

Pest Management News

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Letter #2

June 30, 2020

Management Efforts Toward the Asian Giant Hornet in Washington State

John D. Hopkins

On June 2, 2020 the USDA confirmed that a single hornet specimen found near Custer, WA and reported by the Washington State Department of Agriculture (WSDA) was a mated Asian giant hornet (*Vespa mandarinia*) queen. In their release, the USDA advised that without this queen, any colony she may have started would not survive. The Custer, WA hornet was detected near the location of a suspected Asian giant hornet bee kill in 2019. This first find of the year in the United States comes a few days after the British Columbian government confirmed their first detection of the year in Canada near Langley, B.C. That specimen was initially reported to authorities on May 15, 2020.

WSDA had already planned trapping in the Custer, WA area and will maintain that plan to try and find any colonies that exist in the area. A public reporting program is also in place for **Washington State residents only**. See link for more information

<https://agr.wa.gov/departments/insects-pests-and-weeds/insects/hornets>

. On Saturday, June 6, a resident in Bellingham, WA used the program to report finding a suspected Asian giant hornet on their porch. The specimen was photographed and collected and a report was submitted to the WSDA. WSDA was able to collect the physical specimen and on June 11, 2020 and state and federal labs quickly confirmed the specimen as an Asian giant



Asian giant hornet queen found near Custer WA, on May 27, 2020. Photo by Joel Nielsen

hornet. This new specimen was collected more than 15 miles from the next closest confirmed sighting in Custer.

WSDA received the first Asian giant hornet report last December (1999) from a resident near Blaine, WA and later learned of another specimen in the area which Washington State University had collected. These were the first-ever confirmed sightings of Asian giant hornet in the United States.

Asian giant hornets are the world's largest hornet species and are a predator of honey bees and other insects. A small group of Asian giant hornets can kill an entire honey bee hive in a matter of hours.

Since confirmed specimens of the Asian giant hornet in Washington were found late last year, state entomologists in Washington have been working with the USDA to create trapping and eradication plans for this invasive pest in order to protect honey bees and the hundreds of crops in Washington that depend on those bees for pollination.

The U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) has developed response guidelines that include several options for eradicating the Asian giant hornet should additional hornets be detected in Washington State ([https://cms.agr.wa.gov/WSDAKentico/Documents/PP/PestProgram/Vespa_mandarinia_NPRG_10Feb2020-\(002\).pdf](https://cms.agr.wa.gov/WSDAKentico/Documents/PP/PestProgram/Vespa_mandarinia_NPRG_10Feb2020-(002).pdf)). At this time, there is no evidence that Asian giant hornets are established in Washington State or anywhere else in the United States, according to information from Osama El-Lissy, Deputy Administrator, for USDA/APHIS' Plant Protection and Quarantine program.

WSDA has also provided trapping instructions for **Washington State residents only** (<https://agr.wa.gov/departments/insects-pests-and-weeds/insects/hornets/trapping>). Any **Washington State citizen scientist** who is interested, may build and place Asian giant hornet traps on their property starting in July and report the results to WSDA. Commercially available hornet and wasp traps will not catch Asian giant hornets as the entrance holes are too small to allow Asian giant hornets to enter the traps. Although not typically aggressive toward humans, Asian giant hornets do pose a human health threat. Their sting is more dangerous than that of local bees and wasps and can cause severe pain, swelling, necrosis, and, in rare cases, even death. Anyone who is allergic to bee or wasp stings should not approach or attempt to trap for Asian giant hornets. **Asian giant hornets are not present in Arkansas at this time so DO NOT place these traps in Arkansas as they will only trap and kill non-target beneficial species.**

Are we currently in danger from this invasive hornet species in Arkansas? NO, ABSOLUTLY NOT. See Jon Zawislak's article below.

Asian Giants Hornets... Don't Panic Yet

Jon Zawislak

In the midst of all the other 2020 pandemic panic and paranoia, new headlines began to appear in early May heralding the arrival of more bad news. Suddenly something called a Giant Murder Hornet was rumored to be gathering for an apocalyptic invasion. A few news reports quickly fed a blazing social media frenzy, which resulted in frantic calls to Extension offices and agents across Arkansas and the rest of the country.

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This insect, which is the world's largest hornet, is officially called *Vespa mandarinia*, and is native to temperate and tropical eastern Asia. They can be found as far north as eastern Russia, down to southeast Asia and into India, as well as in Japan. But are they here now? And are they something to worry about?

