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The Alfalfa Weevil and It's Control

Cooperative Extension South Dakota State University

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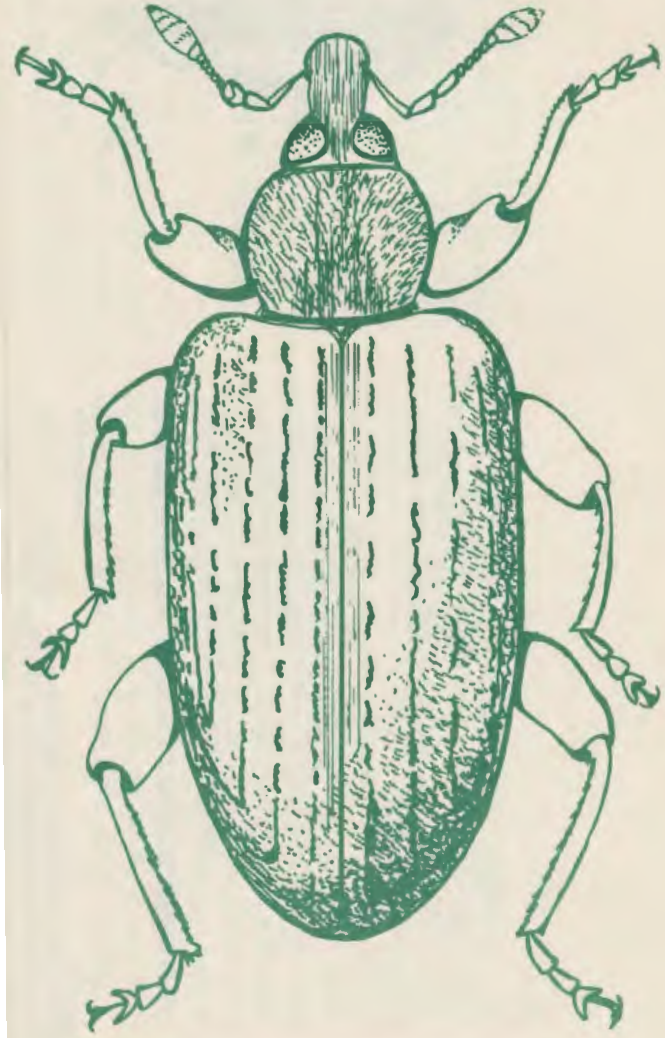
Alfalfa weevil



COOPERATIVE EXTENSION SERVICE
SOUTH DAKOTA STATE UNIVERSITY
U. S. DEPARTMENT OF AGRICULTURE

the Alfalfa weevil and its control

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The alfalfa weevil, *Hyper postica* (Gyllenhall), was first found in the United States near Salt Lake City, Utah, in 1904. It has since spread from Utah into Arizona, California, Colorado, Idaho, New Mexico, North Dakota, Oregon, South Dakota, Washington, and Wyoming. Between 1952 and 1957, new infestations were encountered in a number of eastern states. These infestations have moved steadily westward joining the original western populations in the Great Plains states.

The alfalfa weevil was first detected in South Dakota in Fall River County in 1936 and was found in Custer County in 1937. The weevil moved into South Dakota from the eastern states in 1972 when it was detected in Clay County. Surveys conducted in 1973 and 1974 showed it has moved into all counties in South Dakota.

Alfalfa weevils pass through egg, larval, pupal, and adult stages in their development. There is normally one generation during each growing season in South Dakota. The beetles are grayish brown or nearly black with short grayish hairs giving them a two-banded appearance. They vary from approximately ⅛ to ¼ inch in length with a medium-sized beak about one-half the length of the thorax, projecting down from the head.

In states to the east of South Dakota egg laying and the appearance of larvae has been noted in the fall of the year. This condition has not been found to occur in South Dakota.

During the early warm spring days in South Dakota the adult weevils leave their hibernating quarters around the crowns of alfalfa plants or under leaves and trash in the area. The adult beetles feed a few days, mate, and lay their shiny, oval, lemon-colored eggs in the stems of the alfalfa, when plant growth exceeds 2 inches. The female makes a cavity in the stem with her beak and inserts from 1 to 40 eggs. Each female beetle lays from 400 to 800 eggs during the spring months.

The larvae, on hatching, are almost white, but soon become green with a white stripe down the center of the back. The small larvae feed in the interior of the stems for 3 to 4 days and then migrate to the opening leaf buds at the tips of the plants. The larval feeding period usually requires 29 to 58 days.

When full grown the larvae are about ⅜ inch long. They migrate to the soil surface to pupate. After about 10 days in the pupal stage, they emerge as adults. These adults feed on alfalfa for the remainder of the summer and go into their winter quarters early in the fall for semi-hibernation.

Figure 2. Diagram of Life Cycle of the Alfalfa Weevil *Hypera postica* (Gyllenhall).

NATURE AND EXTENT OF INJURY

Both the larvae and adults take the nutritional value out of the alfalfa by feeding on the plant tips, leaves, and buds. They may also prevent the profitable production of alfalfa seed.

