Kansas State University Extension Entomology Newsletter

For Agribusinesses, Applicators, Consultants, Extension Personnel & Homeowners

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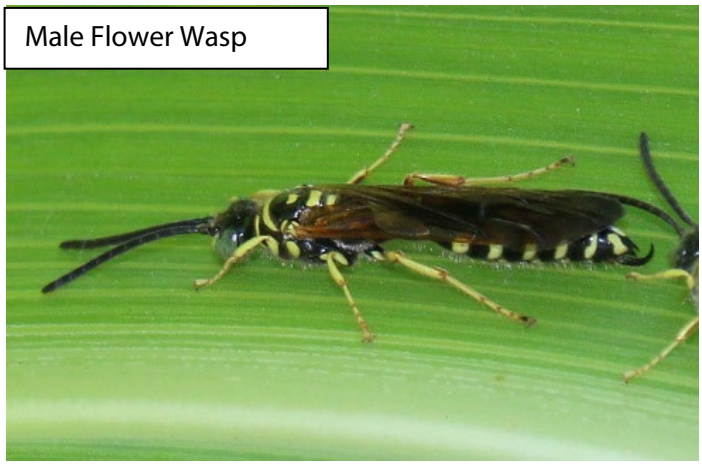
Flower Wasps Getting Attention In Yards and Fields



Male Flower Wasp

A wasp commonly found during the summer in Kansas has recently caused concern among home owners and producers. In one instance, several wasps were mistaken for wheat stem sawfly, a significant pest of wheat that has not yet established in Kansas. Sometimes referred to as flower wasps, the Five-banded Tiphiid Wasp (***Myzinum quinquecinctum), is a harmless solitary wasp found throughout most of the country. In Kansas, it is found statewide and is most common mid to late summer. These ¾ to 1 inch long, narrow bodied wasps have dark bodies, long antennae and smoky wings. Yellow markings are visible on their thorax and yellow bands are present on each abdominal segment. Subtle differences set apart males and females. Male wasps have yellow legs, while females have stockier orange-red legs and wider yellow bands on their abdominal segments. Both male and females visit flowers to feed on nectar. Females are parasitoids of various scarab beetle larvae, including common turfgrass pests such as white grubs, and have been promoted as biocontrol tools in farm and turf settings.*** Female wasps seek out beetle larvae in the ground, digging for them with their

stocky legs. She then deposits an egg on the body of the grub and injects a neurotoxin to paralyze it. As the wasp larva develops it will consume the beetle larva. The wasp then overwinters as a pupa below the ground and emerges as an adult the following summer. Since the populations of both the wasp and its host fluctuate yearly, the level of parasitism changes from season to season. This results in some years where many wasps successfully overwinter and emerge in large numbers. ***The female wasps are not commonly encountered. In fact, it is the male of this species that most often causes alarm. This is due to the fact that the males tend to congregate together in large numbers on vegetation and occasionally even on home siding. These groups are typically attracted to an area because there are nectar sources, shade or tall grass to shelter on over the evening. When approached or disturbed, the group of male wasps take flight and fly circles around the location, giving the appearance of an angry swarm of wasps. The males have no stinger and are harmless, however, the hooked appendage at the end of their abdomen is often mistaken for a stinger, adding to the alarm. Despite their behavior and large numbers, these wasps are no threat to people, pets or landscaping. As summer progresses, these groups of male flower wasps will slowly die off and eventually disappear.***

Male Wasps on Corn

Anthony Zukoff—Southwest Research and Extension Center – Garden City, KS

HOME

Squash Bug

Figure 1. Squash bug adult (Raymond Cloyd, KSU)

Squash bug, *Anasa tristis*, females have laid eggs and various stages of the nymphs are present feeding on squash and pumpkin leaves. Squash bug adults are flattened and 1/2 to 3/4 of an inch in length. Adults are dark-brown and have wings with brown-to-black and orange markings along the outer edge of the body (Figure 1). Females lay red-orange eggs on the leaf underside and top of leaves. Nymphs emerge (eclose) from the eggs in seven to 14 days and undergo five instars (stages between each molt) before maturing to adults. First instar nymphs that emerge from eggs have a red head and thorax (middle section) and pale-green abdomen (Figure 2). Second instar nymphs have a black head and thorax and a pale-green abdomen (Figure 3). Nymphs tend to gather near the eggs after emerging. Older nymphs (3rd to 5th instar) are gray (Figure 4) and tend to distribute themselves over the entire plant (Figure 5). Nymphs are 3/16 of an inch long and cannot fly because they do not have fully-developed wings.

