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Controlling the Alfalfa Weevil in Tennessee

THE UNIVERSITY of TENNESSEE
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Charles R. Patrick, Professor, Entomology and Plant Pathology
Angela Thompson, Associate Professor, Plant Sciences
Larry Steckel, Assistant Professor, Plant Sciences

The alfalfa weevil is present in every county in Tennessee where alfalfa is grown. Producers should be prepared to control this extremely destructive insect whenever necessary if they expect to continue producing this valuable hay crop.

Description

The adult weevil is about 3/16 inch long, including the snout. Young adults are light brown with a dark stripe down the back. As the weevils age, they become uniformly dark brown or almost black. The newly hatched larvae (worms) are 1/32 inch long, legless, yellow with a shiny black head. They later become green and a white stripe is formed down the back. When fully grown, larvae are 3/8 inch long. The larval stage, which causes the most damage to alfalfa plants, is completed in three to four weeks.

Figure 1. Alfalfa Weevil

Damage

Alfalfa is the only plant seriously damaged by the weevil; although in the absence of alfalfa, clovers can be injured.

Damage is caused by the larvae and sometimes the adult weevils. Larvae feed on plant tips and buds, on the upper leaves as they open, and then on the lower leaves, leaving only skeletons of the leaves. Severe feeding can destroy the crop. Larvae feed on the plants from late March through April, and complete defoliation may occur by the time of the first cutting. The second crop may be delayed if too many worms and adults are left in the field after the first cutting (Figures 1 and 2).

Adult weevils feed primarily on new shoots on the stubble after the first cutting, which delays the regrowth of alfalfa. Adults may remain in the stubble if the weather remains cool; if re-growth is delayed for a week or so, a stubble treatment may be required.

The remaining cuttings of the year are not subject to as much damage because the weevils leave the field and are inactive during the summer. Some alfalfa weevils return to alfalfa fields in the fall and will lay eggs throughout the winter on warm, sunny days.

Figure 2. Foliar Damage

Spring Spraying

Control of the alfalfa weevil in the spring is dependent on (1) proper timings of insecticidal sprays and (2) timely cutting. To minimize weevil damage, producers should cut the first crop of fall-seeded alfalfa and also cut old stands of alfalfa when the crop is in the one-tenth bloom stage.

Thorough and frequent scouting of the fields is necessary in order to time sprayings most effectively. Damage can become severe overnight when the weather warms up.

Using Degree Day Accumulations to Apply Insecticidal Control Measures

Several factors, including field sampling, average alfalfa length, and degree day accumulations, can help producers decide the best time to apply insecticidal control measures. Field sampling helps producers detect potentially damaging weevil numbers in time to determine the best control action, whether it be an insecticide application or early harvest. Degree days help the producer efficiently schedule times to take samples. Degree day information is available from county Extension offices or online at http://UTCrops.com. Alfalfa height is factored into the degree day information.

When to Sample

Select the appropriate management table based on the degree day accumulation for your area. Fields should be first examined when 190 day degrees (base temperature 48 F) have accumulated. Field samples for alfalfa weevil should be made at least every seven days, or more frequently if recommended by the following Alfalfa Weevil Pest Management Recommendation Tables.

Sample before 190 day degrees if damage appears on the leaves, growing tips, buds and new shoots of the alfalfa plant. If the damage becomes severe, leaves will become skeleton-like and the resulting bleached-out plant will look as if it has frost damage. If alfalfa weevil larval feeding damage is observed, take stem samples using the equipment and procedures listed below to determine the magnitude of the alfalfa weevil population and the best management strategy.

Equipment Needed for Sampling

- Yardstick or other measuring device
- White or yellow plastic bucket
- Alfalfa Weevil Pest Management Recommendation
- Tables
- Pencil and paper

How to Sample

Walk into the field at least 20 paces before beginning the sampling process.

Collect 30 complete stems while moving through the field in a U- or Z-shaped pattern and place each stem, top first, into the bucket. After collecting 30 stems, return to the edge of the field and place the stems on a clean, flat surface, such as the hood of a truck.

Select four or five stems at a time and beat them vigorously against the inside of the bucket to dislodge alfalfa weevil larvae. Count all larvae, including any that may have fallen onto the surface where the stems were resting and record this number.

