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Fall Armyworm Management in Pastures and Hayfields

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The fall armyworm (*Spodoptera frugiperda*) is by far the most important caterpillar pest in pastures and hayfields across the state of Georgia. These pests can quickly decimate a field of any forage crop, often selecting crops with greater nutritive value first.

If not controlled, fall armyworms can cause severe economic damage and total forage loss. While fall armyworms can damage many commodities in Georgia, this publication will answer the most common questions about the fall armyworm in Georgia pastures and hayfields.

How Do I Know If I Have Fall Armyworm Damage?

Unfortunately, fall armyworms usually go unnoticed until feeding damage occurs. The moths usually arrive in Georgia in the spring, originating from South Florida and the Caribbean. However, it usually takes several months for the population to build to a level where damage occurs. The damaging infestation does not occur until later summer or early fall in most years.

Damage can appear differently depending on the forage type and conditions. Fall armyworms prefer high-quality, well-maintained forage, and they will select higher-quality pastures and hayfields first.

Most damage begins with ragged leaves or areas with stripped stems (Figure 1). In hayfields or pastures that are ready for harvesting or grazing, damage can be devastating, with nearly all tender green vegetation being removed.



Figure 1. Fall Armyworm Damage First Results in Ragged Leaves or Areas With Stripped Stems. Photo: Savannah Tanner, UGA Extension.

Often misdiagnosed as drought damage in overgrazed pastures, fall armyworm injury may appear as thinned grass and brown spots (Figure 2). The damaged patch will usually increase in size as the fall armyworm population builds. The brown color results from the dehydration of plant tissues following fall armyworm feeding. Often, tough stems will be the only vegetation left in the field after a severe fall armyworm infestation.



Figure 2. Fall Armyworm Damage Can Appear as Thinned Grass or Brown Patches. Photo: Savannah Tanner, UGA Extension.

How Do I Identify Fall Armyworms?

Small fall armyworms tend to stay down in the canopy during the day, and their feeding is less damaging and harder to see (Figure 3). The youngest larvae do not eat much, but the large larvae (over $\frac{3}{4}$ in. long) can eat more than all other growth stages put together. Large fall armyworms are fairly easy to find because of their size. They are typically most active in the early morning or late afternoon when temperatures are cooler, but will feed throughout the day.



Figure 3. Fall Armyworms in Forage. Armyworms tend to stay down deep or low in the forage canopy. They can quickly decimate a field of high-quality forage. Photo: Lisa Baxter, UGA Extension.

Most producers will identify fall armyworms at the fully grown larva stage. They can be up to 1.5 in. long and are light green to nearly black with light and dark stripes that stretch horizontally along the body of the worm (Figure 4A). One of their most distinct characteristics is an inverted Y-shape on the head of the worm (Figure 4B). Another distinct characteristic is four black dots at the upper end of the abdomen.



Figure 4. Fall Armyworm Identification. (A) Mature fall armyworms are up to 1.5 in. long and various shades of green. (B) The most distinctive feature of fall armyworms is the inverted Y-shape on their heads. Photos: (A) Savannah Tanner, UGA Extension. (B) Greg Pittman, UGA Extension.

How Do I Scout for Fall Armyworms?

Careful scouting is the best way to prevent economic losses associated with the fall armyworms. University of Georgia Cooperative Extension recommends using an insect sweep net to identify low populations of fall armyworms before significant feeding damage occurs.

Sweep samples should be collected early in the morning and late in the afternoon when the fall armyworms are more prevalent. Some birds, such as geese, crows, or cattle egrets, may serve as an indicator of armyworm activity. However, this is not always guaranteed since these birds are almost always present in pastures and hayfields.

How Long Does a Fall Armyworm Live?

It takes around 30 days for a fall armyworm to complete its life cycle (Figure 5). The warmer the weather, the faster the fall armyworms can complete their life cycles.

