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D1

ALMOND: *Prunus dulcis* (Miller) D. A. Webb

PACIFIC SPIDER MITE CONTROL IN NON-BEARING ALMOND, 2009

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Pacific spider mite: *Tetranychus pacificus* McGregor

During 2009 we conducted a trial in Shafter, CA to evaluate the effects of miticides and insecticides on the density of Pacific spider mites in almonds. Approximately 4.4 acres of one year old trees were divided into 90 plots that each contained 5 trees in a 20 by 22 ft spacing. Plots were organized into a RCBD with 5 blocks of 17 treatments and an untreated check. Treatments were applied to individual trees with a hand gun at a water volume equivalent to 200 gpa on either 17 or 19 Jun. All treatments were combined with 1% 415º Oil. Mite densities were evaluated in each plot prior to treatment on 16 Jun and then 22 Jun (4 DAT), 25 Jun (1 WAT), 2 Jul (2 WAT), 9 Jul (3 WAT), 16 Jul (4 WAT), 23 Jul (5 WAT), 29 Jul (6 WAT), 5 Aug (7 WAT), and 13 Aug (8 WAT). For data collected in pre-counts through 2 WAT, sample size was two random leaves per tree from each of the 5 trees in each plot. From 3 WAT until the end of the trial, sample size was four random leaves per tree from each of the five trees per plot. Leaves were transported to a laboratory where the numbers of motile Pacific spider mites (larvae, nymphs, and adults) per leaf were counted. Average number of mites per leaf were analyzed by ANOVA using transformed data (square root (x + 0.5)) with means separated by LSD ($P = 0.05$).

Spider mite pressure in this trial was moderate. Pre-counts averaged 2.0 mites per leaf across the entire trial (Table 1). Mite densities in the untreated check dropped substantially by 4 DAT, and then increased consistently through the 7 WAT evaluation, and remained high at the 8 WAT final evaluation. All treatments resulted in significant reductions in mite density from the 2 WAT evaluation through 7 WAT, with the exception of 415º oil on the last of these evaluation dates. Acramite and Proclaim reduced spider mite densities to <1 per leaf through 4 WAT and 5 WAT, respectively. After that, mite densities in plots treated with either miticide increased substantially to densities between 3.5 and 8.4 per leaf on 6, 7 and 8 WAT. Plots treated with abamectin (Agri-Mek and Zoro) or milbemectin (Mesa) had mite densities below 0.25 mites per leave through 4WAT, and that remained below 1 mite per leaf (with one minor exception) for evaluations from 5WAT through 8WAT. There were no significant differences in mite densities between different rates of abamectin, different formulations of abamectin, or between abamectin and milbemectin. Mite densities in plots with a combination of bifenazate and abamectin (Prevamite) had mite densities comparable to that of plots treated with abamectin.

Onager treatments kept mite densities <0.15 per leaf through 4 WAT, between 0.7 and 1.3 from 5 to 7 WAT, and then at 3.0 on the final evaluation date.

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Table 1. Effects of miticide treatments on the density of motile spider mites on almond leaves.

Treatment/Forumlation[1]	Rate Form. Prod/acre	Average spider mites per leaf									
		Pre	4DAT	1WAT	2WAT	3WAT	4WAT	5WAT	6WAT	7WAT	8WAT
Acramite 4SC	11 fl oz	0.94a	0.00a	0.02a	0.16a	0.05a	0.24ab	1.44a	7.78d	5.74ef	3.62abcde
Acramite 4SC	15 fl oz	1.24a	0.10a	0.10a	0.00a	0.04a	0.18ab	1.97a	6.19d	4.17def	6.39cde
Prevamite SC	11 fl oz	3.68a	0.02a	0.00a	0.00a	0.01a	0.01a	0.11a	0.38ab	0.92abcd	3.62abcd
Prevamite SC	15 fl oz	3.86a	0.28a	0.00a	0.00a	0.00a	0.02ab	0.05a	0.02a	0.10ab	0.25a
Agri-Mek 0.15EC	10 fl oz	0.24a	0.00a	0.00a	0.00a	0.00a	0.00a	0.02a	0.00a	0.00a	0.00a
Agri-Mek 0.15EC	12 fl oz	1.18a	0.14a	0.04a	0.00a	0.16ab	0.03ab	0.03a	0.12ab	0.17ab	0.06a
Agri-Mek 0.15EC	15 fl oz	3.58a	0.00a	0.00a	0.00a	0.03a	0.01a	0.12a	0.04a	0.26abc	0.57ab
Agri-Mek 0.15EC	20 fl oz	1.92a	0.02a	0.00a	0.00a	0.02a	0.03ab	0.00a	0.13ab	0.01a	0.32a
Zoro 0.15EC	10 fl oz	2.72a	0.44a	0.04a	0.00a	0.06a	0.03ab	0.00a	0.24ab	0.34abc	0.10a
Zoro 0.15EC	20 fl oz	2.10a	0.02a	0.00a	0.00a	0.01a	0.05ab	0.08a	0.22ab	0.42abc	0.10a
Agri-Mek SC	2.57 fl oz	2.60a	0.30a	0.08a	0.00a	0.12a	0.25ab	0.05a	0.92abc	0.32abc	0.63ab
Mesa 0.078EC	25 fl oz	1.22a	0.00a	0.00a	0.00a	0.00a	0.22ab	0.14a	0.55ab	2.32abcde	0.86ab
Mesa 0.078EC	30 fl oz	0.50a	0.34a	0.00a	0.00a	0.02a	0.02ab	0.20a	0.02a	0.08ab	0.20a
Onager 1E	19.2 fl oz	0.06a	0.00a	0.14a	0.00a	0.00a	0.02ab	1.25a	1.04ab	0.68abc	3.00abc
Proclaim 5SG	3.2 oz	1.68a	0.02a	0.02a	0.22a	0.71b	0.52ab	0.52a	3.64bcd	3.54bcde	8.4bcde
Proclaim 5SG	4.8 oz	5.50a	0.32a	0.50a	0.04a	0.09ab	0.43ab	0.48a	4.40bcd	7.26def	4.29abcde
415º oil	1% v/v	1.04a	0.36a	0.74a	0.00a	0.22ab	1.03b	0.85a	5.39cd	13.70fg	12.14e
Untreated Check	---	2.40a	0.08a	0.50a	1.72b	2.59c	4.92c	9.47b	14.68e	17.09g	9.97de

[1] 415º oil used as a surfactant at 1% 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.