Kansas State University Extension Entomology Newsletter

For Agribusinesses, Applicators, Consultants, Extension Personnel & Homeowners

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July 8, 2020 No. 14

Japanese Beetle Adults Are Here! Here

Japanese beetle, *Popilla japonica*, adults are present throughout most of Kansas feeding on many plants including: roses, *Rosa* spp.; littleleaf linden, *Tilia cordata*; Virginia creeper, *Parthenocissus quinquefolia*, and grape, *Vitis vinifera*. The ways to manage populations of Japanese beetle adults are limited, and have been for many years, with the application of insecticides still being the primary strategy. Japanese beetle adults are one of the most destructive insect pests of horticultural plants in landscapes and gardens. In addition, the larva or grub is a turfgrass insect pest in home lawns, commercial settings, and golf courses.

Japanese beetle adults are 3/8 to 1/2 inch long, metallic green with coppery-brown wing covers, and approximately 14 tufts of white hair along the edge of the abdomen (Figure 1). Japanese beetle adults emerge from the soil and 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 (Figures 2 and 3). Plant placement in the landscape and the volatiles emitted by plants are factors that affect adult acceptance for

Fig 1. Japanese Beetle Adults Feeding On Leaf (Auth--Raymond Cloyd, KSU)

Fig 2. Japanese Beetle Adults Feeding On Grape Leaf (Auth--Raymond Cloyd, KSU)

Fig 3. Japanese Beetle Adults Feeding On Grape Leaf (Auth--Raymond Cloyd, KSU)

Fig 4. Japanese Beetle Adult Feeding Damage On Leaf (Auth--Raymond Cloyd, KSU)

Fig 5. Japanese Beetle Adults Feeding On Rose Flower (Auth--Raymond Cloyd, KSU)

feeding. Furthermore, 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, they tend to only fly short distances to feed and for females to lay eggs.

Japanese beetle adults feed through the upper leaf surface (epidermis) and leaf center (mesophyll), leaving the lower epidermis intact. Adults, in general, do not feed on tissue between leaf veins, resulting in leaves appearing lace-like or skeletonized (Figure 4). Adults are most active during warm days, feeding on plants exposed to full sun throughout the day, which may be why roses are a susceptible host plant since roses require at least six hours of direct sunlight to flower. Japanese beetle adults start feeding at the top of plants, migrating downward after depleting food sources. Japanese beetle adults will also feed on flowers (Figure 5), chewing holes in flower buds, which prevents flowers from opening or causes petals to fall prematurely.

Managing Japanese beetle adult populations involves implementing a variety of plant protection strategies, including: cultural, physical, and applying insecticides. Cultural control involves maintaining healthy plants through proper irrigation, fertility, mulching, and pruning, which are important in minimizing 'stress', and may possibly decrease susceptibility. In addition, removing weeds attractive to Japanese beetle adults such as smartweed (*Polygonum* spp.) may help to mitigate infestations. Physical control involves hand removing or collecting Japanese beetle adults from plants before populations are extensive. 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 subsequently killed. This procedure, when conducted daily or every-other-day, for at least three weeks, particularly after adult emergence, may substantially reduce plant damage.

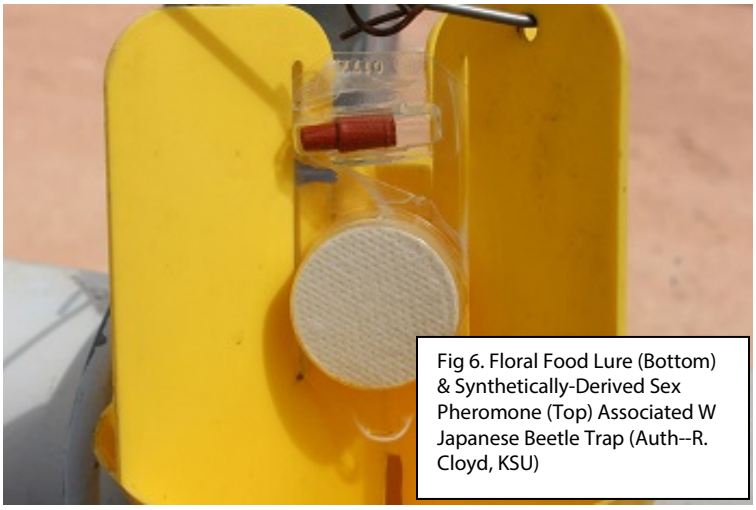

Fig 6. Floral Food Lure (Bottom) & Synthetically-Derived Sex Pheromone (Top) Associated W Japanese Beetle Trap (Auth--R. Cloyd, KSU)

The use of Japanese beetle traps in a landscape or garden is not recommended since the floral lure and synthetically derived sex pheromone (Figure 6) may attract more adults into an area than would 'normally' occur. Japanese beetle adults may also feed on plants before reaching the traps, which increases po tential damage.

