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PEACH: *Prunus persica* (L.) Batsch

PACIFIC SPIDER MITE CONTROL IN PEACH, 2006

David R. Haviland

University of California Cooperative Extension, Kern County

1031 South Mount Vernon Ave.

Bakersfield, CA 93907

Phone: (661) 868-6215

Fax: (661) 868-6208

E-mail: dhaviland@ucdavis.edu

Pacific spider mite: *Tetranychus pacificus* (McGregor)

During the early summer of 2006 a trial was conducted near Arvin, Kern Co., CA to determine the effects of miticides on the density of Pacific spider mite in peaches. A total of 150 trees were organized into a RCBD with five blocks of 13 treatments and an untreated ceck. Plot size was one row by two trees and treatments were applied on 5 Jun using a Schaben, gas-powered sprayer equipped with a hand gun at 150 psi. Applications were made at 200 gpa.

Mite populations were evaluated before treatments on 2 June and 3, 7, 14, 21, 30 and 35 DAT on 8 Jun, 12 Jun, 19 Jun, 26 Jun, 5 Jul and 10 Jul. On each evaluation date, 10 leaves were collected at random from the center portion (between the two tree trunks) of each two-tree plot. Leaves were taken to a laboratory and evaluated under magnification for the total number of Pacific spider mite motiles (juveniles + adults) and eggs. Data for each plot were converted into average Pacific spider mite motiles per leaf and average Pacific spider mite eggs per leaf, and were analyzed by ANOVA using transformed data (squareroot (x+0.5)) with means separated by Fisher's Protected LSD at $P > 0.05$.

Table 1 shows the effects of miticide treatments on the number of motile spider mites per leaf. There were no differences in mite density in the precounts or 3 DAT. By 7 DAT, all treatments significantly reduced mite densities, with all other miticides outperforming Ecotrol. By 14 DAT all treatments reduced mite density, though superior control was achieved by Acramite, Agri-Mek, Desperado + Onager, Envidor, Envidor + Oil, Fujimite, the high rate of Kanemite, Spray Oil 415, Onager and Zeal which all had 2.0 or less mites per leaf compared to 14.5 mites per leaf in the untreated check. By 21 DAT the numbers of mites began to increase dramatically, and only Agri-Mek, Desperado + Onager, Envidor, Envidor + Oil, Onager and Zeal maintained mites to 4.0 or less compared to 66.4 for the untreated check. Mite densities in all other p lots were still significantly less than in the untreated check; however, they were also 2 to 22 times higher than in the precounts and would likely need to be retreated at this point under commercial conditions. By 30 DAT mite populations exploded and mite-induced defoliation began to occur in the untreated check. Mite densities in plots treated with Agri-Mek continued to be the lowest mite densities (7.5 mites per leaf), and were statistically equivalent to plots treated with Envidor,

Envidor with Oil, and Onager (which ranged from 23.6 to 36.4 mites per leaf). Acramite, Fujimite, the low rate of Kanemite, and Zeal also maintained significant reductions in mite density (39.7 to 61.5 mites per leaf) compared to the untreated check (118.9 mites per leaf). By 35 DAT trees in all plots began to show high levels of defoliation with the exception of those treated with Agri-Mek.

Table 2 shows the effects of miticide treatments on the density of spider mite eggs. In general, densities of spider mite eggs paralleled the densities of spider mites. There were no significant differences in egg densities of the precounts or 3 DAT. By 7 DAT and 14 DAT all products reduced egg densities to less than 10 per leaf, with less than 2.5 per leaf in plots treated with Acramite, Agri-Mek, Desperado + Onager, Envidor, Envidor + Oil, the high rate of Kanemite, Onager and Zeal. By 21 DAT Agri-Mek, Envidor and Envidor with Oil maintained the mite eggs below 2.5 per leaf. By 30 and 35 DAT there were no significant differences in egg densities among treatments due to a large amount of variation among plots. However, Agri-Mek continued to maintain the lowest densities of spider mite eggs.

Table 1.