Larvae do the greatest damage by feeding within the plant tips, on the upper leaves as they open, and then on the lower foliage, skeletonizing the leaves. Damaged leaves dry rapidly and the injured plants take on a grayish to whitish color.

After the first crop of alfalfa has been cut, the larvae crawl to the new shoots of the second crop and continue feeding. Both the larvae and adults damage the new shoots and severely retard new plant growth. Young stands can be completely destroyed.

CHEMICAL CONTROL OF ADULT WEEVILS

Heptachlor, dieldrin and related chlorinated hydrocarbon insecticides may no longer be applied as as fall, winter or spring treatments. The Environmental Protection Agency (EPA) has canceled these label registrations on alfalfa, making application of these materials to alfalfa illegal. We do not have any approved insecticides at this time which we can recommend to effectively control the overwintering adult alfalfa weevil.

CHEMICAL CONTROL OF WEEVIL LARVAE

Late-spring treatments directed against the larvae must be relied on for control of this pest. Proper timing of the spray and timely cutting will be necessary. Careful observations will be necessary on infested fields.

The first crop of alfalfa, when showing damage, should be cut in the bud stage just prior to opening of the blooms.

Where early mowing is not possible it may be necessary to apply a spray prior to harvesting the first crop. A guideline to use is to apply a spray when about 35 percent of the plants (either leaves or buds) show chewing injury. Watch fields closely during late May and early June. Where a delay in mowing develops and the plants are in the bloom stage, spray after 7 o'clock p.m. or before 7 o'clock a.m. to protect pollinating insects. Generally, if the infested alfalfa is in the bud stage, it should be cut and the spray, if needed, can be applied to the stubble to protect new growth for the second crop. See Table 1 for insecticide recommendations for control of alfalfa weevil larvae.

Second crop treatments (stubble treatments), after the removal of the first cutting, any of the chemicals mentioned can be used on the stubble. In addition to the listed chemicals, Malathion has given satisfactory control in South Dakota tests when applied as a stubble treatment. Eight larvae per square foot will cause severe damage and justify a stubble spray. Twenty or more larvae per square foot will probably destroy the entire second crop. If weevil populations indicate a spray is necessary on the second crop, apply this spray before the new growth starts. The degree of control obtained will be better on bare stubble because of better insecticide coverage.

EQUIPMENT FOR APPLICATION

Low-pressure, low-volume, tractor-mounted sprayers or other equipment capable of delivering 40 pounds pressure may be used for application. Do not use herbicide-contaminated weed sprayers. When spraying standing alfalfa with ground equipment, at least 10 gallons of water per acre should be used, applied at 40 pounds of pressure. When spraying alfalfa stubble, 6 to 8 gallons of water will be sufficient. Aerial applicators should use sufficient water to obtain good coverage.

CULTURAL PRACTICES TO AID CONTROL

Early cutting helps control alfalfa weevil by killing eggs, young larvae, and pupae. Where fields are heavily infested, early cutting is recommended. This reduces injury to the first crop and helps the second crop get an early start.

Dragging, harrowing and similar mechanical type treatments prior to growth will kill many weevils. This is particularly effective on alfalfa stubble. It does not give complete kill or control, but is a useful practice which can be combined with chemical control or early mowing.

NATURAL CONTROL

Natural enemies aid in controlling the alfalfa weevil. One of the more prevalent parasites attacking the weevil in South Dakota is a small wasp, *Bathyplectes curculionis*. Weevil specimens collected in all heavily infested areas of South Dakota show parasitism. Unfortunately the degree of parasitism usually has not been sufficient to give economic control of this insect in South Dakota.

SPECIAL PRECAUTIONS

When fields are sprayed with ethyl or methyl parathion and guthion, post the treated area with warning signs to prevent unknowing persons from entering the treated area.

READ AND FOLLOW LABEL DIRECTIONS

Guthion and parathion liquid sprays are extremely toxic and should be applied only by experienced commercial applicators who have the necessary equipment to handle these insecticides in a safe man-

Table 1. Insecticides for Ground Sprayer or Aerial Labeled by EPA and Found to Give Effective Control of Alfalfa Weevil Larvae in SDSU Test Plots

Insecticide—First Crop	Amount Actual Ingredient Per Acre Prebloom Stage	Days from Application to Cutting or Pasturing Ground Applications
Furadan	8 ozs. (1 pint of Furadan 4 lbs. per gallon flowable)	14
Pencap M (methyl parathion)	8 oz. (2 pints of 2 lbs. gallon emulsifiable concentrate)	15
*Imidan	1.0 lbs. (2 lbs. 50% wettable powder)	7
*Sevin (carbaryl) 80 sprayable	1.5 lbs. (1.9 lbs.) 80 sprayable	0
*Sevin (carbaryl) 4 lbs. per gallon flowable	(1½ quarts of 4 lbs. per gallon flowable)	0
Supracide	0.5 lbs. (1 quart of Supracide 2E 25% emulsifiable concentrate)	10
Diazinon AG 500	1.0 lbs. (2 pints)	10
Diazinon+Methoxychlor (Alfa-Tox)	.4 lbs.+.8 lbs. per acre (2 quarts)	7
Malathion (57% emulsifiable)+Methoxychlor (25% emulsifiable)	1.0 lb.+1.5 lbs. per acre (1¾ pints) Malathion; (3 quarts) Methoxychlor	7

In addition, Malathion (1.0 lb. alone) and Methoxychlor (1.5 lbs. alone) were tested. Results were unsatisfactory with both of these materials.
*Imidan and Sevin are not recommended for alfalfa weevil control in eastern South Dakota where Pea Aphids are a problem.

