

Kansas State University Extension Entomology Newsletter

For Agribusinesses, Applicators, Consultants, Extension Personnel & Homeowners

Department of Entomology
123 West Waters Hall
K-State Research and Extension
Manhattan, Kansas 66506
785-532-5891
<http://blogs.k-state.edu/kansasbugs/>
<http://www.entomology.ksu.edu/extension>



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Fall Armyworm – Second Generation
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Fall Armyworm – Second Generation

Second-generation fall armyworm, *Spodoptera frugiperda*, caterpillars (larvae) are present throughout portions of Kansas. Those of you that have re-seeded your turfgrass should be on the lookout for the young caterpillars and take appropriate measures to prevent or minimize turfgrass damage.

Fall armyworm cannot survive exposure to freezing temperatures. Consequently, fall armyworm does not overwinter in Kansas, but can overwinter in mild climates such as southern Florida and Texas. The ability of fall armyworm to invade an area depends on prevailing weather conditions during the winter months in the regions where they overwinter. Cool, wet springs followed by warm, humid weather and abundant rainfall favor the movement of fall armyworm northward. Weather fronts are how fall armyworm moths disperse to other regions of the USA. Favorable conditions that can lead to massive infestations of fall armyworm include cool weather, abundant rainfall, well-managed turfgrass, and few natural enemies (e.g. parasitoids and predators). Fall armyworm outbreaks occur at irregular intervals throughout the USA.

Adult female and male moths (Figure 1) are typically active at night (nocturnal) and are attracted to lights. After mating, females lay gray, cottony egg masses on the surface of an assortment of objects or surfaces, including plant leaves, grass blades, twigs, windowpanes, and fence posts (Figure 2), sides of buildings, flag poles, golf carts, and decks. The number of eggs per mass is between 100 and 200 with up to 2,000 eggs laid per female. The eggs are covered by dense hairs resembling gray cotton or flannel. Caterpillars emerge (eclose) from eggs in two to four days at temperatures between 70 and 80°F (21 and 26°C). The higher temperatures lead to faster development.

Figure 1. Fall armyworm adult (Raymond Cloyd, KSU)



Figure 2. Fall armyworm egg mass on fence post.



Caterpillars create silken strands, which allow them to reach the turfgrass. Early instar (young) caterpillars are 1/16 of an inch (2.0 mm) in length and light-green (Figure 3). Later instar (older) caterpillars are 1.5 inches (38 mm) long, tan to olive-green, with stripes that extend the length of both sides of the body (Figure 4). Fall armyworm caterpillars can be distinguished from true armyworm, *Pseudaletia unipunctata*, caterpillars by the presence of a light-colored, inverted Y-shaped marking on the front of the head (Figure 5). In addition, fall armyworm caterpillars have four black tubercles on the back of each abdominal segment.

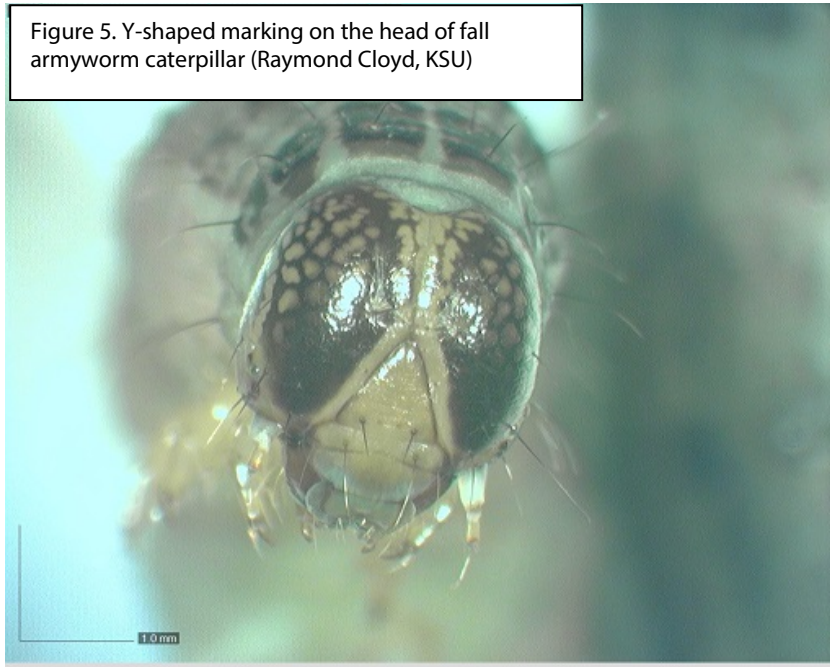
Figure 3. Fall armyworm early instar caterpillar (Raymond Cloyd, KSU)