Spray applications of contact insecticides will kill Japanese beetle adults. However, repeat applications are required; especially when populations are excessive. Several pyrethroid-based insecticides; such as those containing permethrin, bifenthrin or cyfluthrin as the active ingredient, will suppress Japanese beetle adult populations. However, these insecticides will also directly harm many natural enemies (parasitoids and predators) and continual use will result in secondary pest outbreaks of other pests including the twospotted spider mite, *Tetranychus urticae*. Furthermore, these insecticides are directly harmful to honey bees and bumble bees. Therefore, apply insecticides in the early morning or late evening when bees are less active. In general, systemic insecticides are not effective against Japanese beetle adults because they have to feed on leaves and consume lethal concentrations of the active ingredient to be negatively affected. In addition, if extensive populations are present, plant damage can still occur.

The management of Japanese beetle adults requires diligence, patience, and persistence, to prevent adults from causing substantial damage to plants in landscapes and gardens.

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

Raymond Cloyd

HOME

Insect Predation

Sometimes you capture an image that tells a story and just needs to be shared. My daughter captured such as image of a soldier beetle feeding on another species of soldier beetle while its mate looks on helplessly. This is a good reminder about the circle of life and how other organisms provide food for each other.

A predator is an animal or organism that naturally preys on others primarily for food. The prey is the animal or organism that is hunted and killed by another for food. It is important to note that every organism plays an important role in our ecosystem as they serve as food sources for other species. Just because an insect is a predator one day does not mean they can't become prey to a larger organism. Nature has a delicate balance.

Image courtesy of Tessa Miller, Valley Bluebirds 4-H Club

In order to be a good predator, insects must be able to search the environment and recognize what is acceptable prey. Then they have to be quick enough to capture the prey and delicately handle it, so it does not escape. If an insect is not an efficient hunter, they could lose out on dinner.

Some insects have adaptations which cause them to be better at capturing their food. Examples may include: improved vision, limiting searches to prey rich habitats, development of a clear search image, improved motor skills and modifications to their appendages, which make it easier to capture prey. It is amazing the learning opportunities that come from one image.

Resources: The Insect Predation Game: Evolving Prey Defenses and Predator Responses,

https://tiee.esa.org/vol/v4/experiments/insect_predation/description.html

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Caterpillars in Abundance

This week as I have been out in my own yard and garden I have noticed an abundance of different types of caterpillars. Identification of caterpillars can be difficult because so many of them look really similar, but often if you know what plant they feed upon it will give you a clue.

The first image is of a caterpillar sent to me by a friend asking what it was. She found it feeding on her pansies, which were a hold over plants from spring. These caterpillars are known as pansyworms. They usually grow to be 1 ¼ inches long with a characteristic deep-orange color with black striped sides which feature spines. These caterpillars will take bites out of the leaves, but the resulting variegated fritillary butterfly will add color to the garden.

Panysworm image: Courtesy of Cheryl Boyer

Then I found a few yellowstriped armyworm caterpillars feeding on some of my flowers. I picked them off as I did not want them to feed on those particular plants, but allowed them to feed elsewhere. These caterpillars turn into a somewhat drab grayish-brown moth.

Yellow Striped Armyworm

Finally I spotted a mass of small caterpillars feeding on sunflowers in the garden. The sunflowers were not ones I plants and had come up as volunteer so I have decided to let the caterpillars eat on these plants. It is difficult to for me to identify the exact species from a picture, but they will turn into some sort of checkerspot butterfly.

I have chosen to not use any insecticides to control these particular caterpillars, but options such as Bacillus thuringiensis subsp. kurstaki (Btk) and spinosad can be used when caterpillars are small. If you are going to use these products, remember to read and follow the label.

Checkerspot Caterpillar

Sometimes we don't notice the caterpillars until they are larger and hand picking may become the best control option.

