4. New Products

EFFICACY OF IGR INSECTICIDES FOR CONTROL OF SAN JOSE SCALE

R. E. Rice and R. A. Jones
University of California
Kearney Agricultural Center
Parlier, CA 93648

In addition to the evaluations of dilute and concentrate dormant spray applications for scale control, two new unregistered insect growth regulators (IGRs) were evaluated for efficacy on San Jose scale in nectarines and plums.

The IGR insecticide Applaud (buprofezin; AgrEvo USA) was evaluated in a trial similar to the organophosphate insecticide spray trial . Buprofezin 70 WP was applied to Fantasia nectarines at 1.0 lb and 1.5 lb a.i./acre in 400 gallons of spray using an Air-O-Fan GB-34, 500 gallon sprayer. Both buprofezin treatments were compared to an untreated check in a five replication randomized complete block design; they were applied on April 22, 1996 at the beginning of emergence of the first crawler generation. Evaluation of infested fruit at harvest (July 10, 1996) showed infested fruit levels in both buprofezin treatments to be significantly better than the untreated check (Table 1).

Table 1. Efficacy of buprofezin (Applaud®) for control of San Jose scale on Fantasia nectarines. Kearney Agricultural Center, Parlier, Calif.

Treatment	% Infested Fruit[2]	Average Number Crawlers/Tape	
		1st Generation	2nd Generation
Check	32.3 a	24.4 a	40.6 a
Applaud 1.0 lb. a.i.[1]	16.4 b	80.0 a	5.0 b
Applaud 1.5 lb. a.i.	12.1 b	64.4 a	9.4 b

[1] Applied April 22, 1996 at 400 gpa.

[2] 1,000 fruit per treatment, harvested July 10, 1996. Values in columns followed by the same letter are not significantly different at $P = 0.05$, Fishers Protected LSD.

In addition to the infested fruit data, crawler populations in the buprofezin and untreated check treatments were evaluated using the sticky tape traps as described for the dormant diazinon treatments. Counts of San Jose scale crawlers on sticky tapes in both buprofezin treatments were higher than the check in the first (treated) generation, but were significantly reduced compared to the untreated check in the second SJS generation (first generation post treatment). This illustrates the delayed effect of IGRs compared to conventional insecticides that have been used in the past. In this trial, the treated population (first generation) continued to emerge and was

trapped on tapes or settled on fruit in May. As a result of the treatment, however, a high proportion of the first generation failed to mature to adults, resulting in a greatly reduced second generation.

The results of both the fruit infestation data and sticky tape crawler counts showed that buprofezin provided good control of San Jose scale in the generation following treatment, and indicate that the IGR insecticides may be strong candidates for replacement of organophosphate insecticides in scale control programs.

A second field trial with another new IGR, "Arbor" (CGA 59205; Ciba-Geigy Corporation) was applied at 1.05 oz a.i./acre by hand gun in a randomized complete block trial to Friar plums on February 1, 1996 as a dormant spray with oil and on April 22, 1996 to the first generation of scale crawlers. A standard treatment of diazinon 50 W at 2 lb a.i. and 6 gallons of Volck oil per acre was included in this trial for comparison to the Arbor treatments and an untreated check. On July 23 harvest samples comprised of 100 fruit per replication (700 fruit per treatment) were examined for presence of San Jose scale. The results of the fruit evaluation (Table 2) showed that both treatments with Arbor and the diazinon and oil treatment had significantly lowered the population of San Jose scale compared to the untreated check. Collections of scale crawlers on sticky tapes in this trial also showed significant reductions of scale crawlers in each of the first two generations of the Arbor + oil and diazinon + oil (both dormant treatments) compared to the untreated check (Table 2). The post-bloom Arbor treatment without oil had high numbers of crawlers and was not significantly different from the untreated check. In the second generation, however, crawler populations in this Arbor treatment were significantly lower than the check, similar to the effect observed in the other IGR (Applaud) trial.

Table 2. Efficacy of CGA 59205 (Arbor®) for control of San Jose scale in Friar plums. Kearney Agricultural Center, Parlier, Calif.

Treatment	% Infested Fruit[2]	Average Number Crawlers/Tape	
		1st Generation	2nd Generation
Check	39.0 a	450.3 a	327.4 a
Diazinon[1]	10.1 b	8.0 b	24.1 b
Arbor, dormant	9.7 b	4.0 b	10.0 b
Arbor, April	18.0 b	431.3 a	114.7 b

[1] Hand gun sprays at 400 gpa.

[2] 700 fruit per treatment, harvested July 23, 1996. Values in columns followed by the same letter are not significantly different at $P = 0.05$, Fishers Protected LSD.