Kansas State University Extension Entomology Newsletter

For Agribusinesses, Applicators, Consultants, Extension Personnel & Homeowners

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Japanese Beetle Adults
2023 Fall Armyworm Activity

Japanese Beetle Adults

Japanese beetle, *Popilla japonica*, adults are present throughout Kansas feeding on many plants in landscapes and gardens, including: roses (*Rosa* spp), littleleaf linden (*Tilia cordata*), oak (*Quercus* spp.), Virginia creeper (*Parthenocissus quinquefolia*), crabapple (*Malus* spp.), grape (*Vitis vinifera*), and common garden canna (*Canna* x *generalis*). The strategies to manage Japanese beetle adult populations are limited and have been for many years. The primary strategy involves spraying contact insecticides to kill the adults in order to reduce plant damage.

Figure 1. Japanese beetle adults feeding on leaf (Raymond Cloyd, KSU)

Japanese beetle adults are 3/8 to 1/2 of an inch long, metallic green with coppery-brown wing covers. There are approximately 14 white tufts of hair along the edge of the abdomen (Figure 1). Japanese beetle adults live up to 45 days feeding on plants over a four-to-six-week period. Adults feed on many horticultural plants including: trees, shrubs, vines, herbaceous annual and perennials, vegetables, fruits, and grapes (Figure 2). Japanese beetle adults produce aggregation pheromones that attract males and females to the same feeding location. Adults can fly up to five miles to locate a host plant; however, adults tend to only fly short distances to feed and for females to lay eggs.

Figure 2. Japanese beetle adults feeding on grape leaf (Cloyd, KSU)

Japanese beetle adults feed through the upper leaf surface (epidermis) and leaf center (mesophyll), leaving the lower

epidermis intact. In general, adults do not feed on tissue between leaf veins, resulting in leaves appearing lace-like or skeletonized (Figure 3). Adults are active on warm days, feeding on plants exposed to full sun, which may be why roses are a susceptible host plant because roses require at least six hours of direct sunlight to flower. Japanese beetle adults begin feeding at the top of plants, migrating downward as food sources are depleted. Japanese beetle adults also feed on flowers (Figure 4), chewing holes in flower buds, which prevents flowers from opening or causes petals to fall prematurely (Figure 5)

Figure 3. Japanese beetle adult feeding damage on littleleaf linden leaves (Cloyd, KSU)

Managing Japanese beetle adult populations involves implementing several plant protection strategies, including: cultural, physical, and applying insecticides. Cultural control includes proper irrigation, fertility, mulching, and pruning to minimize plant stress, which may decrease susceptibility to Japanese beetle adult feeding. In addition, removing weeds attractive to Japanese beetle adults such as smartweed, *Polygonum* spp., may help to lesson infestations. Physical control such as hand removing or collecting Japanese beetle adults before populations are extensive may minimize plant damage. The best time to remove or collect adults is in the morning when ambient air temperatures are typically cooler. Adults can be collected by placing a wide-mouthed jar or bucket containing rubbing alcohol (70% isopropyl alcohol) or soapy water underneath each adult, and then touching them. Adults that are disturbed fold their legs perpendicular to the body, fall into the liquid, and are killed. The procedure may reduce plant damage when conducted daily or every-other-day, for up to four weeks.

Figure 4. Japanese beetle adults feeding on rose flower (Cloyd, KSU)

Figure 5. Japanese beetle adult feeding damage on rose flower (Cloyd, KSU)

The use of Japanese beetle traps in landscapes or gardens (Figure 6) is not sex pheromone attracts more adults into an area than would occur normally. In addition, Japanese beetle adults may feed on plants before reaching the traps, which can lead to plant damage.

Spray applications of contact insecticides will kill Japanese beetle adults. However, repeat applications are required, especially when high numbers of adults are present. A list of active ingredients in commercially available insecticide products for use against Japanese beetle adults is presented in Table 1. Be aware that these insecticides may also directly harm many beneficial insects (parasitoids and predators) and repeated use can lead to outbreaks of other pests including the twospotted spider mite, *Tetranychus urticae*. In addition, these insecticides are directly harmful to pollinators including honey bees and bumble bees. Therefore, apply insecticides in the early morning or late evening when bees are less active.

For more information on how to manage Japanese beetle refer to the following extension publication:

Japanese Beetle: Insect Pest of Horticultural Plants and Turfgrass
(MF3488 March 2020)
https://www.bookstore.ksre.ksu.edu/pubs/MF3488.pdf

Figure 6. Japanese beetle trap (Cloyd, KSU)

Table 1. Active ingredients in commercially available insecticide products for use against Japanese beetle adults.

