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Chemical Control of the Alfalfa Weevil

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The most serious pest of alfalfa in Kansas is the alfalfa weevil, *Hypera postica* (Gyllenhal). A native of Europe, the weevil was first discovered in the United States in 1904 near Salt Lake City, Utah. For nearly 50 years, it remained confined to 12 western states. In 1952, however, it was discovered in Maryland and from there it spread rapidly through the East, South, and Midwest. Most entomologists believe that the 1904 and 1952 discoveries represent populations of two different, but morphologically indistinct strains; the eastern and the western. In Kansas, the western strain was first discovered in Hamilton and Cheyenne Counties in 1960. It eventually spread into 40 western Kansas counties by 1969. The eastern strain was detected in Cherokee County in 1967 and has spread westward and northward, causing severe damage by 1972.

The alfalfa weevil is a pest on first-crop alfalfa and sometimes on early growth of the second crop. Both larvae and adults are injurious, although larval feeding causes the greatest damage. The larvae feed first in and on the growing plant tips; then as they grow larger, they feed on the opened leaves. The leaves soon become skeletonized and dry. An entire field may take on a grayish to whitish cast in cases of severe damage. Larval feeding not only lowers yields, but also reduces quality and nutritional value of hay.

Alfalfa weevils pass through egg, larval, pupal, and adult stages in their development. Usually, there is only one generation a year. Full grown larvae are legless,

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about $\frac{3}{8}$ " long, and green with a black head and a conspicuous white stripe down the middle of the back (Fig. 1A). The adult weevils are about $\frac{3}{16}$ " long. At first, they are brown, with a broad dark stripe extending half-way down their backs (Fig. 1B). As weevils age, they darken in color and become uniformly dark brown to almost black.

Growers often must rely on chemical control measures to suppress weevil outbreaks and prevent economic damage. We conducted this test to reevaluate several insecticides that are currently labeled for alfalfa weevil control.

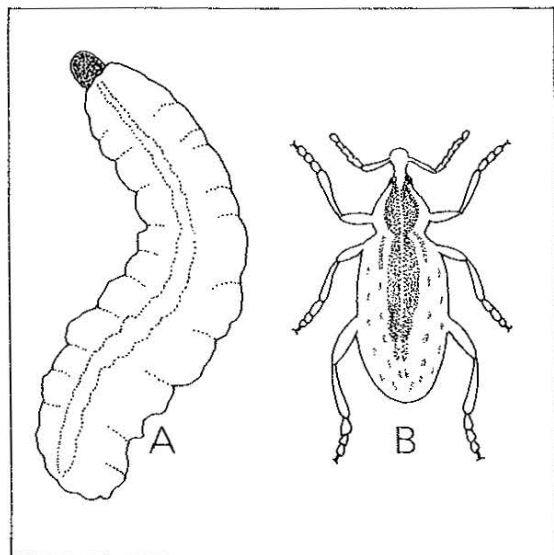


Figure 1. Alfalfa weevil, shown larger than life-size. A. Larva; B. Adult.

Procedure

The test was conducted in a field of Riley alfalfa located at the Garden City Branch Experiment Station. A randomized complete block design with four replications was used. Plots measured 24 ft \times 40 ft. Insecticides tested with Furadan 4F, Supracide 2E, Lorsban 4E, Malathion 5E, methyl parathion 4E, and parathion 8E. Sprays were foliar-applied May 17, 1984, using a CO₂-pressurized backpack sprayer fitted with a six-foot boom. Spray mixtures were applied at 15.2 gal/acre at 30 p.s.i. Alfalfa was 20" tall. Treatments were assessed at 1 and 3 days posttreatment by counting all living larvae collected from 20 stems per plot by shaking the stems against the sides of a plastic bucket. All data were subjected to analysis of variance, and the LSD (least significant difference) test was applied to make pair comparisons.

Results and Discussion

Effectiveness of six insecticides applied for alfalfa weevil control is summarized in Table 1. All insecticidal treatments significantly reduced numbers of weevil larvae compared to the untreated check one day after application. A 100% reduction in the larval infestation was achieved in the Supracide-treated plots at that time. Larval reduction in the other treated plots range from 93 to 97%. After three days, all treated plots stu-

Table 1. Comparative effectiveness of several insecticides applied to alfalfa for control of alfalfa weevil larvae, Garden City, Kansas, 1984.

Treatment & Formulation	Dosage (lb AI/acre)	No. Weevil Larvae/20 Stems and Percent Reduction after			
		1 Day		3 Days	
		No.	% Reduction	No.	% Reduction
Supracide 2E	0.5	0.0	100	0.8	98
Furadan 4F	0.5	0.8	97	0.3	99
Methyl parathion 4E	0.5	1.3	95	1.0	97
Parathion 8E	0.5	1.8	93	2.3	94
Malathion 5E	1.25	2.0	92	3.8	91
Lorsban 4E	0.5	1.8	93	5.3	87
Untreated check	—	26.0	—	42.3	
LSD(0.5)		7.3		6.9	

had significantly fewer weevil larvae than the untreated check. Furadan gave the best control (99%), followed closely by Supracide (98%) and methyl parathion (97%). Control in the other treated plots ranged from 87 to 94%. The alfalfa field was harvested after the three-day assessment period and, consequently, further residual evaluations and yield data were not obtained. A minor amount of leaf burn (spotting) was noted in plots treated with parathion and methyl parathion, but this effect did not seem to result in a significant reduction of plant growth.

Conclusions

Results of this test indicate that several labeled insecticides for alfalfa weevil control are still effective when applied as foliar spray. Growers are reminded to make selections of insecticides for alfalfa weevil control based on effectiveness, cost, harvest restrictions, and length of control. Growers should consult their local county agents or review a current copy of the Kansas Field Crop Insect Control Recommendations booklet for additional help in selecting insecticides for alfalfa weevil control.

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