

## ALFALFA INSECTICIDE TRIAL

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Summary. Four insecticides were tested for their effectiveness in controlling Egyptian alfalfa weevil and blue alfalfa aphid. All 4 were equally effective in controlling Egyptian alfalfa weevil, but none provided long term blue alfalfa aphid control at the tested rates. Using insecticides which provided some measure of blue alfalfa aphid control resulted in higher first cutting yields, but had no effect on second cutting.

Materials and Methods Twenty, 0.6 acre plots were established in a commercial field of CUF 101 at Coolidge, Arizona. The field had been sheeped off January 17 and was heavily infested with Egyptian alfalfa weevil (EAW) and blue alfalfa aphid (BAA). The economic threshold for EAW had been reached on February 25, but the test could not be initiated at that time.

The 4 tested materials were: Carbaryl (Sevin XLR<sup>R</sup>) 3 pts/a, Chlorpyrifos (Lorsban<sup>R</sup> 4E) 1 pt/a, Carbofuran (Furadan 4F<sup>R</sup>) 1 pt/a, encapsulated methyl parathion (PennCap-M<sup>R</sup>) 2 pts/a, and untreated control. All materials were applied by ground in 17 gallons of water per acre, and each treatment was applied to 4 separate plots.

Numbers of EAW larvae and BAA captured in 5, 180° sweeps were recorded 1 day before, and 3, 7, and 14 days after treatment. Two areas in each plot were sampled at each date. A yield sample 30' long by 3' wide (90 sq. ft.) was cut from each plot using a 3' sickle-bar mower. Each sample was weighed immediately after cutting. Yield information was taken from the March 25 cutting and from the following cutting on May 3.

RESULTS - There was no difference between plots on the day before treatments were applied, and EAW numbers in untreated areas remained statistically greater than treated areas on all sample dates (Newman-Keuls test  $P < .01$ )

There was no statistical difference in the performance of any of the insecticides on EAW. All materials suppressed EAW larval populations equally well and control was as good 14 days after treatment as it was 3 days after treatment (see Table I).

The number of EAW larvae sampled from untreated plots showed a significant peak 3 days after treatment. This date coincided exactly with the peak larval population as predicted by a 45°-86° F heat unit model. The model predicts the EAW larval peak will arrive 445 heat units after a freeze that is followed by 117 heat units without frost. Temperature readings from a nearby weather station showed that 446 heat units had accumulated between the last frost in the Coolidge area (Feb. 8) and the 3 day post-treatment sample (March 11).

The original intent of this test was to evaluate EAW control. Pre-

treatment samples, however, revealed a large population (>850 per 5 sweeps) of BAA.

The overall level of BAA in the Carbaryl treatment was higher than other chemical treatments, but not higher than the untreated check. The other 3 chemical treatments initially reduced BAA numbers per 5 sweeps, but BAA numbers per sweep were back up to the original infestation levels by 14 days post-treatment (see Table II.) Blue alfalfa aphid numbers showed a definite significant increase in response to Carbaryl treatment.

First cutting yield showed a significant difference between untreated and Carbofuran-treated plots (see Table II). Second cutting yields ranged from 2420 lbs/a (20% dry wt.) to 2680 lbs/a, but there was no significant difference between treatments. The lack of good aphid control in any of the treatments may have caused stunting throughout the test area and masked any aphid-induced yield effects in the second cutting.

At the time of the first cutting, prices for alfalfa hay in Pinal County, Arizona, were \$95.00 per ton. Application of an insecticide to control EAW and suppress BAA resulted in a gross return of \$10.70 per acre for Penncap-M, \$13.00 per acre for Lorsban 4E, and \$25.00 per acre for Furadan 4F.

**Table I. Alfalfa Weevils Per 5 Sweeps<sup>1</sup>**

Treatment	Sample Dates			
	Pre Treat. March 7	3 Days March 11	7 Days March 15	14 Days March 22
Sevin XLR	113.6 b	14.5 a	8.5 a	29.5 a
Lorsban 4E	99.4 b	6.1 a	2.0 a	7.0 a
Furadan 4F	93.8 b	8.6 a	.4 a	.1 a
Penncap-M	123.1 b	4.6 a	1.7 a	7.8 a
Untreated	88.8 b	168.6 c	87.0 b	82.5 b

1/ Means followed by the same letters are not significantly different by Student-Newman-Keuls test  $P < .01$ .

**Table II. Mean Number of Aphids Per 5 Sweeps<sup>1</sup>**

Treatment	S a m p l e D a t e s			
	Pre Treat. March 8	3 Days March 11	7 Days March 15	14 Days March 22
Sevin XLR	840.0 bcd	1700.0 ef	2400.0 g	3900.0 h
Lorsban 4E	1034.0 cde	69.4 a	312.5 abc	1263.0 de
Furadan 4F	926.3 bcd	56.9 a	443.7 abc	1337.0 de
Pennacap-M	840.3 bcd	40.5 a	168.5 ab	1261.0 de
Untreated	715.2 abcd	2100.0 fg	2196.0 fg	2775.0 g

1/ Means followed by the same letters are not significantly different by Student-Newman-Keuls test  $P \leq .01$ .

**Table III. First Cutting Alfalfa Yield**

Treatment	First Cutting Yield <sup>1</sup> Lbs/a <sup>2</sup>
Untreated	2500 a
Sevin XLR	2500 a
Pennacap-M	2725 a b
Lorsban 4E	2775 a b
Furadan 4F	3025 b

1/ Mean of 4 replications at estimated 20% dry wt.

2/ Means followed by the same letters are not significantly different by Newman-Keuls test  $P \leq .01$ .