Evaluation of Insecticides Against San Jose Scale, 2016

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San Jose scale (SJS): *Quadraspidiotus perniciosus* (Comstock)

A field trial was arranged consisting of several insecticides with both early season and mid season applications targeting San Jose scale (SJS). Some treatments started at bud stage 'tight cluster' or 'pink', and others did not have applications until the emergence of the summer broods. A full list of materials, rates and timings are in Table 1. Treatments, including an untreated check, were replicated 3 times in 4-tree blocks and arranged in a RCB design. Cultivars within the treatment blocks were 'Empire', 'Cortland', 'Jonagold', and 'Delicious'. On-tree fruit samples were also taken after the 1st and 2nd summer generations had emerged on 1 Jul and 4 Aug, respectively. Harvest samples were taken on 14 -16 Sep by picking and destructive sampling 100 fruit in each replicate. All data was transformed and subjected to an AOV with JMP. Means were separated with Student's t test.

Unfortunately, SJS populations have severely declined in the research orchard. It is theorized that severe weather extremes in the past several seasons have affected the overwintering survival of this pest. All data taken for SJS fruit damage during the growing season were not statistically different from another, nor did it exceed levels that would be considered to be commercially threatening, making determinations of efficacy difficult. Harvest data indicates that a very low level of SJS was present throughout the test orchard, and there seems to be some positive effect of control from all treatments. However, damage is still somewhat low in the untreated plot in comparison to that of past seasons. (77.7%-2013, 60.7%-2014, 16.3%-2015, 8.3%-2016) Phytotoxicity was not observed in any of the treated plots. This research was supported in part by industry gifts(s) of pesticides and research funding.

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Table 1.

Trt	Material/formulation	Rate amt/acre	Application Timing	Tight Cluster	Pink	Petal Fall	1C	2C	3C	4C	5C	6C
1	Venerate XC	32.0 oz	2 apps for each summer gen.					14 Jun-21 Jun		26 Jul-1 Aug		
2	Venerate XC	64.0 oz	2 apps for each summer gen.					14 Jun-21 Jun		26 Jul-1 Aug		
3	Grandevo WDG	16.0 oz	2 apps for each summer gen.					14 Jun-21 Jun		26 Jul-1 Aug		
4	Grandevo WDG	16.0 oz	2 apps for each summer gen.					14 Jun-21 Jun		26 Jul-1 Aug		
5	Sivanto Prime SL+ LI-700	14.0 oz 0.125%	pink		3 May							
6	Sivanto Prime SL+ LI-700 Movento 240SC+ Li-700	14.0 oz 0.125% 9.0 oz 0.125%	pink 1st cover		3 May		10 Jun					
7	Lorsban Advanced EC	64.0 oz	tight cluster	27 Apr								
8	Imidan 70WSB	3.0 lb	petal fall, 1 thru 6C			24 May	10 Jun	24 Jun	6 Jul	19 Jul	1 Aug	15 Aug
9	untreated control											

Table 2.

	% San Jose Scale Damaged Fruit	
Treatment	1 Jul	4 Aug
1	0.0 a	0.7 a
2	0.3 a	0.7 a
3	0.3 a	0.7 a
4	0.3 a	1.0 a
5	1.7 a	3.0 a
6	3.0 a	3.0 a
7	0.0 a	1.0 a
8	0.0 a	1.0 a
9	5.0 a	2.3 a

Table 3

Treatment	% San Jose Scale Damaged Fruit at Harvest
1	1.7 b
2	1.7 ab
3	1.3 ab
4	1.0 b
5	1.3 b
6	1.3 b
7	0.7 b
8	0.3 b
9	8.3 a

Means within a column followed by the same letter are not significantly different (Student's t Test, $P \leq 0.05$). Data was transformed arcsine (Sqrt x) prior to analysis.