

Fall Armyworm Insect Pest of Turfgrass

Fall armyworm, *Spodoptera frugiperda*, caterpillars (larvae) feed on agricultural crops such as corn, *Zea mays*; sorghum, *Sorghum bicolor*; and alfalfa, *Medicago sativa*. In addition, caterpillars feed on a wide variety of turfgrass species, including Bermudagrass, *Cynodon dactylon*; tall fescue, *Festuca arundinacea*; and creeping bentgrass, *Agrostis stolonifera*. If not properly managed, fall armyworm caterpillars can cause extensive damage to turfgrass. This publication provides information on the biology, migration, damage, and management of the fall armyworm.

Biology

Adult female and male moths are approximately ½ inch (12.7 mm) long. The two front wings of the male are gray-brown with mottled light and dark markings. There are also white areas near the tip and center of the front wings (Figure 1). The two front wings of the female are gray-

brown with fewer markings than the male. Female and male moths are active at night and attracted to outdoor lights.

After mating, females lay gray, cottony egg masses covered by dense hairs (Figure 2A). The number of eggs per mass may be between 50 and 200, with females laying up to 2,000 eggs in a week. Egg masses can be laid on plant leaves, turfgrass leaves, twigs, window panes, fence posts (Figure 2B), sides of buildings, flag poles, golf carts, and decks. Caterpillars emerge (eclose) from the eggs in two to four days when temperatures are between 70 and 80 degrees Fahrenheit (21 and 26 degrees Celsius).

Young caterpillars are ¼ inch (2.0 mm) long and light green (Figure 3A). Older caterpillars are 1½ inches (38.0 mm) long, tan to olive-green, and have stripes extending the length of both sides of the body (Figure 3B). Fall



Figure 1. Fall armyworm adult moth (Raymond Cloyd)

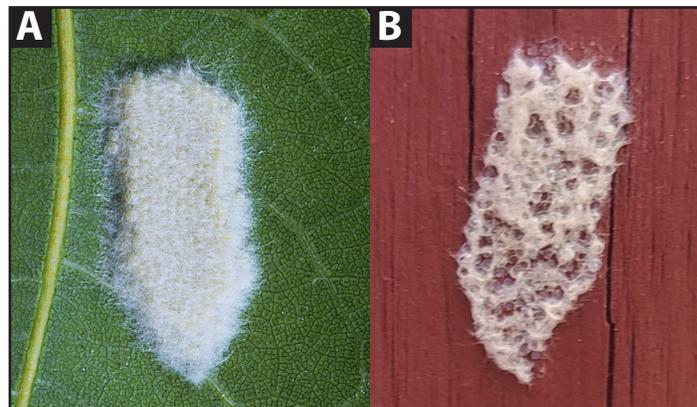


Figure 2. A. Fall armyworm egg mass on leaf (David Shetlar, The Ohio State University); B. Egg mass on fence post (Raymond Cloyd)



Figure 3. A. Young fall armyworm caterpillar; B. Older or fully-mature fall armyworm caterpillar (Raymond Cloyd)



Figure 4. Y-shaped marking on the head of fall armyworm caterpillar (Raymond Cloyd)

armyworm caterpillars can be distinguished from true armyworm, *Pseudaletia unipuncta*, caterpillars by the presence of a light-colored, inverted Y-shaped marking on the front of the head (Figure 4). In addition, fall armyworm caterpillars have four black tubercles on the back of each abdominal segment (Figure 5).

Caterpillars feed on turfgrass day and night, and if disturbed, they fall off leaves onto the soil surface and curl up. Fully-grown caterpillars enter the soil and pupate inside silken webbing, or a cocoon, 1 to 3 inches (2.5 to 7.6 cm) beneath the soil surface. The depth at which pupation occurs depends on the texture, moisture, and temperature of the soil. Adult moths that emerge (eclose) from the pupae can live up to 21 days. The life cycle takes approximately four weeks to complete depending on temperature. There are one or two generations per year in Kansas.

Migration

Fall armyworm does not overwinter in Kansas because none of the life stages (egg, larva, pupa, or adult) can survive freezing temperatures. Fall armyworm overwinters in locations with mild climates such as southern Florida and Texas. The ability of fall armyworm to invade regions of the United States depends on weather conditions in the locations where they overwinter. A cool, wet spring followed by warm, humid weather and abundant rainfall results in northward movement of fall armyworm moths.

Fall armyworm moths disperse to other regions of the United States by means of weather fronts. Conditions that can lead to extensive infestations of fall armyworm include cool weather, abundant rainfall, well-managed turfgrass, and few natural enemies (e.g., parasitoids and predators). Consequently, fall armyworm outbreaks occur at irregular intervals throughout the United States.

Damage

Fall armyworm caterpillars undergo six larval instars, or stages between molts. The first three instar caterpillars aggregate in groups, feeding on the underside of leaves, in leaf folds, or on leaf margins. Feeding damage results in



Figure 5. Fall armyworm caterpillar. Note the four black tubercles on each abdominal segment (circled) (Raymond Cloyd)



Figure 6. Turfgrass damage caused by fall armyworm caterpillar feeding (Raymond Cloyd)

turfgrass leaves having a tattered appearance. The last three instar caterpillars feed on leaves down to the crown of the turfgrass resulting in extensive damage (Figure 6) that can kill the turfgrass. Check the soil surface where the leaves have been fed upon to detect piles of green frass or fecal deposits.

Management

Detection of fall armyworm helps in timing insecticide applications. Sticky traps containing a synthetic sex lure can be placed near turfgrass to capture adult male moths.

There are no preventative insecticide treatments for fall armyworm. To mitigate turfgrass damage, insecticides must be applied when young caterpillars are present. Repeat applications may be needed depending on the extent of the caterpillar infestation. Check turfgrass at least twice a week to determine if an insecticide application is warranted.

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