Fall Armyworm Life Cycle

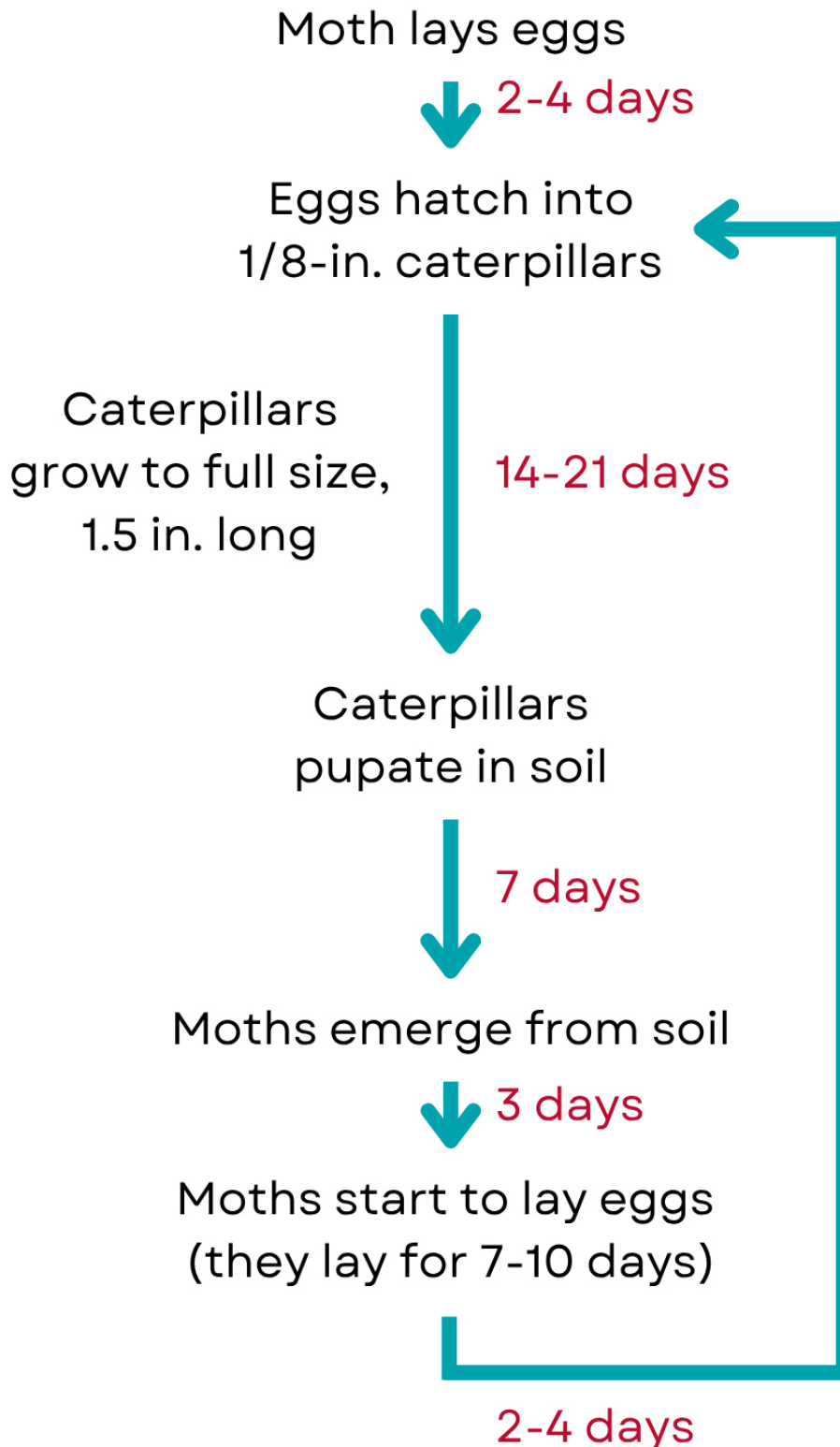


Figure 5. Fall Armyworms Complete Their Life Cycle in About 30 Days. This includes time as an egg, caterpillar or larva, and moth.

First, the fall armyworm egg will hatch into a 1/8-in.-long caterpillar. This first step takes 2 to 4 days. Although we call them worms, the fall armyworm is a caterpillar pest when it is causing the most damage.

The caterpillar continues to feed and grow to the mature size of 1.5 in. long. This will take 14 to 21 days, depending on weather, and fall armyworms are most destructive during this period. Next, the caterpillars will move into the soil for pupation. After approximately 7 days, the fall armyworm will emerge as a moth.

It will begin to lay eggs around 3 days later and will continue to lay eggs for 7 to 10 days until the life cycle is complete. The new eggs hatch, and the next generation of fall armyworms begins. There may be multiple generations of fall armyworms in a single field. The fall armyworm cannot survive freezing temperatures.

Why is FAW Damage Worse During a Drought?

Fall armyworm outbreaks are more prevalent during drought because some of their natural enemies are less active under these adverse conditions. The enemies include a range of vertebrates and invertebrates.

Damage from fall armyworms is also more noticeable during drought conditions because forage is already becoming more limited. Irrigated pastures and hayfields are especially prone to damage during drought conditions because of the lack of forage material in surrounding areas.

How Do I Decide Which Control Option is Best for My Field?