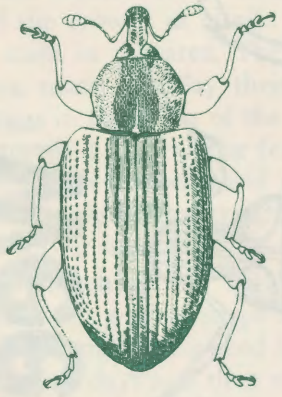
Table 2. Insecticides Approved for Alfalfa Weevil Control to be Applied Only by Experienced Commercial Aerial Applicators

Insecticide* First Crop	Amount Actual Ingredient Per Acre Prebloom Stage	Days from Application to Cutting or Pasturing Ground Applications
Ethyl-parathion	8 oz. per acre (1½ pint of 25% emulsifiable 2.0 gallon of concentrate)	15
Methyl-parathion	8 oz. per acre (1 pint of 4 lbs. per gallon of emulsifiable concentrate)	15
Guthion	12 oz. per acre (3 pints 2.0 lbs. 25% emulsifiable)	21

*Ethyl and methyl parathion and guthion are recommended for use by experienced commercial aerial applicators only. Do not enter treated fields for 48 hours.

ner. Never apply ethyl or methyl-parathion or guthion where spray may drift over streams, ponds, livestock, pasture in use, farmsteads, or other populated areas.

Before spraying a given field in bloom, notify beekeepers who have bees in the area to allow them time to take protective measures.



CAUTION

All insecticides are toxic, and label directions should be followed to the letter. Read the label until it is completely understood. Follow the manufacturer's directions on safety precautions.

Wear the protective clothing prescribed on the label. If any insecticide is spilled on clothing or parts of the body, remove the contaminated clothing and immediately wash any parts of the body that the insecticide may have contacted.

Guthion and ethyl or methyl-parathion are extremely toxic and should be applied only by experienced commercial applicators.

SOUTH DAKOTA POISON CONTROL CENTERS

Sioux Falls: (Treatment and Information)
Poison Control Center
McKennan Hospital
800 East 21st Street
Sioux Falls, South Dakota 57101
Phone: 605/336-3894

Aberdeen: (Treatment and Information)
St. Luke's Hospital
305 South State Street
Aberdeen, South Dakota 57401
Phone: 605/225-5110

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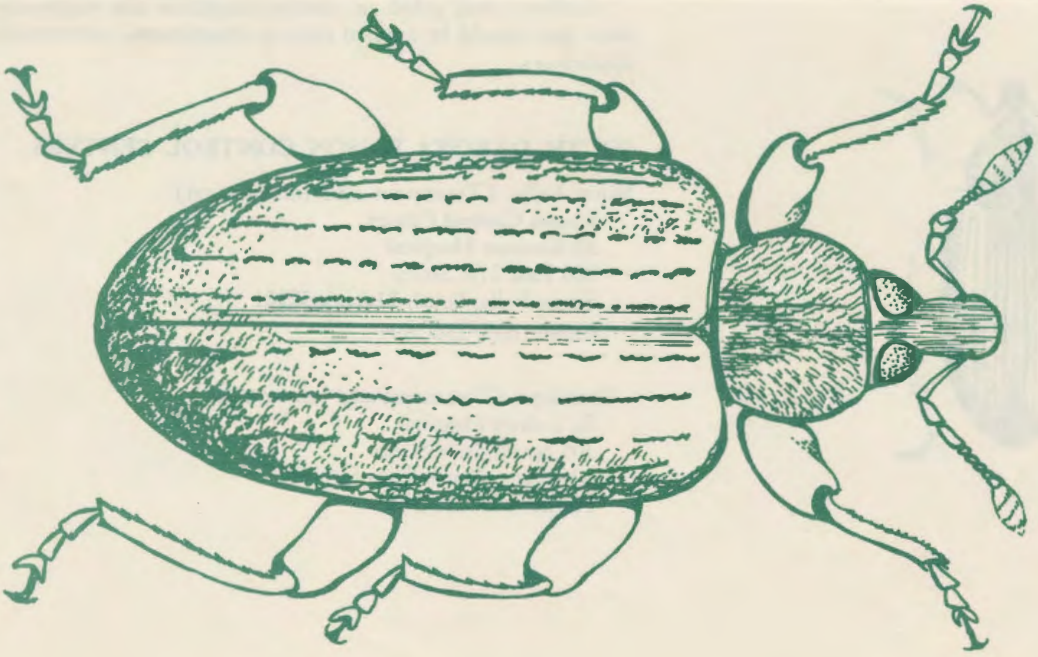
Alfalfa weevil



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