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Alfalfa weevil--consider cutting as a management option

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Alfalfa weevil--consider cutting as a management option

Abstract

Somewhere in Iowa this spring, alfalfa weevil populations will exceed economic thresholds and cause significant yield loss. Now is the time to be scouting alfalfa for this pest. I like to use a sweep net to simply determine if larvae have hatched in the field. Sweeping even a small patch of alfalfa with a net can reveal whether or not larvae are present. If no larvae are found, then move to the next field. However, if they are found in the net, the next step is the stem-sampling technique. This technique more accurately determines the population size and the potential for economic damage.

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Insects and Mites

Alfalfa weevil—consider cutting as a management option

by Marlin E. Rice, Department of Entomology

Somewhere in Iowa this spring, alfalfa weevil populations will exceed economic thresholds and cause significant yield loss. Now is the time to be scouting alfalfa for this pest. I like to use a sweep net to simply determine if larvae have hatched in the field. Sweeping even a small patch of alfalfa with a net can reveal whether or not larvae are present. If no larvae are found, then move to the next field. However, if they are found in the net, the next step is the stem-sampling technique. This technique more accurately determines the population size and the potential for economic damage.

Collect 30 stems by holding the top of the plant with one hand and breaking the base of the stem with the other hand, or cut it with a knife. Holding the top of the stem prevents larvae from dropping from the stem when it is broken or cut at the base. Then place the stems (upside down) inside a white, 5-gallon bucket and beat them against the side. Large larvae are easily knocked loose and can be counted, but newly developing leaves must be pulled apart to find very small, newly hatched larvae hidden in the plant tip.

Alfalfa weevil larvae have a very dark head, almost black, and are pale green with a white stripe down the back. When the alfalfa weevil hatch, they are approximately $\frac{1}{16}$ inch in length and may be light yellow. After feeding for several days, they turn green. They are $\frac{5}{16}$ inch in length when fully grown.



Cutting is a management option for alfalfa weevil larvae.
(Marlin E. Rice)

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Alfalfa weevil larvae may be confused with larvae of the clover leaf weevil, although these are much larger, have a light brown head, and often have the white stripe edged with pink. Clover leaf weevil larvae usually hide around the base of the plant during the day, feed mostly in lower leaves at night, and rarely cause economic yield losses. Clover leaf weevil larvae should not be counted as part of the alfalfa weevil sample.

Economic thresholds are shown in Table 1. Measure the plant height and then determine the average number of weevil larvae per stem, based upon a 30-stem count,

before consulting Table 1. The economic threshold depends on crop height, estimated crop value, control costs, and the growing conditions stated in Table 1. If weevils exceed the economic threshold, then consider cutting the forage as the first management option. However, make certain that the hay is at the optimal developmental stage before cutting. If the hay is not ready to be cut in several days, then an insecticide might be necessary. Several insecticides labeled for weevils are listed in Table 2.



Alfalfa weevil larva with black head. (Marlin E. Rice)



Clover leaf weevil larva with light brown head. (Marlin E. Rice)

Table 1. Economic thresholds based on alfalfa weevil larvae per stem, calculated from a 30-stem sample*

Plant Height (Inches)	\$40/Ton	\$70/Ton	\$100/Ton	Management Decision
4	1.8–2.8	0.8–1.3	0.6–0.8	Reevaluate in 4 days. If damage and larval numbers are increasing, a long-residual insecticide is recommended to prevent severe yield loss.
6	2.0–3.0	0.8–1.5	0.6–1.0	
8	2.2–3.2	0.9–1.7	0.7–1.2	
10	2.3–3.5	0.9–1.9	0.8–1.4	If alfalfa is in vegetative stages, a short-residual insecticide should be used.
12	2.4–3.8	1.0–2.2	0.9–1.6	
14	2.5–4.2	1.2–2.5	1.0–1.8	If >60 percent of alfalfa is in the bud stage, harvest is recommended. Evaluate stubble after harvest. If not scheduled to be cut within 7–10 days, a short-residual insecticide is recommended.
16	2.6–4.6	1.5–2.8	1.1–2.0	
18	2.7–5.0	1.7–3.1	1.2–2.3	
20	2.8–5.8	2.0–3.4	1.4–2.6	
>20	3.0–7.0	2.4–4.0	1.6–3.0	

*Use the smaller threshold if alfalfa is drought-stressed or control costs are relatively low (\$7–10 per acre). Use a larger threshold if rainfall is abundant, diseased larvae are present, or control costs are relatively high (\$11–14 per acre).

Table 2. Insecticides labeled for alfalfa weevil

Insecticide	Rate per Acre (High and Low Rates)	Harvest Interval (Days)
Baythroid 2 E	1.6–2.8 ounces	7
Furadan 4 F	0.5–2 pints	7–28
Lannate LV	3 pints	0
Lorsban 4 E	1–2 pints	14–21
Mustang Max	2.24–4.0 ounces	3
Pounce 3.2 EC	4–8 ounces	0–14
Sevin XLR+	3 pints	7
Warrior	2.56–3.84 ounces	7

Marlin E. Rice is a professor of entomology with extension and research responsibilities in field and forage crops.



Damage to alfalfa by weevil larvae "skeletonizes" the leaves with only the tougher leaf veins remaining. (Marlin E. Rice)



Insects and Mites

Nothing but (sweep) net

by Marlin E. Rice, Department of Entomology

Many years ago when Michael Jordan was dominating the basketball courts, his incredible shooting ability was often described as “nothing but net”—a mark of smooth perfection. To excel as a crop scout, the best tool of the trade is nothing more than a net (sorry, it’s my best analogy). I find the sweep net a perfect tool for first detection of insects in soybeans or alfalfa. In a few quick minutes, a field can be swept and the contents examined. If the insect in question is found, then a more thorough process can be implemented to determine the number of insects per plant, square foot, length of row, etc. A sweep net is helpful for scouting bean leaf beetles and caterpillars in soybeans, and is absolutely essential for scouting potato leafhoppers in alfalfa.

I use a hybrid net whose components are made by two different supply houses. I recommend buying the handle from Ward’s because of its 3-foot long, strong metal construction and heavy wire gauge hoop, but their net bag is flimsy. I recommend replacing the net bag with one made by BioQuip. The bag from BioQuip is extremely durable—the edge is made of Dacron sail tape—and slides easily through alfalfa and soybeans during sweeping. The Dacron is extremely resistant to



A crop scout sweeping a soybean field with a net. (Marlin E. Rice)

abrasion and should last throughout the growing season, plus it will not roll up on the leading edge of the net hoop like the more flimsy net bag from Ward’s. Unfortunately, the BioQuip net handle is wood and a short 2-foot long. For these reasons, I suggest buying the parts and making a hybrid sweep net.

The hybrid sweep net is not inexpensive, but it will serve you well in collecting insects in alfalfa and soybeans. I strongly encourage you to get one if you’ll be scouting either of these crops this season.