First, let's drop the media's "murder" moniker. People have coexisted with the Asian Giant Hornet for thousands of years. These insects are responsible for a number of deaths each year in Japan and mainland Asia, but it's generally when people come upon an unknown nest which defends itself like other wasps, hornets and bees. They are large, up to 2" long, and thus pack a powerful sting. But it would take many consecutive stings to prove fatal, just as with any other Hymenoptera. There are some people who are highly allergic to insect stings, but these are a minority.

Three Asian Giant Hornets were first confirmed in August 2019 near the town of Nanaimo, on Vancouver Island, British Columbia, and their nest was exterminated. This is standard practice for an invasive species. Two more individual specimens were identified last December near the border town of Blaine, Washington.

As spring temperatures warmed, many hibernating insects become active again. In mid-May another specimen was confirmed in Langley, B.C, followed by another near Custer, WA. Although their range appears to be a little wider than first thought, no other specimens have been found. Authorities in the Northwest have been conducting an intensive and coordinated monitoring program on both sides of the border, with citizens and scientists on the lookout. While there was a lot of overblown media hype at first, it did raise the attention of residents in Washington state, and increase the number of people keeping an eye out for an unusual insect.

But for the rest of the country, it is nothing to worry about for the foreseeable future. The Asian Giant Hornet likely arrived on a cargo ship, and has been observed so far only near one busy port area. *V. mandarinia* reportedly prefer nesting in low mountain areas and forest habitats, while almost completely avoiding open plains and high-altitude climates. This is good news, since there are many high mountains and a vast plain, imposing significant natural barriers between Arkansas and Washington state. The most likely threat is more human-assisted travel. Busy gulf ports, like Houston or New Orleans, are more likely to become entry points for additional invasive species than Arkansas, hopefully giving us ample warning.

There is practically no chance that any insect found in Arkansas this year is an Asian Giant Hornet. Nor are we likely to see any in the near future. The majority of specimens that were brought to county Extension agents this spring, or photos that were sent by email and text message were almost all *Vespa crabro*, the European hornet. These insects, also introduced species, have made themselves at home here since the 19th century. Their colony populations grow throughout the spring and summer, when other insects they prey upon are abundant. As fall turns cool and crisp, the colony produces new hornet queens. These leave the nest and hibernate alone, while the rest of the colony typically dies out in winter. These new queens emerge in spring and found new colonies, and repeat the cycle. These queens are larger than their typical workers, and were emerging this year, exploring for new nesting sites, just as the "murder hornet" headlines were causing panic. The timing was perfect for making everyone assume the large insects they caught or killed were indeed the great threat they had just learned to dread.

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Bermudagrass Stem Maggots

Kelly Loftin

Last year, hay producers experienced bermudagrass yield losses from BSM (bermudagrass stem maggot - *Antherigona reversura*) infestations across the state. Most of the damage occurred in latter cuttings. This year county agents in 18 counties are participating in an IPM project to detect the first presence of adult BSM in the state. After adults have been detected, we will continue monitoring for adults, maggot damage and yield. Sampling resulted in the collection of flies from yellow sticky cards and sweep nets from Columbia Co. (Fig. 1) around May 20 and White, Greene and Franklin County in June. Relatively few flies were collected and little to no BSM damage was observed. Now that we know they are present and that populations will likely build up, bermudagrass producers should remain alert and scout for BSM adults and damage.

