

FALL ARMYWORM CONTROL IN PASTURES

Dalton C. Ludwick, Sonja L. Swiger, and David L. Kerns*

BIOLOGY AND DAMAGE

There are two strains of fall armyworms (FAW): the corn (C) strain and the grass (R) strain. The corn strain usually appears in the spring and early summer and feeds on crops such as corn, sorghum, and cotton. The grass strain, which is the strain that is most commonly found in hay fields and pastures, generally shows up after significant rain events from mid-July through the fall. The corn strain is known for being resistant to pyrethroids, while the grass strain is susceptible to pyrethroids. In Texas, the predominant strain is the rice strain. Severe FAW outbreaks typically occur following high rainfall events in South Texas that produce sufficient native grass growth to increase FAW populations that travel northward. In a typical year, four to five generations occur.

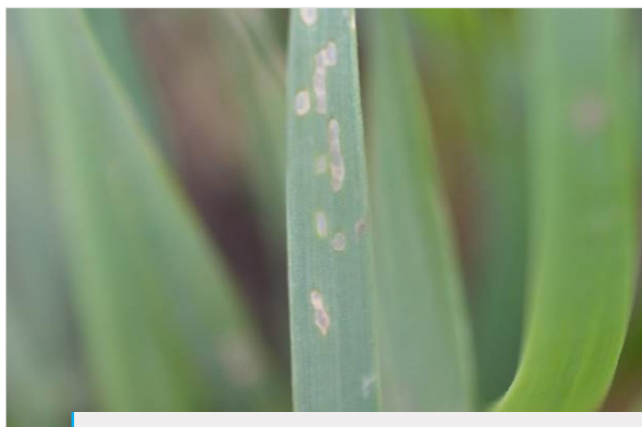


Figure 1. Windowpaning by fall armyworm caterpillars.
Image by Holly Davis

Freshly emerged caterpillars will begin to feed on the leaves and make small transparent areas (windowpanes; Fig. 1), giving the grass a frosted appearance. As they grow and molt, the caterpillars will begin to consume the entire leaf. The larger the caterpillars, the more damage they cause. During their last few days as a caterpillar, when they are 1 to 1.5 inches in length, they consume about 80 percent of all the leaf tissue they will consume in their lifetime. FAW caterpillars develop into pupae within 2 to 4 weeks, depending on the temperature. Smaller caterpillars are easier to control.

IDENTIFICATION AND SCOUTING

FAW caterpillars are primarily identifiable by two features. The head will have apparent white markings that form an upside-down “Y” pattern (Fig. 2). The second feature are raised black spots which form a rectangular pattern on the last few segments of the caterpillar.



Figure 2. Fall armyworm caterpillar with inverted “Y” pattern.
Image by Pat Porter

*Extension Entomologists, Texas A&M AgriLife Extension Service



Figure 3. Fall armyworm caterpillars collected with a sweep net.

There are multiple methods to scout for FAW caterpillars. The most effective method to scout for FAW caterpillars is with a sweep net (Fig. 3). By sweeping the net from side to side, the caterpillars are collected and are easily counted. The more common method is to get on your hands and knees and closely inspect the grass. During hot days, check the lower parts of the plant or soil surface where they may be hiding from the harsh temperatures. Another method is to run your hands across a 1- to 2-square-foot area to knock the caterpillars to the soil surface. Then, simply inspect the soil for dislodged caterpillars.

Regardless of the scouting method, take note of the size of the caterpillars to determine whether action is necessary. Smaller caterpillars (<½ inch) are less damaging, and every two should be considered equivalent to one large FAW caterpillar. Larger caterpillars (>½ inch) should be treated soon to prevent greater damage.

Treatment thresholds depend upon the scouting method. If using a sweep net, then treat at two or more caterpillars ½ inch or larger per sweep. For visual inspections, treat if you have two or more FAW caterpillars per square foot. Most of the time, fields are either well below or well above threshold.

CONTROL OPTIONS

If the grass is being used for hay and is near harvest, then harvest early to prevent extra feeding damage. However, be aware that caterpillars may consume the cut hay until it is dry, so this is not always recommended.

Insecticide applications should be made early in the morning or late in the evening, if possible, to ensure caterpillars come into contact with insecticide. During hotter parts of the day, caterpillars may be out of the canopy and avoid maximum insecticide exposure.

There are many insecticides that can be used to control FAW caterpillars (Table 1). Pyrethroids are relatively cheap and readily available. These insecticides take roughly 3 days to achieve maximum effectiveness against small and large caterpillars. Pyrethroid insecticides tend to have a short residual period and can be washed off by rains.

Table 1. Insecticides available to control fall armyworms in pastures.

Class	Active Ingredients	Trade Names	Pre-grazing Interval (days)	Pre-harvest Interval (days)
Pyrethroids	Cyfluthrin	Tombstone	0	0
	Beta-cyfluthrin	Baythroid XL, Sultrus	0	0
	Zeta-cypermethrin	Mustang, Mustang Maxx	When dry	0
	Lambda-cyhalothrin	Calvary, Firestone, Grizzle, Kendo, L-C Insecticide, Lambda-Cy, LambdaStar, Lamcap, Paradigm, Province, Ravage, Silencer, Warrior	0	7 for hay, 0 for forage
	Gamma-cyhalothrin	Declare	0	7
Benzoylureas	Diflubenzuron	Dimilin, Durant, Micromite, Unforgiven	0	1
	Methoxyfenozide	Intrepid, Invertid, Troubadour, TurnStyle, Zyllo	0	7
Carbamates	Methomyl	Lannate, Nudrin	7	3
	Carbaryl	Sevin, Carbaryl	14	14
Diamide	Chlorantraniliprole	Vantacor	0	0
Spinosyn	Spinosad	Blackhawk	When dry	3
Diamide + pyrethroid	Chlorantraniliprole + Lambda-cyhalothrin	Besiege	0	7 for hay, 0 for forage

The addition of a product like Dimilin (or generic products with diflubenzuron) can increase the residual control period to 10 to 12 days, eliminating caterpillars that emerge in that timeframe. Neither pyrethroids nor Dimilin will continue providing control if significant rain occurs. Another fairly inexpensive option is Intrepid (or generic products with methoxyfenozide). This product will provide residual control for about 7 days, but it must be eaten to kill the caterpillar and is not rainfast. For assistance with selecting a product, use the flowchart below (Fig. 4) to aid with decisions.

