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BLUEBERRY: *Vaccinium corymbosum* L.

CITRUS THRIPS CONTROL IN SOUTHERN Highbush BLUEBERRIES IN CALIFORNIA, 2009

David R. Haviland and Stephanie M. Rill

University of California Cooperative Extension, Kern County
1031 South Mount Vernon Ave.
Bakersfield, CA 93307
Phone: (661) 868-6215
Fax: (661) 868-6208
E-mail: dhaviland@ucdavis.edu

Citrus thrips: *Scirtothrips citri* (Moulton)

In the summer of 2009 we conducted a field trial to evaluate the effects of insecticides on citrus thrips in blueberries. Citrus thrips feeding causes curled and discolored leaves, shortened internodes, and decreased fruiting wood quality for the following season. This trial evaluated the effects of insecticides on the numbers of thrips found on the blueberry foliage. A 3.7 acre portion of a mature blueberry field near Richgrove, Tulare Co., CA was divided into 48 plots, each 4 rows (44 ft) by 77 ft long. Each contained two rows (rows 2 and 3) planted to the variety 'Star'. The other two rows (1 and 4) were planted to either the variety 'Santa Fe' or the variety 'Jubilee'. Blueberry bushes of all varieties were approximately 5 ft in height. Plots were organized into a RCBD with 4 blocks of 11 treatments and an untreated check. Treatments were applied at 100 gpa on 19 Aug 2009 using a commercial, electrostatic sprayer equipped with wrap-around booms capable of treating two rows at a time. The effects of insecticide treatments were evaluated by beating the 6 terminal inches of new growth from un-branched shoots onto a black 12-in by 12-in piece of acrylic, and then counting the thrips. Ten beat samples from the center two rows of each plot were collected on 18 Aug (pre-counts), 24 Aug (5 DAT), 28 Aug (9 DAT), 4 Sept (16 DAT), 11 Sept (23 DAT), 18 Sept (30 DAT), and 23 Sept (35 DAT). Average thrips densities per plot were analyzed by ANOVA using transformed data (square root ($x + 0.5$)) with means separated by Fisher's Protected LSD at $P > 0.05$.

All treatments provided numerical reductions in thrips density until 30 DAT and statistically for at least one evaluation date. However, only Delegate and all three rates of Carzol lowered thrips density to lower than 9 thrips per beat through 16 DAT (Table 1). Movento lowered thrips density compared to the untreated check through 30 DAT. Veratran D + Molasses and Beleaf lowered thrips densities at 5 DAT, however, thrips densities increased to over 22.0 thrips per beat until the end of the trial. Thrips densities in the Danitol, Lannate, and Assail plots were between 19.6 and 33.7 thrips per beat throughout the trial, with most of the evaluations not significantly different from the untreated check.

Table 1. Effects of insecticide treatments on the density of citrus thrips in blueberries.

Treatment/ Formulation	Rate Form. Prod/Acre	Mean no. citrus thrips per ten beat samples						
		Pre	5 DAT	9 DAT	16 DAT	23 DAT	30 DAT	35 DAT
Delegate 25 WG ¹	6 oz	17.3a	2.7a	4.3ab	8.9b	19.5b	24.7bc	22.8a
Carzol 90SP ²	0.75 lb	18.3a	1.7a	5.1b	7.5ab	11.8a	17.0a	22.8a
Carzol 90SP ²	1 lb	20.4a	1.7a	2.5ab	7.3ab	12.4a	26.7cd	23.2a
Carzol 90SP ²	1.25 lb	17.0a	1.3a	1.9a	5.9a	10.1a	20.6ab	20.3a
Assail 30SG ²	5.3 oz	20.0a	22.7cd	24.2c	25.6de	28.4c	31.9def	26.7a
Assail 30SG ²	6 oz	20.2a	22.4cd	22.7c	26.2de	28.6c	30.8de	25.9a
Movento 2SC ¹	8 fl oz	22.4a	14.0b	23.3c	16.0c	21.2b	26.9cd	26.9a
Carbine 50WG ¹	2.8 oz	18.6a	15.3bc	24.9cd	22.9d	27.9c	33.7ef	25.5a
Veratran D + Molasses	15 lb 1 gal	19.0a	13.8b	22.9c	22.8d	27.5c	32.5def	24.6a
Danitol 2.4EC ¹	3 fl oz	18.6a	23.8cd	26.7cd	25.2de	28.9c	30.6de	25.5a
Lannate 90SP ¹	1 lb	19.1a	19.6bc	26.7cd	21.4d	29.6c	33.7ef	27.8a
Untreated Check	---	21.5a	29.0d	33.8d	28.6e	33.7c	37.9f	24.9a

¹First Choice 2220 used as a surfactant at 0.25% v/v

²First Choice Break Thru used as a surfactant at 0.25% v/v

Means in a column followed by the same letter are not significantly different

($P > 0.05$, Fisher's protected LSD) after square root ($x + 0.5$) transformation of the data. Untransformed means are shown.