Figure 4. Fall armyworm later instar caterpillar (Raymond Cloyd, KSU)



Figure 5. Y-shaped marking on the head of fall armyworm caterpillar (Raymond Cloyd, KSU)



There are six larval instars. The first three instars feed on the underside of leaf blades, in leaf folds, or on the leaf margins resulting in a tattered appearance. The last three instars feed on leaf blades all the way down to the crown of the turfgrass resulting in extensive damage (Figure 6) in two to three days. At high densities, caterpillars will exhibit cannibalistic behavior—or eat each other.



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

Caterpillars feed during the day and night. If disturbed, caterpillars will fall onto the soil surface and curl-up (Figure 7). If you look at the soil surface where the leaf blades have been chewed-down, you will notice piles of green frass or 'caterpillar poop' (Figure 8). Eventually, the sixth larval instar enters the soil and pupates in a silken webbing or cocoon at depths of 1.0 to 3.0 inches (2.5 to 7.6 cm). The soil depth that pupation occurs is contingent on soil texture, moisture, and temperature. Adult moths that emerge (eclose) from the pupae can live up to 21 days. The life cycle takes approximately four weeks to complete although development is dependent on temperature. Bermudagrass, *Cynodon dactylon*; tall fescue, *Festuca arundinacea*; and creeping bentgrass, *Agrostis stolonifera*, may be fed upon by fall armyworm caterpillars. There are one to two generations per year in Kansas.

Figure 7. Fall armyworm caterpillar curled-up on soil surface (Raymond Cloyd, KSU)

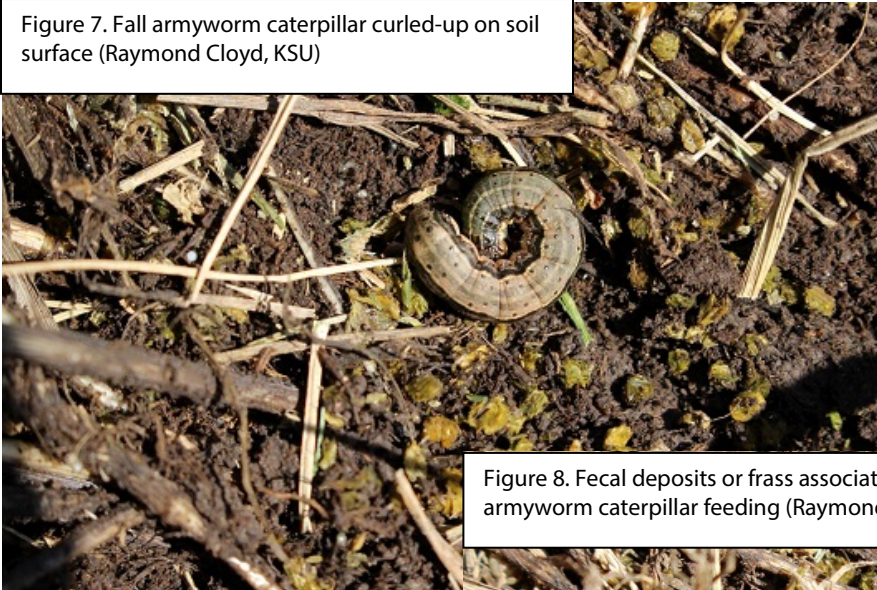


Figure 8. Fecal deposits or frass associated with fall armyworm caterpillar feeding (Raymond Cloyd, KSU)



