

Section VIII

Biology and Control of Insect and Mite Pests of Wine Grapes

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1. Control of grape leafhoppers. Grape leafhoppers can cause severe economic injury to wine grapes grown in the Pacific Northwest, particularly where foliage canopies are closely managed. Where foliage canopies are closely managed, leafhoppers can seriously disrupt the balance between leaf area and fruit load. Research in 1997 indicated that acetimidrid at 0.075 lbs AI/A gave excellent leafhopper control. Acetimidrid was compared with imidacloprid (Provado®) at 0.035 lbs AI/A and fenprothrin (Danitol®) at 0.2 lbs AI/A. All three were significantly better than the untreated check, chlorfenapyr or a Valent numbered compound, S-1288. Since this was the first season for acetimidrid to be tested and results were very promising, it was included in 1998 grape leafhopper control trials. In addition, a new compound from Novartis, CGA 293343, and a new compound from BASF, pyridaben (Pyramite®) were included. The treatments and rates are presented in Table 1. Plots six vines long and four rows wide were replicated three times on each of four grape varieties in WSU-IAREC field H-9. The grape varieties were Chenin blanc, Pinot noir, Semillion, and White Riesling. Early season (first generation) leafhopper numbers were low. Sprays were not applied until August 4 when second generation nymphs were present. Spray volume was 100 gallons of water/A using an air blast sprayer and a protective, tractor-mounted shield opposite the spray stream to prevent cross-row contamination. Sprays were applied to one side at a time; both sides of each row were sprayed. Sprays were applied between 10 and 11 a.m., air temperature ranged 79-88 F and wind velocity was less than 2 mph.

Sampling to determine efficacy consisted of counting living nymphs on the undersurface of 5 leaves/vine on 6 vines/plot/sampling date (n=30). The data were analyzed using the analysis of variance and replicated means were tested using the least significant difference test. The data (Table 1) show that the grape varieties Chenin blanc and Pinot noir had more leafhoppers through the season followed by the variety Semillion. White Riesling had fewer grape leafhoppers. This data is consistent with varietal data from previous years.

Data in Table 2 show that all three chemicals tested had significantly fewer leafhopper nymphs than the untreated check. Acetimidrid provided excellent grape leafhopper control for the second year in a row. CGA 293343 and Pyramite provided very acceptable control in their first year of testing in these trials and should be included in future testing.

Table 1. Grape Leafhopper on Different Varieties, H-9, WSU-IAREC, Prosser, WA. 1998
Mean leafhoppers per 30 leaves.

<u>Treatment</u>	<u>June 26</u>	<u>July 7</u>	<u>July 13</u>	<u>July 22</u>	<u>July 27</u>	<u>Aug. 10</u>	<u>Aug. 17</u>	<u>Aug. 25</u>	<u>Sept. 3</u>	<u>Sept. 8</u>	Season
											<u>Total</u>
Chenin blanc	43.58a	38.92a	22.08a	13.08a	25.12a	19.25b	21.17ab	20.75ab	11.42a	7.5a	288.87
Pinot Noir	37.17ab	39.08a	24.25a	9.17a	26.50a	48.58a	34.33a	22.58a	13.08a	5.17ab	259.91
Riesling	26.33b	16.50b	9.33b	3.25b	8.12b	15.08b	8.07c	8.73c	6.92a	3.67ab	106.00
Semillion	35.17ab	32.67a	18.75a	9.92a	24.12a	18.83b	17.25bc	12.92abc	7.17a	2.08b	178.88

Spray Date: August 4

Means in a column followed by the same letter are not significantly different (least significant difference test; $P = 0.05$).

Table 2. Grape Leafhopper Insecticide Tests, H-9, WSU-Prosser, WA. 1998
Mean leafhoppers per 30 leaves.

<u>Treatment</u>	<u>Rate (lbs (AI/ai))</u>	<u>July 27</u>	<u>August 10</u>	<u>August 17</u>	<u>August 25</u>	<u>September 3</u>	<u>September 8</u>
Acetimidiprid	0.075	26.58a	0.17a	0.08a	0.08a	0.33a	0.17a
CGA 293343	0.02	22.92a	11.25a	10.08a	9.33a	4.67a	2.25a
Pyramite	0.33	24.83a	15.58a	5.25a	2.4a	3.58a	1.42a
Untreated	0	19.67a	74.75b	71.50b	53.17b	30.00b	14.58b

Spray Date: August 4

Means in a column followed by the same letter are not significantly different (least significant difference test; $P = 0.05$).