Project No. 87-E1 - Insect and Mite Research
Chemical Control of Ants

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Objectives: Identify additional effective insecticides for ant control in almonds, particularly materials which can be applied to berms in flood irrigated orchards.

Interpretive Summary: Diazinon 14G is the only currently registered pesticide for controlling ants in almond orchards. Research shows it is effective in sprinkler irrigated orchards but that it must be watered in. In flood irrigated orchards, ants move their nest openings up onto the berms after the first few irrigations to escape the water. Accordingly, granular insecticides have limited success in controlling the ants in this situation.

This trial was undertaken to detemine if a liquid formulation of insecticide applied to the berms will adequately control the ant population and reduce kernel damage to grounded almonds at harvest. The trial compared two and four pounds active ingredient (a.i.) of Lorsban 4E applied in either 40 or 200 gallons of water. Treatments were made either in late spring or mid-summer. These liquid treatments were compared with diazinon granules applied to the middles and also with a combined treatment of the granules and liquid. The treatments are listed in Table 1.

Nests were examined for activity (ants entering and leaving the nest hole). The active nests were counted and marked with stakes just prior to treatment. Nests were considered separate if the holes were about two feet or more apart. The treatments were evaluated after application on the dates shown. Previously marked nests that were still active and any new active nests were counted and the counts computed as a percentage of the pretreatment counts. This was done to account for the high degree of variability in nest numbers throughout the trial.

As it turned out, the nest activity ratings were the only evaluation of the treatments to be obtained. The number of nests increased significantly during the interval between the treatments. There were approximately 14 active nests per plot prior to the May treatments and nearly 22.5 nests per plot just before the July applications. The August 12 activity rating is probably the most important figure, being the closest to harvest. The results show that nearly all treatments are better than nothing, and that the July treatments had lower amounts of activity close to harvest than the May applications. The difference in the rate of insecticide seemed to have more effect on activity

than the amount of water in the May application, but the July treatments indicated the opposite. The granular diazinon applied only to the middles also reduced the activity compared to the untreated plots.

This trial shows that liquid sprays such as Lorsban applied to berms will significantly reduce ant activity; however, it was not possible to determine reduction in damage to grounded almonds at harvest. As planned, follow-up studies will do this. Also this year a residue trial was conducted in order to register this use of Lorsban.

Table 1. Chemical Control of Ants: Treatments and Results. Fresno County 1987.

Treatments	Rating of Activity* June 3 % Active**	August 5 % Active	August 12 % Active
Applied May 25, 1987			
Lorsban 4E @ 2 lb a.i. in 40 gal. water on berm	13.8 a	98.3 d	72.4 de
Lorsban 4E @ 2 lb a.i. in 200 gal. water on berm	12.1 a	62.5 cd	59.4 cde
Lorsban 4E @ 4 lb a.i. in 40 gal. water on berm	15.7 a	29.6 abc	24.1 abcd
Lorsban 4E @ 4 lb a.i. in 200 gal. water on berm	7.8 a	44.2 bcd	46.2 bcd
Applied July 31, 1987			
Lorsban 4E @ 2 lb a.i. in 40 gal. water on berm	---	11.1 abc	37.5 abcd
Lorsban 4E @ 2 lb a.i. in 200 gal. water on berm	---	3.1 a	10.2 ab
Lorsban 4E @ 4 lb a.i. in 40 gal. water on berm	---	14.0 abc	12.8 ab
Lorsban 4E @ 4 lb a.i. in 200 gal. water on berm	---	7.6 ab	5.4 a
Diazinon 14 G @ 2.8 lb a.i. to middles	---	31.2 abc	28.0 abcd
Lorsban 4E @ 2 lb a.i. in 200 gal. water on berm + Diazinon 14 G @ 2.8 a.i. in middle	---	13.6 abc	13.6 ab
Untreated Check	49.1 b	118.8 e	83.3 e

* Ratings are the percent of nests showing activity on sample data compared to pretreatment activity.

** Numbers followed by the same letter(s) are not significantly different at the 5% level (Duncan multiple range test).

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