No option is guaranteed to be 100% effective against the fall armyworm. Therefore, we will refer to these practices as management options. The management option best suited to a particular field will depend on the size of the fall armyworm caterpillars and the height of the forage. These options are summarized in Table 1 and discussed in greater detail in the next two sections.

Table 1. Fall Armyworm Control Options Based on the Size of the Pest and the Height of the Forage.

Size of fall armyworms	Forage height	Management options
1/8 to 3/4 in. long	recently harvested or up to 6 in. tall	treat with insecticide
	6 to 8 in. tall	clip with rotary mower or graze if damage is present then treat with an insecticide
	ready to harvest or over 12 in. tall	harvest hay or graze immediately then apply insecticide
greater than 3/4 in. long	recently harvested or up to 6 in. tall	clip with rotary mower or graze immediately then apply insecticide
	6 to 8 in. tall	clip or graze immediately then apply insecticide
	ready to harvest or over 12 in. tall	harvest hay or graze immediately then apply insecticide

If the fall armyworms are between 1/8 and 3/4 in. long, the management options will depend on the forage height. If the field has been recently harvested or there is less than 6 in. of forage, then an approved insecticide from Table 2 should be applied.

If the forage is between 6 and 8 in. tall, then use a rotary mower to clip or allow livestock to graze the damaged forage before treating with an insecticide. If the forage is ready for harvest or over 12 in. tall, then harvest hay or graze immediately, and then apply an approved insecticide if the fall armyworm is still prevalent in the area.

If the fall armyworms are greater than 3/4 in. long, the management options are more limited. The actual option chosen will depend on the forage height and resources available on the farm. Depending on the height of the forage, the field will need to be harvested for hay, clipped with a rotary mower, or grazed immediately before an approved insecticide is applied.

Table 2. Insecticide Options for Fall Armyworms.

Chemical	Chemical group	Example trade name	Grazing interval (days)	Harvest interval (days)	Residual activity¹
Carbaryl	1A	Sevin SL	14	14	medium
Methomyl	1A	Lannate 2.4 LV	7	3	low
Cyfluthrin	3A	Tombstone	0	0	low
Beta-cyfluthrin	3A	Baythroid XL	0	0	low
Lambda-cyhalothrin	3A	Warrior II w/Zeon	0	7	low
Zeta-cypermethrin	3A	Mustang Maxx	0	0	low
Diflubenzuron	15	Dimilin 2L	—	1	medium
Methoxyfenozide	18	Intrepid 2F	0	7	medium
Spinosad	5	Blackhawk	0	3	low
Chlorantraniliprole	28	Vantacor	0	0	high
Chlorantraniliprole + Lambda-cyhalothrin	28 + 3A	Besiege	0	7	high
¹ low = 0 to 7 days; medium = 7 to 21 days; high = 21 to 28 days					

How Do I Decide Between Harvesting, Clipping, and Grazing?

Ultimately, this decision is based on the height of the forage and the resources available on the farm.

Hay harvesting is only recommended if there is sufficient material to cut and bale. This will depend on the equipment available, but at least 12 in. of standing forage generally is required to ensure adequate pickup by a hay baler. Hay production can be expensive, so sufficient material must still be standing in the field to make this a viable option.

Clipping with a rotary mower is a good option if there is insufficient material for hay harvest and grazing is not an option. More farms would likely have access to a rotary mower than to hay harvesting equipment.

Grazing the damaged area is another good management option **if** there is existing infrastructure for grazing livestock **and** there is a large enough herd or flock size available. The infrastructure required for grazing should include fencing and access to water and shade, depending on the time spent in the field. The number of animals should be great enough to graze down the damaged area before the fall armyworms remove the existing material. If these two things are **not** available, then clipping or harvesting is recommended.

How Do I Choose an Insecticide?

Textbook treatment thresholds are typically recommended at three fall armyworm larvae per square foot, but weather and forage demand may dictate a more conservative threshold. If insecticides are required, be sure to follow all label instructions. Insecticides are labeled for specific life stages of the fall armyworm.

In general, small caterpillars are easier to control than larger ones, and insecticides are only recommended when the fall armyworms are less than 3/4 in. long. Routine scouting during the summer and fall growing season is key to catching the fall armyworms before significant damage occurs.

Several insecticides are available for young larvae, but pay careful attention to grazing or harvesting restrictions related to these products. The products recommended for use in Georgia are listed in Table 2. Select the product that best matches your anticipated grazing or harvest date.

Producers may also want to consider a residual control option. The length of residual control and application costs vary by product, so producers will need to determine the potential returns on this investment. For more specific insecticide recommendations for your area, please consult with your [local Extension agent](#).

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