

# Control of Variegated Grape Leafhoppers by Insecticides

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## Introduction

A trial to assess the efficacy and residual impact of various insecticides upon variegated grape leafhopper populations was executed during August and September with the cooperation of Bob Rush and Jose Solorzano, Red Mountain Farming Company, Dateland, AZ; and Mark Sybouts, Sandoz Crop Protection.

## Procedure

Nine insecticide treatments and an untreated check were applied post harvest to perlette grapes located near Dateland, AZ. Insecticide treatments were Spur 22EW (Fluvalinate) at 0.05 and 0.1 lbs. of active ingredient per acre, Danitol 2.4 EC at 0.1 and 0.2 lbs ai/A, three treatments of Sandoz 842 (0.025, 0.05 0.1 lbs ai/A), Lannate at 0.9 lbs ai/A, and Furadan 4F at 1.0 lbs ai/A. Treatments were replicated four times, and each treatment plot was 48 ft long over one row. The experimental design was randomized complete block. Adjoining rows were not treated to allow for reinfestation. Applications were made on 24 Aug by a tractor pulled Rears converted airblast sprayer with an over the top 5 nozzle boom calibrated to deliver 130 gal/acre. Triton B-1956 was added to each treatment at the rate of 0.25%. Daytime high temperatures averaged 102.9 °F the 15 day period following treatment, low temperatures averaged 72.1°F.

Samples were taken 4, 8, 15, 22, and 29 days post treatment. Samples taken 4 days post treatment consisted of a single leaf at least 4 inches long or wide, with six leaves sampled per plot. (This sampling technique was utilized due to transportation difficulties which did not allow sampling to begin until late in the afternoon). Samples at later dates consisted of 2-6 (dependent upon sample date and nymph density) 10 leaf terminals per plot. The number of variegated grape leafhopper nymphs on each sample (10 leaves) were counted and recorded. Data were analyzed.

## Results and Discussion

Variegated grape leafhopper populations were very high, and treated plots were heavily fed upon by adults from adjacent rows, resulting in removal of much photosynthetic area. Statistically significant differences were noted between nymph numbers from the north vs. south side of the row at the 15 day post treatment sample, with the overall north side average being 3x more than the south side. Data presented in the following tables and graphs are for the north side. It is thought that thermal temperatures and radiation may be responsible for the reduced numbers of nymphs on the south side of the row. Numbers of adults were not quantified in this study.

Data on the last sample date (29 days post treatment) presented here represent only two replicates because of population crashes in all treatments in two blocks. This may have been due to water reduction or some other cause and was atypical of the rest of the field samples.

The high rates of Danitol 2.4 EC (0.2 rate), Spur 22EW (0.1 rate) and Sandoz 842 (0.1 rate) were providing close

to 90% control at 22 days post treatment and 70+ % control at 29 days post treatment. Control by Lannate was very good in the 4 day sample (data not shown) but declined rapidly after that time because Lannate has a very short residual. At 15 days post treatment Furadan 4F was providing 64.2% control compared to the 24.4% control by Lannate. At 29 days post treatment three treatments had more leafhopper nymphs than did the control. These treatments were Sandoz 842 (0.025 rate), Spur 22EW (0.5 rate), and Lannate.

