

Armyworms *in Hayfields and Pastures*



Two species of armyworms routinely infest forage and pasture production fields in Louisiana. Both species of these pests belong to the Noctuidae family of insects along with other agronomic pests, such as the cotton bollworm, soybean looper and tobacco budworm.

Louisiana typically has multiple generations of “true” and fall armyworms in pastures and forage fields around the state. True armyworms are spring pests of cool-season grasses, tall fescue and wheat, while fall armyworms are summer and fall pests that infest bermudagrass, fall-seeded grasses and established winter annuals. Infestations of true armyworms will typically occur in northern Louisiana, while fall armyworm infestations often occur statewide as the summer months progress.

Injury from true and fall armyworms will often go unnoticed until large amounts of defoliation begin to occur when worms reach later instars. Like other defoliating worms, both species of armyworms consume less foliage in the early instars — the first through the third — than in later instars. Large populations of armyworms will often move en masse to non-infested fields once they exhaust all of the resources at their present location. Because of the destructive nature of both species of armyworms, producers should routinely scout their fields to prevent excessive defoliation.

Pest Description

Egg Mass

Fall and true armyworm egg masses are typically white with a domed shaped and are flattened against the leaf surface. Eggs are often oviposited in masses of 50 or more on lower leaves and in dense growth. Armyworm egg masses have a fuzzy appearance because of the scaly layer covering the entire mass.

Larva: True Armyworm



Fall armyworm on rice. Note the inverted Y on the head capsule.

True armyworm larvae appear very similar to fall armyworm larvae after hatching. However, as the true armyworm develops into later instars, important distinguishing characteristics become visible. True armyworms have a greenish brown (mottled) head capsule and exhibit paired dark spots along the back of each abdominal segment. A thin yellow line runs longitudinally through each row of spots, and fully developed larva will often reach 1 ½ inches in length.

Larva: Fall Armyworm

Newly hatched fall armyworm larvae are cream to light green in



True armyworm larva on grass

color and one-sixteenth of an inch in length. As larvae develop into later instars, armyworm larvae will often become darker with light lines running down the length of the body. The head capsule is dark in color and exhibits an inverted Y on the face of the insect. Additionally, this insect has four conspicuous dark spots on the next to last abdominal segment. Use of the inverted Y and four abdominal spots are reliable characteristics in distinguishing the fall armyworm from the true armyworm.

Life Cycle: Fall Armyworm

Female fall armyworm moths will often oviposit egg masses of 50 to several hundred eggs on leaf tissue during the evening and night. Egg masses will often be found in areas of a pasture with excessive growth. Eggs eclose in three to four days, and each larval instar will take two to four days to complete depending on temperature. Warm temperatures increase growth and development, with fall armyworms completing maturity from the first to the sixth instar in 12 to 15 days. Cooler temperatures slow larval progression, extending development to 30 days. Fall armyworm infestation often occurs in waves, resulting in mixed larval sizes that indicate overlapping generations.



Armyworm larvae on grass.

Life Cycle: True Armyworm

The true armyworm life cycle is similar to the fall armyworm. However, because true armyworms are present during cooler weather, their life cycle may range from 40 to 60 days.

Injury: Fall Armyworm

Fall armyworm injury often appears as brown or defoliated patches that stretch out from the edges of field borders. Injured field areas increase in size as worms move throughout the field and spread to non-infested areas. After severe armyworm infestations, the only vegetation left is thick, tough stems with no foliage. Fall armyworms rarely completely kill established pastures; however, newly established stands of bermudagrass or winter annuals are at risk of severe stunting and death. Fields that are drought-stressed or lack fertility may be more susceptible to infestation as rains break dry periods or fertilizer is applied and foliage begins greening. Fall armyworm outbreaks typically occur in mid-to-late summer and continue throughout the fall months. Fall armyworms actively feed during early morning and late afternoon hours but will also feed most of the day in tall foliage.

Injury: True Armyworm

True armyworm injury is very similar to fall armyworm injury, with injured field areas increasing in size as the armyworms move throughout the field. Large true armyworms will consume significantly more foliage than small worms, and feeding typically occurs at night. True armyworms, in contrast to fall armyworms, will not normally feed on bermudagrass. These insects seem to prefer fescue and other cool-season grasses but tend to avoid fields containing legumes, such as alfalfa and clover. Louisiana typically has two to three generations of true armyworms per year.

Natural Enemies

Natural enemies, including pathogens, predators and parasitoids, occur in Louisiana and can effectively reduce or eliminate fall and true armyworm infestations in a short period of time. Under ideal environmental conditions it is not uncommon to see a rapid decline in pest populations, especially if a large population of small larvae are present. Fall and true armyworm predators are composed of generalist predators such as ground beetles, predaceous true bugs, birds and rodents. Specific parasitoids and pathogens, such as *Cotesia marginiventris* and nuclear polyhedrosis virus (NPV), cause large mortality levels in pest populations as well.