Frannie Miller

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ID to last week's bug

Picture-winged fly – Picture-winged flies get their name from the distinct ornate color patterns on their wings. It is almost like they are painted. Their body shape kind of reminds you of an ant. Larvae feed on rotten, decomposing vegetation and rotten fruit. These insects can be confused with fruit flies, but do not feed on living plant matter like fruit flies.

Frannie Miller

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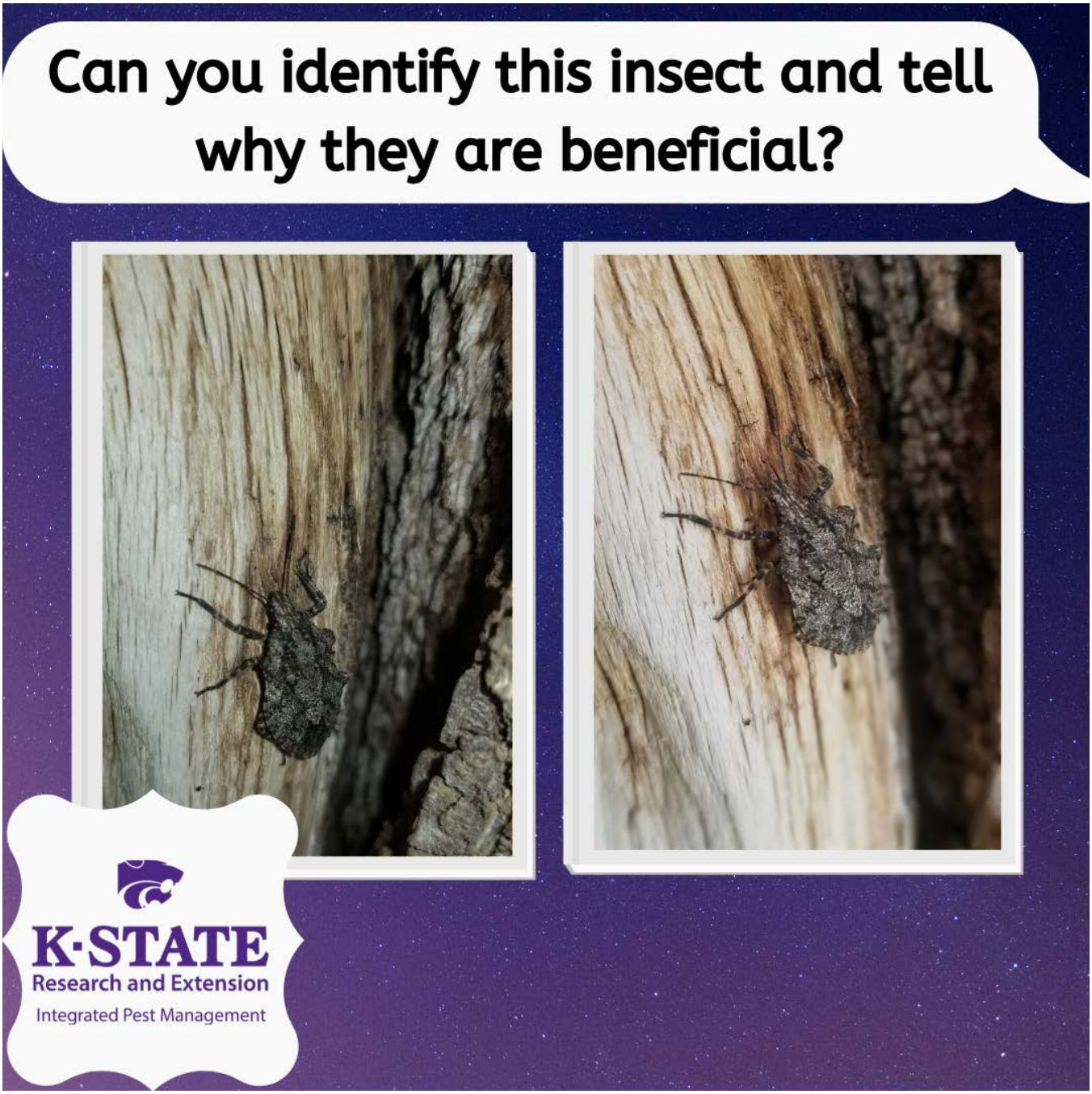
Identify This Insect



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