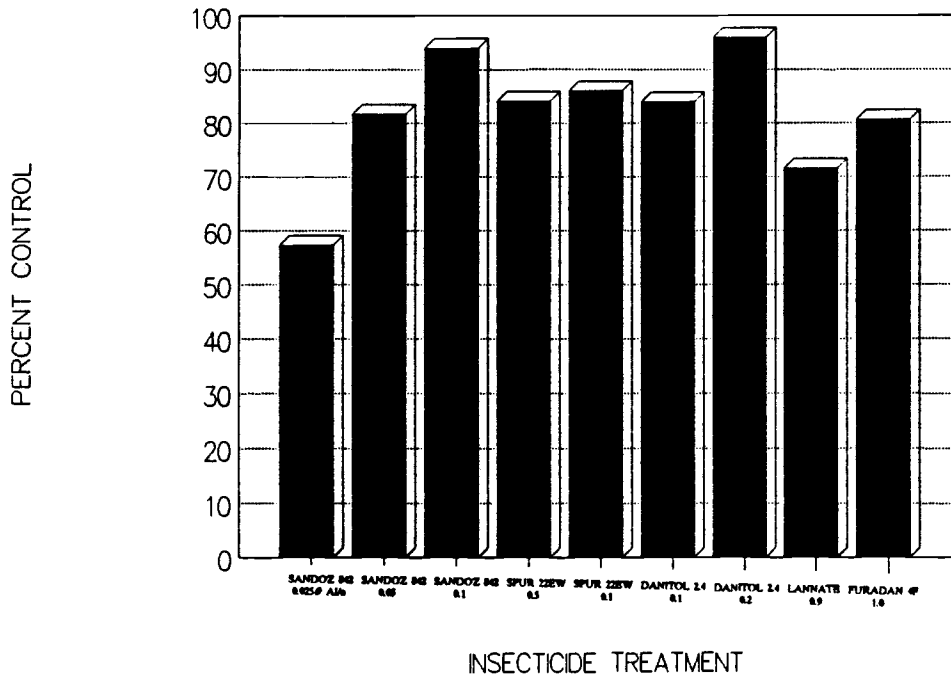
It should be noted that of the insecticides in this trial only two (Lannate and Furadan) are currently registered for use on grapes in Arizona, and Furadan 4F is a SLN registration. No phytotoxicity was noted from any of the unregistered treatments.

**Mean Number and Percent Control of Variegated Grape Leafhopper Nymphs  
Per 10 Leaf Terminal Following Insecticide Treatment on August 24, 1989**

