

(D20)

PISTACHIO: *Pistacia vera* L.

EFFICACY OF INSECTICIDES AGAINST THE MEALYBUG, *FERRISIA GILLI*, IN PISTACHIO, 2005

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Mealybug: *Ferrisia gilli* Gullan

Ferrisia gilli is a newly described species of mealybug that has become established and is quickly spreading throughout pistachio-growing regions of California. *F. gilli* reproduces quickly and its affinity for feeding on pistachio hulls late in the season has negative effects on nut quality. During the spring of 2005, an insecticide trial was conducted in Tipton, Tulare Co. CA to determine the effects of experimental and registered insecticides against this new pest. A total of 45 trees were organized into a CR design trial with five replications of eight treatments and an untreated check. Treatments were applied on 2 Jun 2005 using a Schaben sprayer equipped with a hand gun at 150 psi. Applications were made at 200 gpa. This treatment timing coincided with the emergence of the first in-season generation of crawlers that were being produced by adult females that had overwintered as nymphs. Plots were sampled prior to application (24 May), 2 weeks after treatment (WAT) (15 Jun), 4 WAT (28 Jun), 8 WAT (27 Jul), and 13 WAT (9 Sep). On each sampling date, a total of 10 clusters per tree (20 clusters on the 13 WAT evaluation) were visually inspected for the total number of mealybugs per cluster. Clusters were chosen at random from those that could be reached in the bottom 7 feet of the tree. Data were converted into mean number of mealybugs per cluster and percentage of clusters infested per plot. Data were transformed using square root ($x + 0.5$) and analyzed by ANOVA with means separated by Fisher's Protected LSD at $P \leq 0.05$.

Table 1 shows the effects of insecticide treatments on the mean no. of mealybugs per cluster. There were no significant differences in the numbers of mealybugs per cluster in the precounts or 2 WAT. Beginning with 2 WAT there were two groupings of product efficacy for the remaining evaluations. The first group, which resulted in the lowest mealybug populations on all evaluation dates included Assail, the two rates of Movento, and Centaur. At 8 WAT the number of crawlers per cluster in plots treated with these products ranged from 0 to 17 mealybug crawlers per cluster compared to 323 per cluster for the untreated control. The second grouping of products included Imidan, the two formulations of Provado, and Sevin. In general, applications of these products produced significant reductions of approximately one third to one half of the mealybugs found in the untreated control. This trend continued throughout all post-treatment evaluation dates. There were no significant differences among the four treatments at any evaluation date except for the 8 WAT evaluations of crawlers where the mealybug populations for Imidan were significantly lower than those of the other three. Table 2 shows the effects of insecticide treatments on the percentage of clusters with mealybugs present. The results were very similar to those previously described. Assail, the two rates Movento, and Centaur produced the lowest percentages of mealybug-infested clusters on all evaluation dates. Imidan, both formulations of Provado, and Sevin all reduced the percentage of infested clusters compared to the untreated check, but in general the cluster infestations were significantly higher than the four best treatments.

Table 1.

Treatment/ formulation	Rate amt product/acre	Mean no. mealybugs per cluster					
		Precounts (adults)	2 WAT (nymphs)	4 WAT (nymphs)	8 WAT (adults)	8 WAT (crawlers)	13 WAT (mixed)
Assail 30SG	8 oz	0.6a	0.1a	0.6abc	0.2ab	17a	0.5a
BYI 8330 150OD	8 fl oz	0.8a	0.4a	0.0a	0.0ab	4a	0.3a
BYI 8330 150OD	12 fl oz	0.6a	0.1a	0.0a	0.0a	0a	0.7a
Centaur 7WP	2.14 lb	0.4a	0.0a	0.1ab	0.0ab	0a	0.6a
Imidan 70W	5 lb	0.8a	1.8a	1.7bc	0.6ab	64a	7.9b
Provado 1.6F	8 fl oz	0.9a	1.7a	1.4abc	1.0ab	181b	8.7b
Provado 70WG	2.25 oz	0.8a	1.3a	2.5c	0.8ab	120b	10.6bc
Sevin XLR Plus	5 qt	0.7a	1.2a	1.8c	1.0b	125b	8.4bc
Untreated check	--	0.5a	4.1a	5.0d	2.8c	323c	17.3c

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	Percentage clusters with mealybugs					
		Precounts (adults)	2 WAT (nymphs)	4 WAT (nymphs)	8 WAT (adults)	8 WAT (crawlers)	13 WAT (mixed)
Assail 30SG	8 oz	24a	5a	18ab	10abc	8abc	10a
BYI 8330 150OD	8 fl oz	46a	13a	2a	4ab	2ab	10a
BYI 8330 150OD	12 fl oz	32a	5ab	2a	0a	0a	5a
Centaur 7WP	2.14 lb	28a	3a	4a	2ab	0a	1a
Imidan 70W	5 lb	38a	35bc	38bcd	34de	36cd	41b
Provado 1.6F	8 fl oz	36a	23abc	38bc	24bcd	16abc	42b
Provado 70WG	2.25 oz	42a	18abc	42bc	26abcd	26bc	50b
Sevin XLR Plus	5 qt	28a	38bc	54cd	32cd	32c	61bc
Untreated check	--	34a	45c	80d	70e	62d	84c

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.