There are no preventative treatments for fall armyworm. Consequently, when the young caterpillars are present, contact or stomach poison insecticides can be applied including those with the following active ingredients: azadirachtin, *Bacillus thuringiensis* subsp. *kurstaki*, bifenthrin, chlorantraniliprole, cyfluthrin, permethrin, lambda-cyhalothrin, and spinosad. Repeat applications of an insecticide may be needed depending on the extent of the infestation. However, check your turfgrass at least twice per week to determine if an insecticide application is warranted.

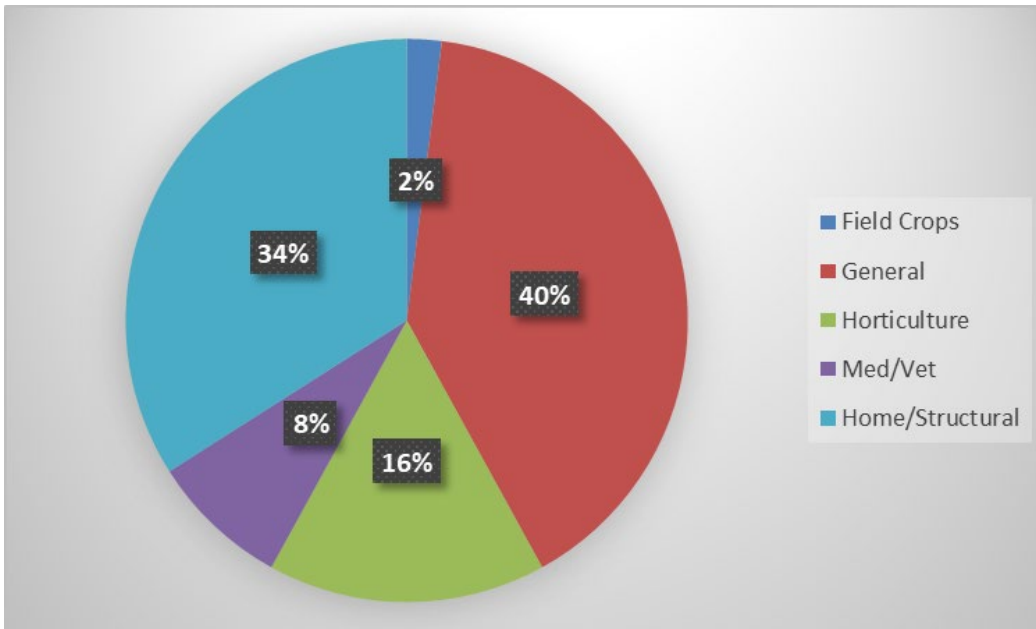
Raymond Cloyd – Horticultural Entomology

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Insect Diagnostics 2021 Season Summary