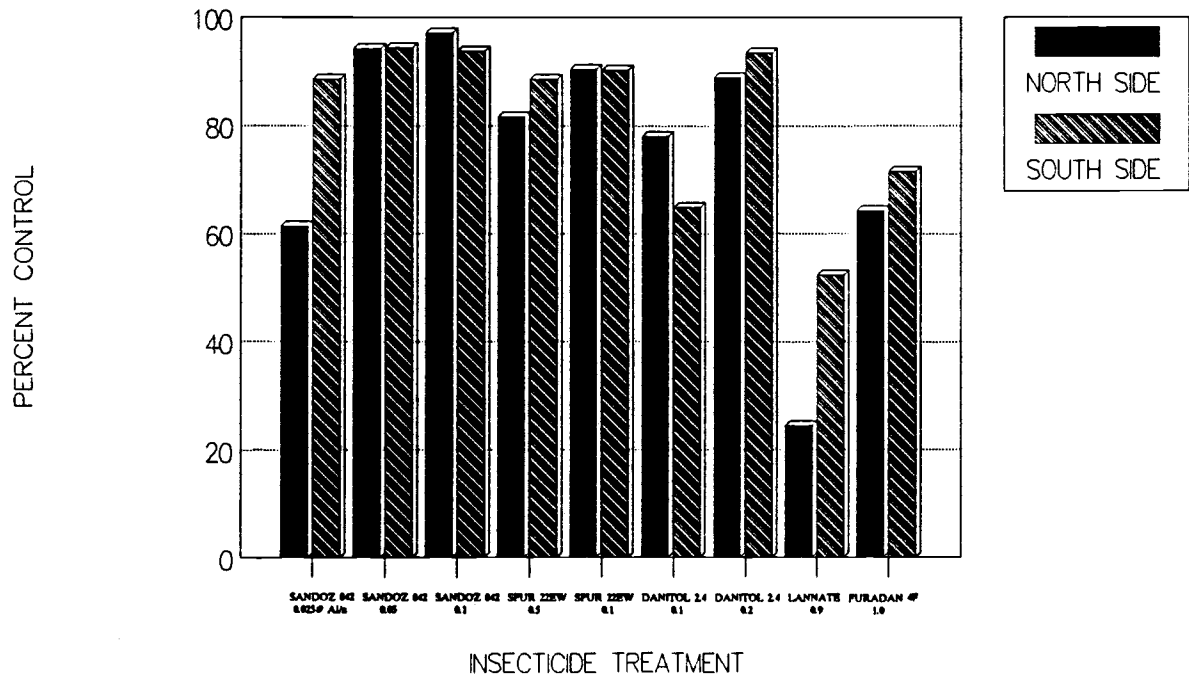
Treatment	# ai/A	8 DAT		15 DAT		22 DAT		29 DAT	
		Nymphs <sup>A/</sup>	% Control	Nymphs	% Control	Nymphs	% Control	Nymphs	% Control
Untreated Check	--	67.5	--	73.3 <sup>b</sup>	--	208.5 <sup>d</sup>	--	358.8 <sup>bc</sup>	--
Sandoz 842	0.025	33.2	50.8	37.3 <sup>a</sup>	61.4	122.3 <sup>c</sup>	41.4	387.3 <sup>bc</sup>	- 7.9
Sandoz 842	0.05	15.2	77.5	5.3 <sup>a</sup>	94.2	31.4 <sup>ab</sup>	84.9	199.2 <sup>ab</sup>	44.5
Sandoz 842	0.1	0.3	99.6	2.8 <sup>a</sup>	97.2	25.5 <sup>a</sup>	87.8	87.8 <sup>a</sup>	75.5
Spur 22EW	0.5	12.8	81.0	17.6 <sup>a</sup>	81.7	80.8 <sup>b</sup>	61.3	372.5 <sup>bc</sup>	- 3.8
Spur 22EW	0.1	12.7	81.2	9.1 <sup>a</sup>	90.5	23.3 <sup>a</sup>	88.8	197.0 <sup>ab</sup>	45.1
Danitol 2.4EC	0.1	11.7	82.7	21.3 <sup>a</sup>	78.0	43.1 <sup>ab</sup>	76.3	208.0 <sup>ab</sup>	42.0
Danitol 2.4EC	0.2	2.7	96.0	10.6 <sup>a</sup>	89.0	22.6 <sup>a</sup>	89.1	104.0 <sup>a</sup>	71.0
Lannate	0.9	17.3	74.4	73.0 <sup>b</sup>	24.4	59.6 <sup>ab</sup>	71.4	556.8 <sup>c</sup>	- 55.2
Furadan 4F	1.0	11.7	81.2	34.5 <sup>a</sup>	64.2	72.9 <sup>ab</sup>	65.0	269.3 <sup>ab</sup>	24.9

<sup>A/</sup> Means followed by the same letter are not significantly different at the 0.05 level (S-N-K test) for the same sample test.