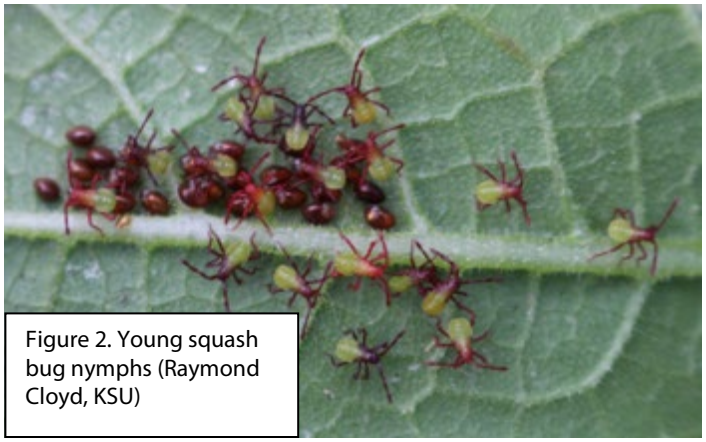
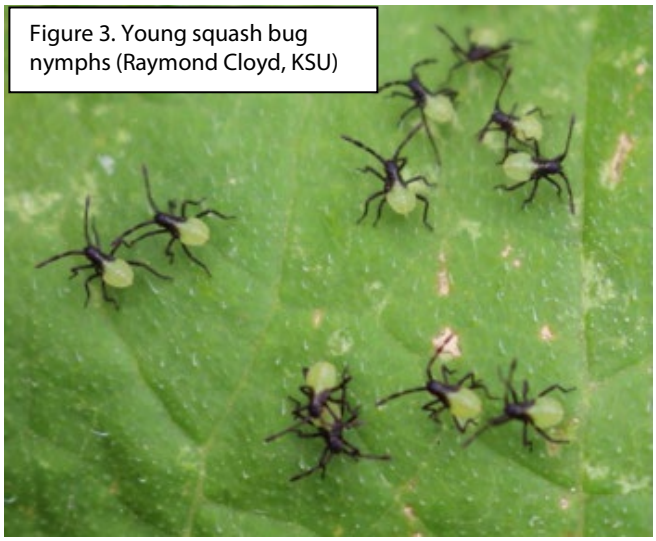


Figure 2. Young squash bug nymphs (Raymond Cloyd, KSU)

Squash bug nymphs and adults use their piercing-sucking mouthparts to withdraw plant fluids from leaves, stems, vines, and fruits. Damage to leaves appears as small, yellow specks that eventually turn brown (Figure 6).

Figure 3. Young squash bug nymphs (Raymond Cloyd, KSU)



Below are the plant protection strategies that you can implement to mitigate problems with squash bugs and prevent subsequent plant damage.

Figure 4. Older squash bug nymphs (Raymond Cloyd, KSU)

Figure 5. Older squash bug nymphs on the stem (Raymond Cloyd, KSU)

Figure 6. Feeding damage caused by squash bug (Raymond Cloyd, KSU)

1. Check plants for the presence of eggs, nymphs, and adults on leaf undersides at least once per week during the growing season.
2. Destroy eggs, and remove (handpick) nymphs and adults, placing them into a container with soapy water to kill them. Handpick every three to four days.
3. Place a floating row cover over plants to protect them from squash bug nymphs and adults.
4. Position wooden boards throughout the garden, turning them over daily to collect squash bugs hiding underneath. You can kill the squash bugs by placing into a container of soapy water.
5. Apply a contact insecticide when the nymphs are present. The smaller nymphs are easier to kill than the larger nymphs. Contact insecticides are less effective against adult squash bugs because adults have a thickened waxy cuticle (skin) that insecticides cannot adhere to and penetrate. Adults are also protected from insecticide sprays by the leafy plant canopy. Weekly applications of contact insecticides may be required to maintain populations below levels that will prevent plant damage. Thorough coverage of the leaf undersides is important to manage squash bug populations.

For more information on how to manage squash bug populations refer to the following extension publication:

