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

DORMANT SEASON APPLICATIONS OF INSECTICIDES FOR THE MEALYBUG, *FERRISIA GILLI*, IN ALMOND, 2004-05

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Mealybug: *Ferrisia gilli* Gullan

Ferrisia gilli is a newly described species of mealybug that has become established in pistachio and almond groves in California. During late 2004 observations were made that feeding from severe infestations of the mealybug in almond could be sufficient to cause complete defoliation of the tree. As a result, this trial was conducted during the winter of 2004-2005 to determine the effects of dormant insecticide treatments on mealybug density the following year. A total of 63 of the most heavily infested almond trees were chosen from an area of approximately 2.5 acre in size. Trees were organized into a CRD with nine replicates of five treatments and an untreated check. Treatments were applied on 17 Dec 2004 using a John Bean sprayer equipped with a hand gun applied at 150 psi. Applications were made at 200 gpa with the hand gun. The effects of insecticide treatments on mealybug populations were measured using bark samples from Dec 2004 through Mar 2005 and then spur samples in Apr and May. Bark samples were taken 1 week after treatment (WAT) (23 Dec), 4 WAT (12 Jan), 7 WAT (3 Feb), and 12 WAT (8 Mar) by excising a 3-inch diameter core sample of bark in an area of each tree trunk where aggregations of mealybugs were present. Cores were brought back to a laboratory and the number of live mealybugs was recorded. Spur samples were taken by evaluating 30 randomly collected spurs per tree and analyzed for the number of live mealybugs present. These samples were collected on 7 and 12 Apr, and on 15 May and are reported as mealybugs per 30 spurs as well as percentage spurs infested. Data from were analyzed by ANOVA using transformed data (square root ($x+0.5$)) with means separated by Fisher's Protected LSD at $P \leq 0.05$.

Table 1 shows the effects of treatments on the density of mealybugs on the bark. One WAT there were no significant differences in mealybug densities. At 4 and 7 WAT, the Lorsban+oil treatment was the only treatment to show a reduction compared to the untreated control. At 12 WAT there were no significant differences among treatments, though trees treated with Lorsban still had the lowest pest density. Table 2 shows the effects of the dormant insecticide applications on percentage of spurs infested and total mealybugs per 30 spurs in Apr and May. Centaur is an insect growth regulator that kills mealybugs by inhibiting their ability to molt. Since mealybugs did not molt between Dec and Mar, the effects of Centaur were not seen on the bark. However, spur samples in Apr and May, once overwintering mealybugs had molted, showed excellent mealybug control by Centaur. Lorsban also resulted in significant reductions in mealybugs during the Apr evaluation. By May there were no differences among any of the treatments.

Table 1.

Treatment/ Formulation	Rate amt product/acre	Mean no. mealybugs per 3 in diameter circle of bark			
		1 WAT	4 WAT	7 WAT	12 WAT
Asana XL 0.66EC + NR-415 Oil	16 fl oz + 1.5% v/v	24.3a	35.3b	8.3b	2.1a
Centaur 70WP + NR-415 Oil	64 oz + 1.5% v/v	27.8a	8.2ab	4.6ab	3.7a
Lorsban 4E + NR-415 Oil	4 pt + 1.5% v/v	16.5a	0.1a	0.1a	0.4a
Seize 35WP + NR-415 Oil	16 fl oz + 1.5% v/v	63.3a	31.3b	14.4b	2.3a
NR-415 Oil	1.5% v/v	63.3a	13.8b	11.3b	5.0a
Untreated check	--	62.0a	12.3b	22.0b	2.3a

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. Untransformed means are shown.

Table 2.

Treatment/ formulation	Rate amt product/acre	% spurs infested		Total mealybugs/30 spurs	
		Apr	May	Apr	May
Asana XL 0.66EC + NR415 Oil	16 fl oz + 1.5% v/v	4.8abc	10.0a	1.7ab	3.7a
Centaur 70WP + NR415 Oil	64 oz + 1.5% v/v	0.6a	0.6a	0.2a	0.1a
Lorsban 4E + NR415 Oil	4 pt + 1.5% v/v	3.0ab	2.8a	1.1ab	0.7a
Seize 35WP + NR415 Oil	16 fl oz + 1.5% v/v	8.9bcd	10.6a	4.0bc	4.0a
NR-415 Oil	1.5% v/v	13.3d	17.8a	7.4c	6.8a
Untreated check	--	11.9cd	9.4a	8.9c	5.7a

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. Untransformed means are shown.