

INSECTICIDES AND TIMING SPRAYS FOR CONTROL OF SAN JOSE SCALE

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SCALE INSECTS are among the most serious pests known to agriculture, and San Jose scale, *Quadraspidotus perniciosus* (Comstock), ranks as the primary scale pest on deciduous fruit and nut trees. It is distributed worldwide and has been collected from approximately 700 different hosts. Unlike many insect pests, San Jose scale has the ability to kill all or parts of infested trees, in addition to making infested fruit unmarketable.

Field trials were conducted in the San Joaquin Valley in 1970-71 to evaluate the effectiveness of three insecticides for control of San Jose scale. Two new materials were compared with both untreated checks and a standard insecticide—all three in combination with various formulations of supreme-type spray oils.

The two experimental insecticides (Supracide and chlordimeform) were tested alone and in combination with oil, as fall, dormant and May sprays on Casseleman plums in Fresno County. The standard chemical (Diazinon), was evaluated for scale control in combination with four different formulations of oils.

The plot design was a randomized complete block with four single tree replicates per treatment. Materials were applied with a handgun at 300 psi, using 5 gals

of spray per tree. Treatments were applied September 29, 1970 (fall), January 21, 1971 (dormant), and May 24, 1971 (May treatment).

All treatments were evaluated and compared with the untreated check plot on August 31, 1971. Because the fruit in the orchard was not commercially harvested, evaluations were made by calculating the percentage of infested fruit in 25 plums picked at random from each replicate.

Results of this trial (table 1) indicated that Supracide, alone or in combination with oil, gave good reduction of scale populations regardless of time of treatment. Chlordimeform did not provide satisfactory control. All four oil formulations at 2 gal per 100 gal water, in combination with Diazinon, gave good control when applied as dormant treatments, whereas the same sprays at lower rates did not perform as well when applied in September. There were insufficient trees available for testing the Diazinon-oil combinations as May sprays.

These data indicate that dormant sprays, using a suitable organophosphorous insecticide in combination with oil, were generally more effective than fall treatments for control of San Jose scale. Additional benefits from the dormant treatment are control of overwintering eggs of mites and aphids, and peach twig borer larvae.

Treatment	Formulation	Rate per 100 gals H ₂ O	% Infested Fruit		
			Fall* Spray	Dormant Spray	May Spray
Supracide	2 E	1 qt.	12	4	2
Supra + Volck Supreme oil**	2 E	1 qt.	9	10	4
Chlordimeform	95 SP	0.5 lb.	59	62	86
Chlordimeform + Volck oil	95 SP	0.5 lb.	29	16	47
Diazinon + Spraytex NR oil	50 W	1.0 lb.	9	8	..
Diazinon + Orchex 796 oil	50 W	1.0 lb.	16	6	..
Diazinon + PGSO-2 oil	50 W	1.0 lb.	17	3	..
Diazinon + Volck Supreme oil	50 W	1.0 lb.	17	11	11
Check	78†	78	78

* Fall, dormant, and May treatments applied Sept. 29, 1970; Jan. 21, 1971; and May 24, 1971, respectively.

** Oils combined with fall and May sprays were applied at 1 gal. per 100 gals. water; and at 2 gals. per 100 gals. water for the dormant spray.

† The same untreated check was used for comparison to all other treatments.

May sprays can be as effective as dormant sprays for scale control, but must be timed much more accurately to coincide with scale crawler activity. The critical timing required for May sprays is often difficult to achieve, especially when spray schedules must be coordinated with other activities in the orchard during this time of the year. There is also evidence that some foliar sprays tend to create other insect or mite problems by killing beneficial predators and parasites, while dormant sprays usually do not result in such upsets.

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