Squash Bug (MF3308 July 2016)
https://www.bookstore.ksre.ksu.edu/pubs/MF3308.pdf

Raymond Cloyd – Horticultural Entomology

HOME

Corn Earworms

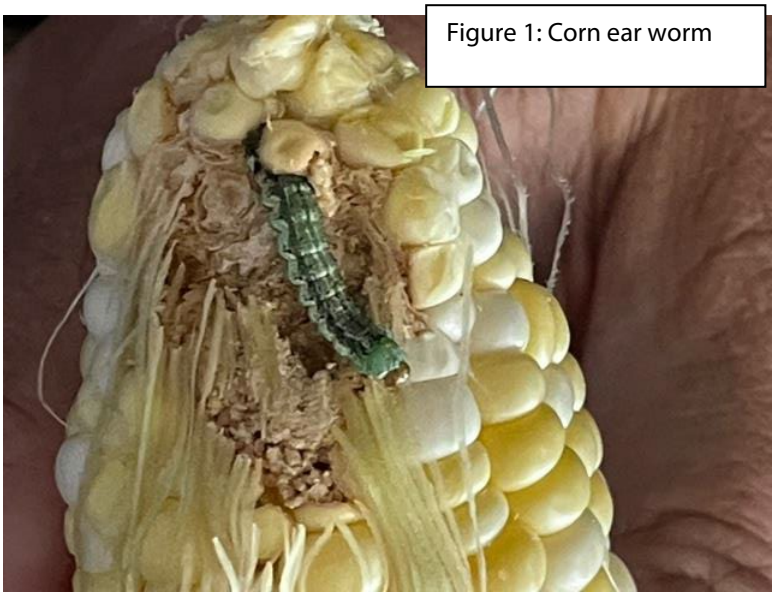


Figure 1: Corn ear worm

Most corn has recently tasseled, just is, or will be soon. 100% of all the ears we examined in the last 2 weeks, both sweet and field corn, were infested with at least one "earworm". This is not unusual. All "earworms" were only one half to three fourths grown (see fig 1) as of 18 July. Thus, these worms should cease feeding in the next 7-14 days, pupate in the soil for 4-7 days, and then emerge as adult moths. These moths will then mate and fly to a suitable host plant to start depositing eggs. Whether sorghum or soybeans depends upon the crop's stage of growth when these moths are actively depositing eggs. Double cropped soybeans may be attractive to moths for another 1-3 months as the plants continue to set pods, and thus there could be another 1- 3 generations of larvae feeding on the bean within the pod. Sorghum, however, should only attract moths from flowering to soft dough--a much smaller oviposition window, but very critical because generally one larva causes 5% loss in grain.

Jeff Whitworth – Field Crop Entomologist

HOME

Dectes Stem Borer

Dectes stem borer adults have been active for about the past 3 weeks. Females have mated and started depositing eggs in stems for about the last 2 weeks. The small larvae are already causing an impact on young soybean plants (see fig2).

Figure 2: Soybean plant damaged by Dectes stem borer

Jeff Whitworth – Field Crop Entomologist

HOME

Grasshoppers

Figure 3: Grasshopper

Grasshoppers continue developing, mainly still in grassy/weedy areas, adjacent to crop fields. These grasshoppers generally can fly for a short distance, but are not yet adults (see fig 3). As they continue feeding and developing however, and the hot/dry conditions continue, these grasshoppers will become adults, which means more mobile, and probably then fly to the more succulent crops nearby.

Jeff Whitworth – Field Crop Entomologists

HOME

Control of Headworms in Kansas Sorghum –Research Spotlight

Collaborative research in China was featured in this summer's edition of American Entomologist, and is relevant to control of headworms in Kansas sorghum.

https://academic.oup.com/ae/article-abstract/68/2/4/6605209?redirectedFrom=fulltext

This work was done on 'Old World bollworm', H. armigera, but its biology is very similar to that of corn earworm, H. zea.

The mechanisms by which the virus manipulates host behavior described therein are likely the same as those used by the HzeNPV that is the organism in the Heligen product we are using to control corn earworm in sorghum.

Instead of trying to pupate in the soil, infected larvae climb to the tops of plants where they die, assisting in the dispersal of the virus.

Here is the full abstract:

Abstract

Baculoviruses can induce climbing behavior in their caterpillar hosts to ensure they die at elevated positions to enhance virus transmission, providing an excellent model to study parasitic manipulation of host behavior. Here, we demonstrate that climbing behavior occurs mostly during daylight hours, and that the height at death of *Helicoverpa armigera* single nucleopolyhedrovirus (HearNPV)-infected larvae increases with the height of the light source. Phototaxic and electroretinogram (ERG) responses were enhanced after HearNPV-infection in host larvae, and ablation of stemmata in infected larvae prevented both phototaxis and climbing behavior. Through transcriptome and quantitative PCR, we confirmed that two opsin genes (a blue light-sensitive gene, *HaBL*, and a long wave-sensitive gene, *HaLW*) as well as the *TRPL* (transient receptor potential-like channel protein) gene, all integral to the host's visual perception pathway, were significantly up-regulated after HearNPV infection. Knockout of *HaBL*, *HaLW*, or *TRPL* genes using the CRISPR/Cas9 system resulted in significantly reduced ERG responses, phototaxis, and climbing behavior in HearNPV-infected larvae. These results reveal that HearNPV alters the expression of specific genes to hijack host visual perception at fundamental levels – photoreception and phototransduction – in order to induce climbing behavior in host larvae.

J.P. Michaud- Integrated Pest Management – Agriculture Research Center Hays, KS

HOME

Sincerely,

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