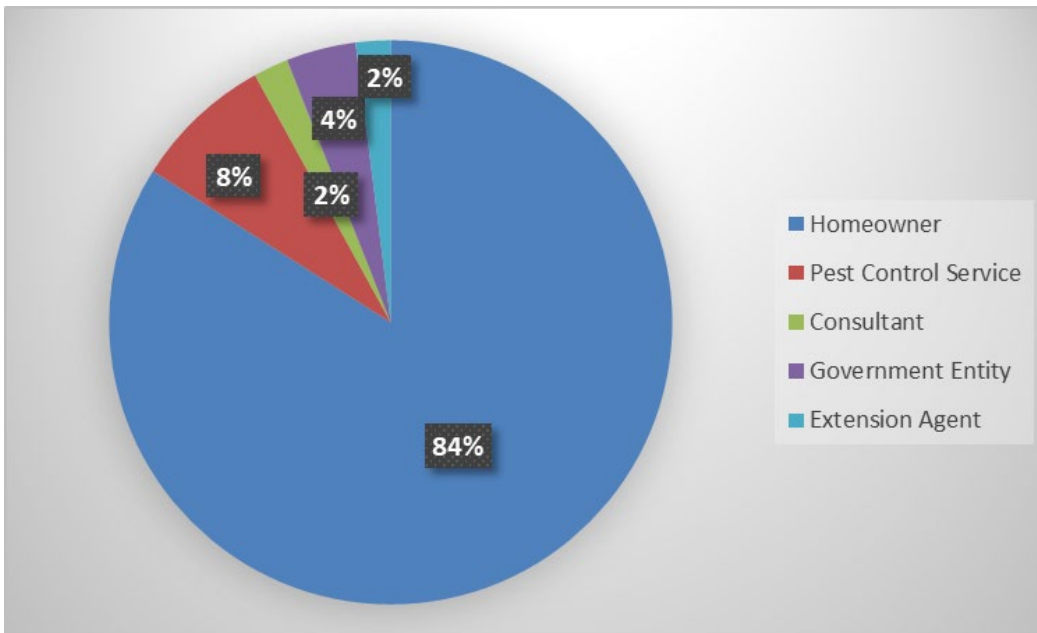
In May of 2021, the Insect Diagnostics program was brought back into service in an all-new digital format. Members of the public seeking assistance identifying an insect can access the Insect Diagnostics ID Request Form online. After providing observation information such as location and date of the sighting, followed by answering a set of questions intended to help with the identification process, one can then upload up to 3 photos and submit the form. The inquiry is then forwarded on to one of the entomology extension specialists. Within a few days, usually less than two, the identity of the insect along with appropriate life history information and/or control measures is then sent to the client by email or phone. The online submission process takes only a few minutes and can be accessed with desktop computers and mobile devices.

Between the initial launch in May and the end of September, Insect Diagnostics has processed 50 inquiries from 3 states. Kansas represented the majority of inquiries, but citizens of Colorado and Kentucky also utilized Insect Diagnostic's services this year. Identification requests fell into several categories, from requests out of general curiosity to much more specific identification needs. The Home/Structural and General categories contained the bulk of this season's inquiries (Figure 1). During the season, a variety of clientele reached out to our program for identification assistance. Homeowner's submitted the most requests, followed by commercial pest control services (Figure 2). Government entities, independent agronomists and extension agents utilized our service as well.



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While insects identified this season varied quite a bit, a few were more common in requests than others. Fall Armyworm was abundant in crops and lawns during the 2021 growing season and it showed up in requests frequently. As news outlets continued to report on the “Murder Hornets” in the Pacific Northwest, quite a few inquiries came in towards the end of summer for the unrelated, yet similar looking Cicada Killer wasp. Serious pests such as termites and bedbugs were identified several times and important control information was provided to the homeowners. Sometimes, inquiries were simply interesting insects that are not often observed, such as the Arkansas Clearwing moth (Figure 3.)



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The main season for insect activity may be coming to a close, but the Insect Diagnostics Program will continue to operate and accept online inquiries throughout the fall and winter. Insect Diagnostics would like to thank specialists Raymond Cloyd, Cassandra Olds, Jeff Whitworth and Frannie Miller for their contributions and expertise, which helped make the 2021 Insect Diagnostics reboot a success. If you need insect identification assistance, submit a request at <https://entomology.k-state.edu/extension/diagnostician/>.

Anthony Zukoff – Southwest Extension and Research Center

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Bug Joke of the Week

Q: What Do You Call A Bug That Cannot Have Too Much Sugar?

A: A Diabeetle

Raymond Cloyd – Horticultural Entomology

HOME

Sincerely,

Raymond A. Cloyd
Professor and Extension Specialist
Horticultural Entomology/Integrated Pest Management
Phone: 785-532-4750
Fax: 785-532-6232
e-mail: rclloyd@ksu.edu

Anthony Zukoff
Extension Associate – Entomology
Southwest Research and Extension Center
Garden City, KS
Phone: 620-275-9164
e-mail: azukoff@k-state.edu
[@westksbugs](#)

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Kansas State University Agricultural Experiment Station and Cooperative Extension Service

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