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Michigan State University

Cooperative Extension Service

IPM Facts

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FACTS

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Managing Alfalfa Weevils

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The alfalfa weevil¹ is a major alfalfa pest in Michigan. While both adults and immatures feed on alfalfa foliage, immature weevils (larvae or grubs) cause the most damage.

Description of Life Stages:

Young larvae are cream to yellowish-green, legless and have a cylindrical, "wrinkled" body. As the larvae grow, they turn green and have a white stripe down the middle of the back. The head is shiny black. Full grown larvae are 1/4- to 3/8-inch long. Clover leaf weevil² larvae resemble alfalfa weevil larvae, but have a brown head and are much larger when mature. Newly emerged weevils are gray to light brown, about 3/16-inch long, and have a broad dark band down the middle of the back which darkens as they age. Their mouthparts are in the form of a long, slender "snout".

Life Cycle:

Alfalfa weevils overwinter as adults in plant debris in and around alfalfa fields. They become active on the first warm days of spring, feeding and laying eggs in alfalfa stems. Larvae pass through four growth stages (instars), feeding for a period of three to four weeks. Pupation takes about 10 days, after which the adult emerges and feeds before seeking a sheltered location to spend a summer hibernation period. Adult weevils become active again in the fall and some egg laying may take place in the extreme southern counties of Michigan. These eggs generally do not survive the winter.

Damage:

Adults feed on stems and leaves of alfalfa, producing round or elongated holes in leaves. Larvae feed on the leaf buds and terminal growing areas. Pinholes in upper leaves are an early indication of larval feeding. Warm areas such as south facing slopes may show this type of damage first. Older larvae feed on expanded leaves, sometimes leaving only the veins which give

the leaves a skeletonized appearance. Adults and larvae can also cause serious damage to alfalfa regrowth after the first cutting. This can be recognized as a failure of the alfalfa to "green up" due to weevils feeding on the developing crown buds.

Detection:

Routine inspections of fields are the best way to determine if weevils are threatening the crop. Make observations early in the season (late April to early May) by looking for the insect and signs of feeding damage. Alfalfa should be well monitored at the first bud stage. Survey five randomly selected areas of the field, staying away from field edges and unusual areas not representative of the overall field. Check the tips and upper leaves of 20 plants for grubs and their damage. Continue to check every few days. A threshold has been reached if the field will not be cut for a week or more and 25% (25/100) or more of the plants have feeding damage while grubs are present.

Management:

Biological Control — Probably the greatest reduction in alfalfa weevil numbers is due to *Microctonus aethiopoides*, a small wasp which lays its eggs (oviposits) in the adult weevil. The egg hatches and the wasp larva spends the winter inside the weevil adult. Weevils that carry wasp larvae become sterile and are eventually killed.

Two other wasps, *Bathyplectes anurus* and *B. curculionis*, also oviposit in alfalfa weevil larvae. Infected larvae feed for a shorter time, resulting in less damage than from uninfected larvae. The wasp larva feeds on the weevil larva's internal organs, killing it. Of these two parasitoids, *B. anurus* has the greatest impact on the alfalfa weevil population.

Predators of alfalfa weevil larvae include various species of lady beetles, nabids and spiders. A fungal pathogen of alfalfa weevil larvae also reduces weevil populations.

Cultural Control — Cutting management is the key to alfalfa weevil management. Cutting is recommended if the crop is in the early bud stage or beyond

¹ Alfalfa Weevil: *Hypera postica* (Gyllenhal)

² Clover leaf Weevil: *Hypera punctata* (Fabricus)

when a weevil threshold has been reached. Cutting at early to mid-bud stage (flower buds) will reduce alfalfa weevil populations and prevent serious feeding damage. Cutting too early, before the bud stage, does little to reduce weevil numbers and may result in extensive weevil damage to the second crop. Timely cutting augments the biological control agents and provides direct control of weevil larvae.

Chemical Control — An insecticide application may be necessary if a threshold has been reached and the field cannot be cut for a week or more.

Special care should be taken to avoid exposing bees to insecticides if the field is in bloom. Hay that has already been badly damaged should be cut as soon as possible without spraying. Check fields until the regrowth from the first cutting is well established (about 6" tall). An insecticide application may be necessary if the field is not regrowing and grubs are readily found feeding on the stubble. Stubble applications are recommended only if warranted for weevil control, not as a potato leafhopper prevention.

Recommended insecticides for controlling alfalfa weevil larvae in alfalfa.¹

<u>Chemical</u>	<u>Formulation²</u>	<u>Rate³</u>	<u>RUP⁴</u>	<u>Restrictions & Precautions⁵</u>
Lorsban	4 EC	1 - 2 pt	N	PHI 14 days.
Furadan	4 F	1/2 - 2 pt	Y	PHI 7 days for every 1/2 pt applied.
permethrin (Ambush, Pounce)	3.2 EC	4 - 8 oz	Y	PHI 14 days, 0 days for 4 oz rate.
Imidan	50 WP	2 lb	N	PHI 7 days.
Guthion	50 WP	3/4 to 1 lb	Y	PHI 14 - 21 days; see label.
	3 F	2/3 to 2 pt	Y	PHI 14 - 21 days; see label.
diazinon	4 EC	2 - 3 pt	N	PHI 10 days hay, 2 days grazing.
malathion	5 EC	1 1/2 - 2 pt	N	None.
carbaryl (Sevin)	4 F	1 - 1 1/2 qt	N	PHI 7 days.
Lannate	1.8 L	2 qt	Y	PHI 7 days.
	90 SP	1 lb	Y	PHI 7 days.
Supracide	2 EC	2 - 4 pt	Y	PHI 10 days.
Pennacp-M	2 EC	1 - 1 1/2 qt	Y	PHI 15 days.

¹ Be sure your equipment is properly calibrated. Refer to Extension Bulletin E-1582 "Chemical Control of Insects and Nematodes in Field and Forage Crops," available at your county Extension office.

² Other formulations may be available.

³ Rate per acre. Full coverage is not required, and 1 gal. of spray per acre by air or 10 gal. of spray per acre with ground equipment is sufficient.

⁴ Restricted Use Pesticide. If (Y), a pesticide applicator certification is required.

⁵ PHI = Pre Harvest Interval.

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To protect yourself and others and the environment, always read the label before applying any pesticide.

This publication contains pesticide recommendations based on research and pesticide regulations. However, changes in pesticide regulations occur constantly. Some pesticides mentioned may no longer be available, and some uses may no longer be legal. If you have questions about the legality and/or registration status for using pesticides, contact your county Cooperative Extension Service office.



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