Treatment/ Formulation	Rate amt product per acre or v/v	Spider mites per leaf						
		Precounts	3 DAT	7 DAT	14 DAT	21 DAT	30 DAT	35 DAT
Acramite 50WS	1 lb	1.2 a	7.3 a	1.2 a	1.1 abc	9.0 bcd	47.3 bcd	71.8 bc
Agri-Mek 0.15EC + Oil	10 fl oz + 1% v/v	2.9 a	7.7 a	0.7 a	0.1 a	0.2 a	7.5 a	14.8 a
Desperado 54AS	8 pt	3.0 a	4.3 a	0.7 a	3.7 cd	13.4 d	81.4 cde	134.0 d
Desperado 54AS + Onager 1EC	4 pt + 10 fl oz	1.3 a	5.4 a	0.7 a	0.4 ab	4.0 abc	67.5 bcde	99.8 bcd
Ecotrol 10EC	4 pt	1.6 a	3.2 a	4.9 b	5.8 d	45.3 e	88.9 de	38.9 ab
Envidor 240SC	18 fl oz	0.8 a	4.0 a	0.6 a	1.7 abc	2.8 ab	36.4 abc	53.0 abc
Envidor 240SC + Oil	18 fl oz + 1% v/v	1.5 a	0.7 a	0.1 a	0.3 a	0.3 a	23.6 ab	60.3 bc

Fujimite 5EC	2 pt	3.3 a	7.1 a	1.0 a	1.5 abc	8.2 bcd	39.7 bcd	40.8 ab
Kanemite 15SC	21 fl oz	0.4 a	8.2 a	1.1 a	2.4 bcd	12.3 cd	61.5 bcd	43.0 ab
Kanemite 15SC	31 fl oz	1.3 a	3.6 a	1.6 a	0.8 ab	13.6 d	77.2 cde	90.8 bcd
Spray Oil 415	2% v/v	3.6 a	2.5 a	1.1 a	2.0 abc	22.6 d	61.0 bcde	96.7 bcd
Onager 1EC	20 fl oz	1.0 a	0.9 a	0.2 a	0.2 a	1.7 ab	30.1 ab	92.8 bcd
Zeal 72 WDG	3 oz	1.9 a	0.5 a	0.8 a	0.7 ab	2.3 ab	43.1 bcd	94.4 bcd
Untreated check		3.9 a	9.8 a	8.7 c	14.5 e	66.4 f	118.9 e	104.6 cd
F		1.02	1.83	7.12	8.80	14.19	3.25	2.49
P		0.4483	0.0626	<0.0001	<0.0001	<0.0001	0.0012	0.0100

Means in a column followed by the same letter are not significantly different ($P > 0.5$, Fisher's protected LSD) after square root (x + 0.5) transformation of the data. Data are reported as original numbers.

Table 2.

Treatment/ Formulation	Rate amt product per acre or v/v	Spider mite eggs per leaf						
		Precounts	3 DAT	7 DAT	14 DAT	21 DAT	30 DAT	35 DAT
Acramite 50WS	1 lb	1.2 a	8.0 a	0.7 abcd	2.3 abc	10.5 bc	38.2 a	32.3 bcde
Agri-Mek 0.15EC	10 fl oz + 1%	1.3 a	7.6 a	0.1 ab	0.1 a	0.1 a	2.9 a	3.7 a
Desperado 54AS	8 pt	3.1 a	3.6 a	0.8 abcd	5.0 cd	10.3 bc	37.7 a	43.3 de
Desperado 54AS	4 pt + 10 fl oz	2.1 a	11.1 a	0.5 abc	1.0 abc	4.6 ab	53.6 a	67.4 e
Ecotrol 10EC	4 pt	1.6 a	4.8 a	1.5 cd	8.7 d	32.5 d	25.7 a	10.2 ab
Envidor 240SC	18 fl oz	1.6 a	7.8 a	0.8 abcd	1.7 abc	2.4 ab	33.7 a	28.7 abcde
Envidor 240SC	18 fl oz + 1%	0.3 a	0.8 a	0.1 a	0.9 abc	0.4 a	40.2 a	41.3 cde
Fujimite 5EC	2 pt	4.1 a	8.6 a	0.9 abcd	3.5 abcd	6.3 ab	16.7 a	12.6 abc
Kanemite 15SC	21 fl oz	0.6 a	6.4 a	0.1 a	4.2 bcd	9.9 bc	22.8 a	19.2 abcd
Kanemite 15SC	31 fl oz	1.3 a	2.8 a	0.8 abcd	2.0 abc	19.3 cd	53.0 a	43.1 bcde
Spray Oil 415	2% v/v	3.3 a	3.2 a	2.0 e	5.0 bcd	28.3 cd	45.3 a	33.8 bcde
Onager 1EC	20 fl oz	1.8 a	2.7 a	0.9 abcd	0.3 a	3.9 ab	35.1 a	60.3 e
Zeal 72 WDG	3 oz	1.8 a	6.1 a	1.3 bcd	0.9 ab	5.6 ab	55.8 a	61.8 e
Untreated check		2.5 a	0.8 a	3.4 e	22.7 e	42.1 d	52.2 a	23.2 abcde