Scouting

The best approach to limiting the amount of injury sustained by armyworms to a forage or pasture crop is to routinely scout. Producers may watch for the presence of birds in a field as an indicator of armyworms. This method should not be the only method used to check for armyworms because this indication often is too late to avoid field injury. Early signs of infestations by small larvae cause plants to have a “windowpane” appearance. This is due to the larvae’s inability at small sizes to chew completely through the leaf blade, leaving the upper epidermis intact. Large areas of windowpaning will give fields a “frosted” appearance. Scouting should be initiated in areas where birds are feeding or when dead patches begin to appear in the crop. When scouting during times armyworms are not feeding (midday to afternoon), be sure to dig through the thatch layer and check the base of plants. Detection of frass (insect excrement) is also a sign that armyworms may be present in a field.

Treatment decisions should be determined on thresholds from individual fields. The LSU AgCenter threshold for armyworms in forage or pastures is one worm per sweep or two or more worms per square foot. Producers should scout at least 10 random areas in a field with a few samples coming from dense vegetation because moths prefer these areas for oviposition sites. Fields should be scouted in intervals of at least two weeks. This ensures that large populations do not develop in your fields and overlapping worm generations can be determined.

Control Options

Correct application timing results in better control. Factors such as worm size and maturity of the hay crop should be taken into consideration before an application is made. If hay is heavily infested and the crop is ready to bale, consider cutting and baling the hay instead of making an insecticide application. If a sub-threshold level of worms — less than one worm per sweep or two worms per square foot — is detected, it would be prudent to calibrate and prepare your sprayer for an impending application. This has two benefits. First, the time needed to prepare your equipment may allow natural enemies to control the population. Second, the equipment will be properly prepared in case an application is necessary. Application rates of 10 gallons per acre, at a minimum, should be used to ensure adequate coverage and control.

Insecticide choices for armyworm control are numerous. When choosing an insecticide, a producer should take into consideration grazing or harvest restrictions, residual activity and local availability. Many of the newer chemistries have little to no grazing restrictions, and products can vary widely in price. Products with longer residual activity may be worth the extra expense if armyworm pressure is high. Remember that grass that has been cut, grazed or is growing quickly may not have much insecticide residue left.

Pyrethroid insecticides are faster acting than insect growth regulators and work well on small to medium worms. Insect growth regulators and diamide compounds will have longer residual activity

than pyrethroids. Also, if a pyrethroid application is made and a rain event occurs, consider that a non-application. By their nature, insecticide growth regulators work better on small worms. This is due to the compound's ability to disrupt the action of molting that worms undergo in their development. As such, if a field is primarily infested with large worms nearing pupation, a growth regulator will have little to no effect on these insects. As a general rule, large worms are harder to control than small worms with any compound. Generic compounds exist for many insecticides used for armyworm control in pastures and forage. Be sure to read and follow all label specifications, including application rate and PHI restrictions.

Products from the LSU AgCenter insect control guide are listed below.

Armyworms and Fall Armyworms					
Pasture Grasses and Hay Crops	Sevin/ carbaryl (4)	32-48 ounces	1.0-1.5	4-2.7	14-day PHI for grazing or harvest. REI: 12 hours.
	Blackhawk (0.36)	1.1-2.2 ounces	0.025-0.049	14.5-7.3	3-day PHI for harvest. Zero-day PHI for grazing. REI: 4 hours
	Prevathon (0.43)	14-20 ounces	0.047-0.067	9.1-6.4	Zero-day PHI for grazing or harvest. REI: 4 hours.
	Baythroid XL (1)	1.6-1.9 ounces	0.013-0.015	80-67	Zero-day PHI for grazing or harvest. REI: 12 hours.
	Declare (1.25)	1.02-1.54 ounces	0.01-0.015	125.5-83.1	Zero-day PHI for grazing and 7 days for hay. REI: 24 hours.
	Karate Z (2.08)	1.28-1.92 ounces	0.02-0.03	100-66.7	One-day PHI for grazing and 7 days for hay. REI: 24 hours.
	Mustang Maxx (0.8)	2.8-4.0 ounces	0.018-0.025	32-45.7	Zero-day PHI for grazing or hay. REI: 12 hours.
	Confirm 2F (2)	6-8 ounces	0.09-0.125	16-21.3	Zero-day PHI for grazing or harvest. REI: 4 hours.
Bermudagra ss Pastures	Lannate (2.4)	12-48 ounces	0.225-0.9	10.7-2.6	Treat for one or more worms per sweep or one to two or more per square foot.

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