Active Ingredient (s)	Product
Bifenthrin	Ortho Bug-B-Gon Lawn and Landscape Insect Killer
Carbaryl	GardenTech Sevin 5% Dust RTU
Clarified Hydrophobic Extract of Neem Oil	Captain Jack's Neem Oil RTU
Cyfluthrin	BioAdvanced Rose & Flower Insect Killer RTU
Deltamethrin	Ortho Insect Killer Rose & Flower RTU
Gamma-Cyhalothrin	Spectracide Triazicide Insect Killer for Lawns and Landscapes
Imidacloprid	BioAdvanced All-In-One Rose & Flower Care Concentrate
Imidacloprid and Clothianidin	BioAdvanced All-In-One Rose & Flower Care
Lambda-Cyhalothrin	GardenTech Sevin Insect Killer RTU
Malathion	Spectracide Malathion Insect Spray
Tau-Fluvalinate	BioAdvanced 3-In-1 Insect, Disease & Mite Control
Zeta-Cypermethrin	GardenTech Sevin Insect Killer Concentrate

Raymond Cloyd – Horticultural Entomology

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2023 Fall Armyworm Activity

Fall armyworm, *Spodoptera frugiperda*, can damage several important Kansas crops as well as pasture, turf and home landscaping. This insect does not overwinter in Kansas. Rather, it is native to the tropical regions of the western hemisphere and is active year-round along the gulf coast and southern Florida, migrating in from these locations each year. Two full generations are possible in Kansas with defoliation and grain damage being the biggest concerns.

Picture of fall armyworm

The first detected fall armyworm for the season was on June 16 in the Central Kansas district. Moths were also captured in southwest Kansas the final week of June. Overall, numbers were very low (Figure 1).

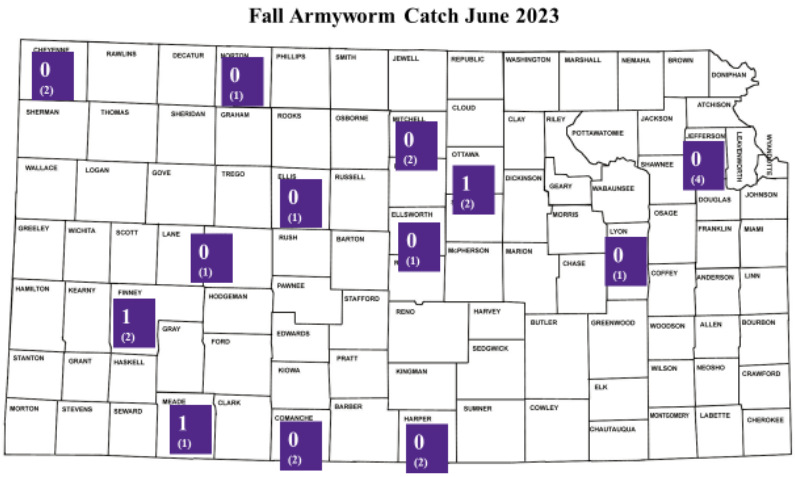

Figure 1. Total Fall Armyworm moth captures in June. The number in parentheses indicates total number of traps in the county.

The total number of moths caught so far in July has been low as well and restricted to the southwest (Figure 2).

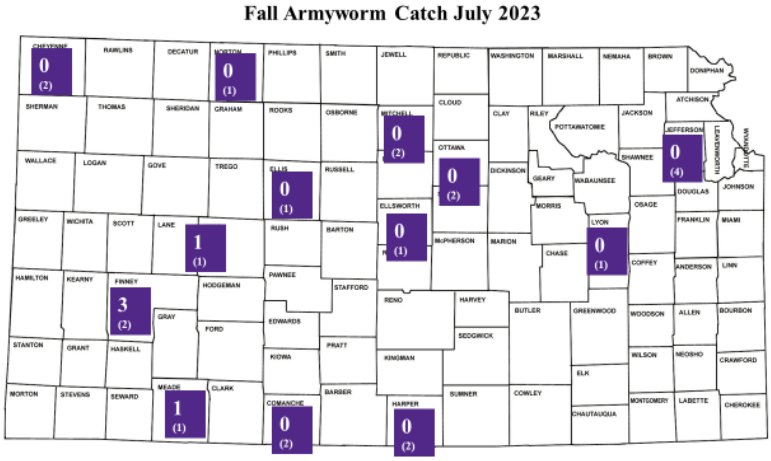

Figure 2. Total Fall Armyworm moth captures so far in July. The number in parentheses indicates total number of traps in the county.

The number of moths entering Kansas will likely increase through July and at-risk crops should be scouted regularly for the remainder of the growing season. Caterpillars increase in size at an exponential rate and a majority of feeding occurs during the later stage of development. It is critical to scout thoroughly and treat, if needed, before the caterpillars are over ½ inch long. Larger caterpillars are harder to control and do the most damage. Keep in mind that it is the second generation of fall armyworm that poses the greatest risk, especially for heading sorghum. The first generation is usually small, and crops are in vegetative stages. Caterpillar feeding will make plants look bad, but yield is not at risk with the first generation. Additionally, use caution when making control decisions in alfalfa as flaring aphids is possible. Recommended thresholds can be found below.

Fall Armyworm Thresholds

- Alfalfa: 1-2 caterpillars per square foot can destroy seedling alfalfa. 10-15 per square foot can destroy 12" tall plants.
- Corn: damage to whorl stage in early summer; treatment may be needed if 75% of plants are damaged. Bt corn may prevent ear damage.
- Sorghum: damage to whorl stage in early summer; treatment may be needed if 75% of plants are damaged. 1-2 larvae/head during flowering to soft dough reduces yield 5-10%.
- Wheat: Larval "window-paning" (Figure 2) in early planted wheat can be a concern. If 25-30% of plants show damage, examine field frequently. Treat at 2-3 active larvae/ft.

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