT[y]		7 DAT		11 DAT[x]
Assail 30SG 4.0 oz……	9.500	abc[w]	10.250	cd	15.250
Dimethoate 4EL 1pt……..	9.007	bc	15.750	ab	13.000
Lannate SP 1 lb…….....	9.203	c	17.250	ab	13.750
Microthiol 6.0 lbs……..	16.500	a	19.750	a	20.750
Movento 5.0 oz……	16.250	a	13.750	abc	19.500
Radiant 6.0 fl oz……	8.750	c	11.000	cd	14.500
Mustang 4.3 fl oz + Beleaf 50SG 2.8 oz……...	9.250	c	12.000	bcd	13.250
Mustang 4.3 fl oz……..	15.203	abc	13.250	bcd	15.500
Success 6.0 fl oz……	13.250	abc	19.558	a	13.250
Success 6.0 fl oz + Ecozin Plus 8.0 oz……..	11.500	abc	9.000	d	12.750
Venom 70DG 4 oz……	14.500	ab	17.000	ab	12.000
Untreated Control……..	14.870	ab	12.589	bcd	13.250

[z] All materials were applied on 1 June with the adjuvant, Induce 0.25% v/v, in the equivalent of 25 gallons of water per acre with a CO_2-pressurized backpack sprayer at 30 psi.

[y] Days after treatment

[x] No significant differences among treatments at 11 days after treatment.

[w] Means followed by the same letter do not differ significantly asd determined by Least Significant Difference on log transformed data ($P \leq 0.05$). Non-transformed means are presented.