

Pesticide Resistance

Control of San Jose Scale With IGR Insecticides

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Dormant and first crawler (May) sprays using buprofezin (Applaud) and pyriproxyfen (Esteem, Knack) for control of San Jose scale were applied to several cultivars of plums at the Kearney Agricultural Center. All dormant applications were applied in late January at 400 gal/acre using an Air-O-Fan GB-34 sprayer driven at 1.5 mph. The application timed to crawler emergence was applied on May 4, 1998, without oil. Efficacy of the various treatments was measured by examining a total of 900-1000 fruit/treatment with 4-5 replicates in each treatment. Statistical analyses in each trial were carried out using Fisher's Protected LSD analysis.

The results of these trials with insect growth regulators (IGRs) showed control superior to organophosphate applications with diazinon or Lorsban (Table 1). The two organophosphate insecticides showed control statistically better than the untreated check on Black Amber and Queen Rosa plums. Diazinon was also better than the untreated check on Royal Diamond and Rosemary plums. Esteem and Applaud provided control statistically better than either of the two organophosphate insecticides on three of the four plum cultivars. On the Queen Rosa cultivar harvested in early July, these two IGRs were not statistically better than diazinon or Lorsban. However, the percent infested fruit with both materials was numerically superior to the organophosphates.

The comparison of diazinon to Applaud applied as a dormant spray on January 27 and to Applaud applied without oil on May 4 (Table 2) showed no significant difference on Black Amber plums between the dormant diazinon and May spray timing with Applaud. The dormant application of Applaud, however, was significantly better than the diazinon or May Applaud treatment. On the Queen Rosa cultivar harvested in early July, the May spray of Applaud was not statistically different than the untreated check or the dormant diazinon treatment. The dormant Applaud treatment was numerically superior to the other treatments but was not statistically better than the dormant diazinon application.

These field trials at the Kearney Agricultural Center showed considerable promise for control of San Jose scale that may be resistant to organophosphate insecticides. The efficacy data from 1998 trials is consistent with the results of the 1997 trials. In addition, earlier trials with Applaud had confirmed that dormant sprays would be the better timing for using these materials for control of scale and that high volume (400 gal or more) applications are more efficacious than concentrate applications at 100 gal/acre.

Table 1. Efficacy of dormant sprays¹ using diazinon, Lorsban, buprofezin (Applaud) and pyriproxyfen (Esteem) for control of San Jose scale.

Treatment	Rate a.i./acre ³	% Infested fruit ²			
		Black Amber 6/28/98	Queen Rosa 7/6/98	Royal Diamond 7/29/98	Rosemary 8/10/98
Check	--	31.5 a	26.8 a	42.6 a	45.7 a
Diazinon 50WP	2.0 lb	12.8 b	6.2 b	23.6 b	38.8 b
Lorsban 4EC	2.0 lb	10.8 b	8.5 b	--	--
Esteem 2.9EC	0.1 lb	3.0 c	1.9 b	6.9 c	13.1 c
Applaud 70WP	1.5 lb	0.8 c	0.8 b	1.7 c	1.9 c

¹Applaud applied 1/22/98; all other treatments on 1/27/98 at 400 gpa; Air-O-Fan GB-34 sprayer.

²Four-six replicates; 900-1000 fruit per treatment; Fisher Protected LSD.

³6.0 gal Volck oil per acre in all treatments.

Table 2. Efficacy of dormant vs. first crawler sprays using buprofezin (Applaud) for control of San Jose scale on plums¹.

Treatment	Rate a.i./acre ³	Application date	Total percent infested fruit ²	
			Black Amber 6/28/98	Queen Rosa 7/6/98
Check	--	--	31.5 a	26.8 a
Diazinon 50WP	2.0 lb	1/27/98 ³	12.8 b	6.2 bc
Applaud 70WP	1.5 lb	5/4/98	13.9 b	13.2 b
Applaud 70WP	1.5 lb	1/27/98 ³	0.8 c	0.8 c

¹400 gpa applied with Air-O-Fan GB-34 sprayer.

²Four replicates; total 1000 fruit per treatment; Fisher Protected LSD.

³Dormant treatments with 6.0 gal Volck oil per acre.