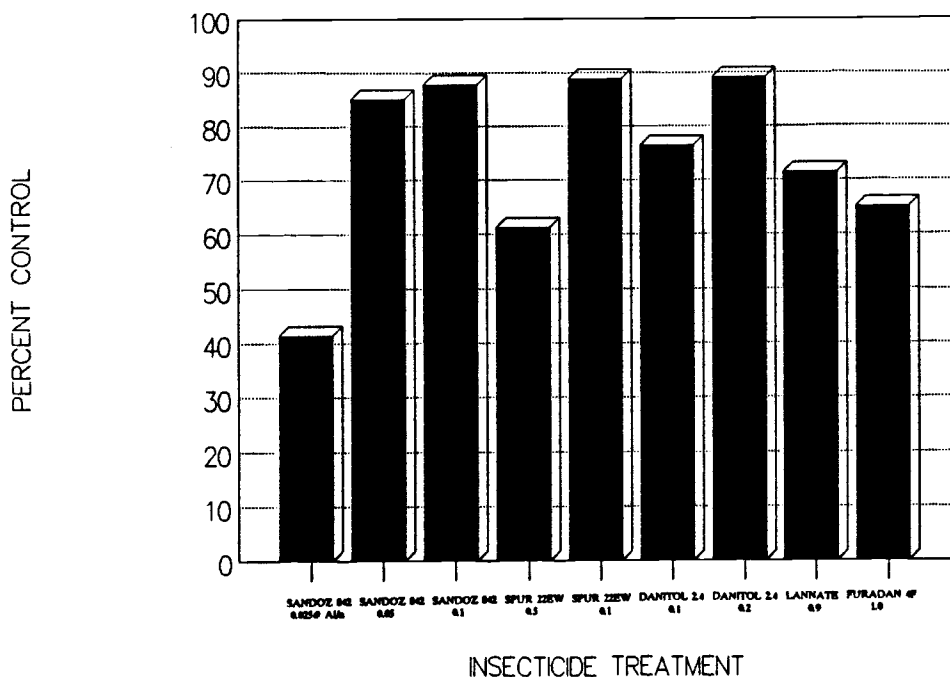
# PERCENT CONTROL OF VARIEGATED GRAPE LEAFHOPPERS, 8 DAYS POST TREATMENT



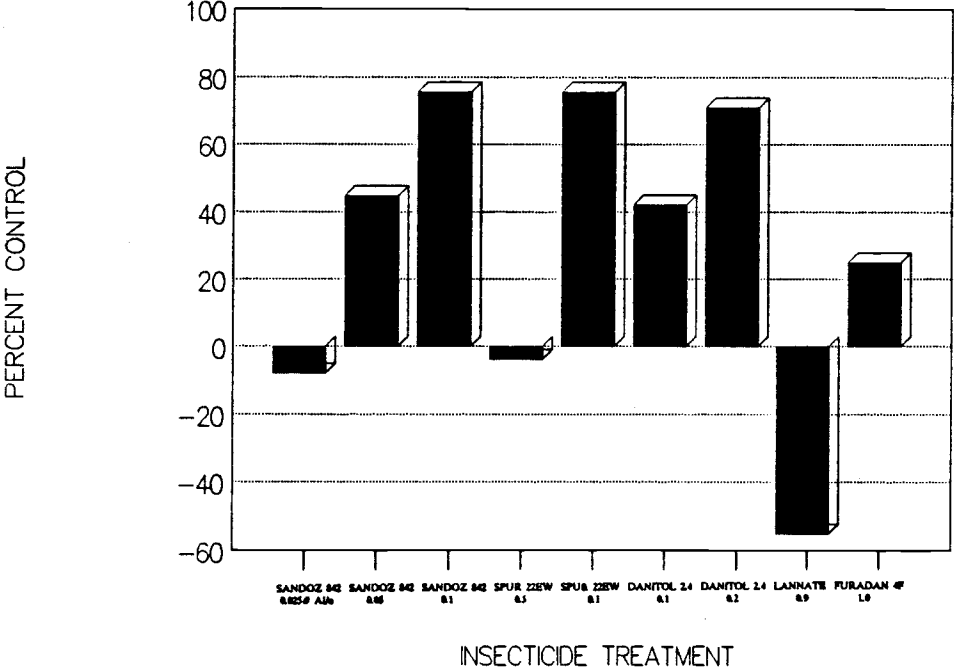
# PERCENT CONTROL OF VARIEGATED GRAPE LEAFHOPPERS, 15 DAYS POST TREATMENT



# PERCENT CONTROL OF VARIEGATED GRAPE LEAFHOPPERS, 22 DAYS POST TREATMENT



# PERCENT CONTROL OF VARIEGATED GRAPE LEAFHOPPERS, 29 DAYS POST TREATMENT



# VARIEGATED GRAPE LEAFHOPPER NUMBERS AFTER INSECTICIDE TREATMENT 8/24/89