F	1.09	1.19	2.99	6.78	6.39	1.21	2.42
P	0.3859	0.3151	0.0025	<0.0001	<0.0001	0.2987	0.0123

Means in a column followed by the same letter are not significantly different ($P > 0.5$, Fisher's protected LSD) after square root (x + 0.5) transformation of the data. Data are reported as original numbers.

Part II. Materials Tested for Arthropod Management

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Acramite 50WS

1-methylethyl 2-(4-methoxy[1,1′-biphenyl]-3-yl)hydrazinecarboxylate

bifenazate

Crompton/Uniroyal Chemical, World Headquarters, 199 Benson Road, Middlebury, CT 06749

Agri-Mek 0.15EC

mixture of avermectins

abamectin

Syngenta Crop Protection, Inc., P.O. Box 18300, Greensboro, NC 27419

Desperado 54AS

mixture of sulfur and 2-tert-butyl-5(4-tert-butylbenzylthio)-4-chloropyridazin-3(2H)-one

mixture of sulfur and pyridaben

Wilbur Ellis, P.O. Box 16458, Fresno, CA 93755

Ecotrol 10EC

Mixture of a blend of rosemary oil extracts and a blend of peppermint oil extracts

EcoSMART Technologies, Inc., 318 Seaboard Lane, Suite 208, Franklin, TN 37067

Envidor 240SC

3-(2,4-dichlorophenyl)-2-oxo-1-oxaspiro[4.5]dec-3-en-4-yl 2,3-dimethylbutyrate

spirodiclofen

Bayer CropScience, 2T.W. Alexander Drive, P.O. Box 12014, Research Triangele Park, NC 27709

Fujimite 5EC

tert-butyl (E)-α-(1,3-dimethyl-5-phenoxypyrazol-4-ylmethyleneaminoxy)-p-toluate

fenpyroximate

Nichino America Inc., 1550 New Linden Hill Road, Suite 501, Wilmington, Delaware 19808, USA

Kanemite 15SC

2-(acetyloxy)-3-dodecyl-1,4-naphthalenedione

Acequinocyl

Arvesta Corporation, 100 First Street, Suite 1700, San Francisco, CA 94105

Onager 1EC

Rel-(4*R*,5*R*)-5-(4chlorophenyl)-N-cyclohexyl-4-methyl-2-oxo-3-thiazolidinecarboxamide

Hexythiazox

Gowan Company Ag Chemicals

12300 E. County 8th Street, Yuma, AZ 85364

Spray Oil 415

Paraffinic oil blend

Petrolium oil

Loveland Products, Inc. P.O. Box 1286, Greeley, CO 80632

Zeal 72WDG

2-(2,6-difluorophenyl)-4-[4-(1,1-dimethylethyl)-2-ethoxyphenyl]-4,5-dihydrooxazole

etoxazole

Valent USA Corporation, P.O. Box 8025, 1600 Riviera Avenue, Suite 200, Walnut Creek, CA 94596