Randomly select and measure 10 of the 30 stems. Measure each stem to the nearest inch, then calculate the average stem height.

Turn to the Alfalfa Weevil Pest Management Recommendation Table that corresponds to the current degree day range. Use the number of larvae per 30 stems and average alfalfa height in inches to determine the management recommendations for the field sampled.

Note the growth stage of each stem that you measured: pre-bud if there are no buds, bud if buds have formed, and flower if any flowers are present. Use the following tables to calculate spray times.

Alfalfa Weevil Pest Management Recommendation Tables

190 to 225 Degree Days				
Number of larvae per 30 stems	27	67	100	130
Plant height (inches)	2	4	6	8

- Apply a long residual insecticide if the number of larvae found is greater than the number in the table above for the average height of alfalfa sampled. Spraying now protects alfalfa weevil parasites emerging later.
- Sample again in two days if larval number is above 15 but fewer than the table value, OR sample again in seven days if fewer than 15 larvae are present in the sample.

226 to 275 Degree Days			
Number of larvae per 30 stems	15	19	20
Plant height (inches)	2	4	6 or taller

- Apply a long residual insecticide if the number of larvae found is greater than the number in the table above for the height of alfalfa sampled.
- Sample again in seven days the sample contains fewer than the number of larvae for the appropriate alfalfa height.

276 to 325 Degree Days					
Number of larvae per 30 stems	37	60	83	105	135
Plant height (inches)	4	6	8	10	12 or taller

- Apply a medium residual insecticide if the number of larvae found is greater than the number in the table above for the height of alfalfa sampled.
- Sample again in seven days if the sample contains fewer than the number of larvae for the appropriate alfalfa height.

326 to 375 Degree Days		
Number of larvae per 30 stems	82	105
Plant height (inches)	8	10 or taller

- Apply a short residual insecticide if the number of larvae found is greater than the number in the table above for the height of alfalfa sampled.
- Sample again in two days if alfalfa is less than 16 inches and the number of larvae found is more than 20 but fewer than 82 per 30 stems, OR sample again in seven days if alfalfa is taller than 16 inches and the number of larvae found is fewer than 20.

376 to 525 Degree Days				
Number of larvae per 30 stems	52	64	72	80
Plant height(inches)	12	14	16	18 or taller

- Apply a short residual insecticide if the number of larvae is exceeded for the size alfalfa sampled or harvest now if the alfalfa is in the 30 percent bud stage or greater.
- Sample again in two days if the number of larvae is fewer than but within 20 of the number justifying a treatment.

Evaluating Post-harvest Alfalfa Weevil Larval and Adult Damage

Weevil larvae and adults left in the field after harvest can feed on developing shoots and slow recovery of the plant. If early harvest was used as a weevil management tool, there occasionally may be sufficient larvae or newly emerged adults present to justify an insecticide application. However, routine stubble sprays are not justified. Watch fields carefully for the normal green-up that indicates active re-growth. Surviving larvae may feed on developing leaves and new adults can cause notch-like feeding holes on leaves giving them a feathery appearance. The table below may be used to evaluate larval numbers and plant height to determine whether or not post-harvest control is necessary. Treatment may be

ASSESSING ALFALFA WEEVIL LARVAE ON FIRST CUTTING RE-GROWTH (Five to seven days after harvest)				
Number of larvae per 30 stems*	20	33	47	60
Number of larvae per 30 stems**	17-20	17-32	23-46	23-59
Plant height (inches)	2	4	6	8 or taller
*Spray with a short residual insecticide if the number of larvae per 30 stems exceeds the number in the table above for the appropriate alfalfa height. **Sample again in two days if the number of larvae per 30 stems is in this range for the appropriate alfalfa height. If numbers are below this level, no treatment should be necessary.				

Insecticides		
Material	Rate/Acre	Days from Last Application to Grazing or Harvest
Baythriod XL	1.6-2.8 oz.	7
Mustang Max	2.24-4.0 oz.	7
Warrior 2	1.28-1.92 oz.	7
Karate	1.28-1.92 oz.	

justified if adult weevils are found feeding on 50 percent or more of the crowns and re-growth is prevented for three to six days. Use low rates if an insecticide application is necessary.

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Of course, ALWAYS READ AND FOLLOW LABEL DIRECTIONS FOR SAFE USE OF ANY PESTICIDE!

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