If rain is a continuous issue, the only truly rainfast options are products such as Vantacor, Shenzi, or Besiege. All of these products contain the active ingredient chlorantraniliprole, though it should be noted that Besiege also contains a pyrethroid. These products are absorbed by the leaf tissue and are rainfast upon drying. While these products are more expensive, they do provide excellent residual activity and will persist longer at the higher rate. For example, Vantacor at 1.7 fl oz/ ac will typically provide 14 days of control, while a greater rate will provide around 20 days of control.

For additional questions about FAW control, please reach out to your local county Extension Agent, IPM Agent, or Extension Entomologist. Always use an insecticide according to the label. Texas A&M AgriLife Extension Service is not responsible for insecticide applications, damages, or other issues encountered.

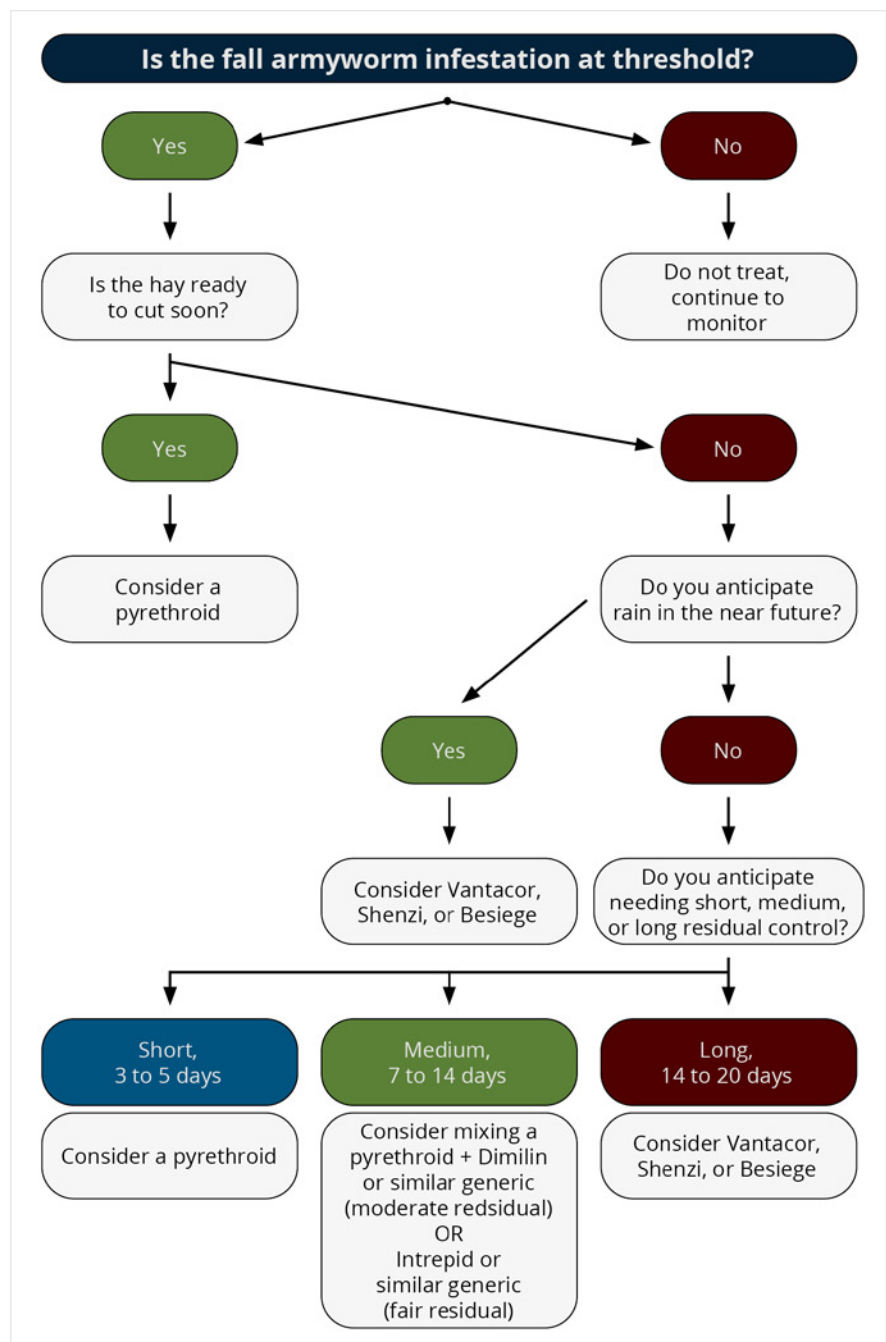


Figure 4. Decision flowchart for selecting insecticides to control fall armyworms in pastures.

Acknowledgment

This work is supported in part by the Crop Protection and Pest Management, Extension Implementation Program [award no. 2021-70006-35347/project accession no. 1027036] from the United States Department of Agriculture (USDA) National Institute of Food and Agriculture.