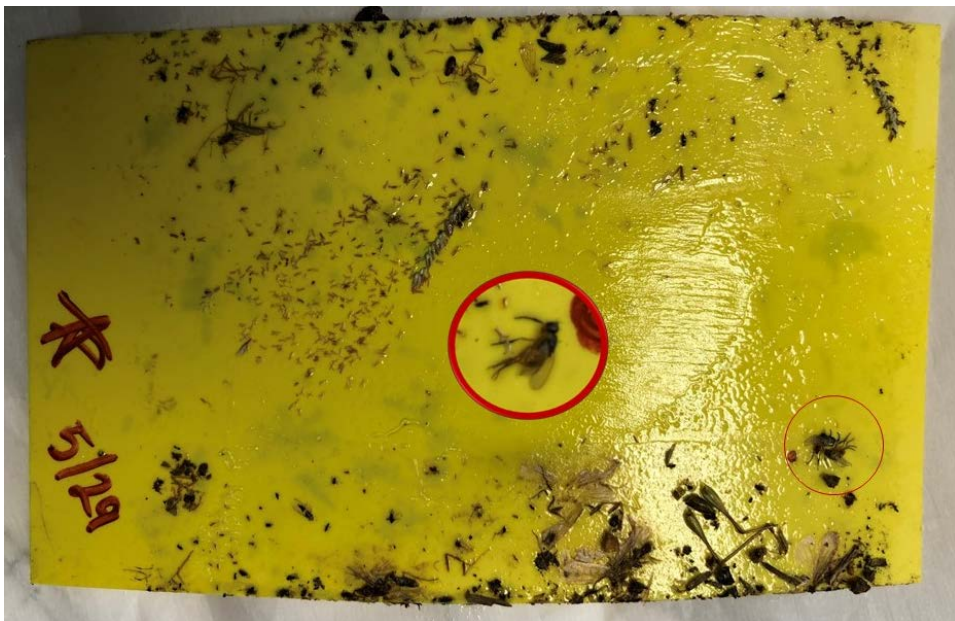


Figure 1. Two bermudagrass stem maggots on a yellow sticky card.

Damage caused by the bermudagrass stem maggot results from larval stages (maggots) feeding in the shoot causing the top two or three leaves to die (Fig. 2). Lower leaves remain alive and unaffected by the maggot's feeding. Because of the death of the top couple of leaves, the plant (and field, if heavily infested) may exhibit a frosted appearance (Fig. 3). The life cycle from egg to adult requires about three weeks. Adult female flies will lay eggs on the bermudagrass stem near a node. The maggot will hatch from the egg, crawl up to toward the last plant node (where the leaf blade emerges from the stem)



Fig. 2. Typical damage caused by the bermudagrass stem maggot. Note the dead upper leaves.

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and burrow into the shoot and begin feeding. Usually by the time the top leaves have died, the maggots have exited the stem and pupated on the ground. With such as short generation period, multiple generations occur and populations tend to increase later in the season causing an accumulation of damage.

The adult fly is small (approx. 1/8 inch in length) and yellow colored with four prominent black spots on the abdomen (Fig. 4). The maggot (larva) is also yellowish colored and about 1/8 inch in length when fully mature (Fig. 5).



Fig. 3. Bermudagrass stem maggot damage.



Fig. 4. Bermudagrass stem maggot adult. Note the four black spots on its abdomen.



Fig. 5. Bermudagrass stem maggot larvae.

In general, this pest is less of a problem in coarse stemmed bermudagrass varieties (Tifton 85 and others) and bermudagrass that is grazed. In grazed pastures, cattle eat the fly eggs and maggots along with the grass, lessening population build up. Bermudagrass stem maggots may become an economic pest in finer stemmed varieties (common, Coastal, Alicia and others) that are baled for hay, especially later in the season after the population builds. In heavy infestations, regrowth after cutting can be slowed substantially. Bermudagrass stem maggot management demonstrations have shown as much as 50% yield loss in fine-stemmed varieties. Figure 6 shows a bermudagrass field with significant damage in untreated versus the pyrethroid treated area.

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Fig. 6. Pyrethroid treated verses non-treated areas of a bermudagrass field infested with bermudagrass stem maggots. Photo by Ben Thrash.

Systemic insecticides and insect growth regulators labeled for use in bermudagrass forage are **not** effective in combatting bermudagrass stem maggot damage. Effective insecticide applications are aimed at killing the egg-laying adults. When applied from seven to ten days following harvest, a pyrethroid insecticide application will usually protect the crop until the next cutting. Timing of the pyrethroid application is critical for two reasons. First, the grass has resprouted and adults are emerging from larvae that pupated at the time of cutting and are ready to lay eggs. Second, pyrethroid applications made after the seven to ten-day treatment window are less effective because some eggs have already been laid and the grass canopy may be too thick for the pyrethroid application to penetrate the area where adults rest. In many situations, early cutting is necessary to allow for a successful treatment to prevent significant yield loss in the next cutting. Pyrethroid insecticides such as lambda-cyhalothrin and others labeled for use in forage grass are the most cost-effective product choices.

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Chinch Bugs

Kelly Loftin

Chinch bugs can be a serious pest of pearl millet, sorghum, sorghum-sudan and corn particularly during hot, dry weather. Infestation in early growth pearl millet and sorghum-sudan can result in significant stand reduction. They can also infest small grains and summer annual forage grasses. Damaged grasses may appear tinged with purple or yellow, or turn completely brown. Chinch bug damage can cause plants to become visibly stunted. The base of the stem can become brittle, causing the plant to snap off near ground level. Chinch bugs cause damage by puncturing the plant with piercing mouth parts and sucking out plant juice. Both nymphs and adults feed on the plant. Because chinch bug populations tend to build during the summer, annual grass forages are more at risk. Legumes are unsuitable hosts.

In Arkansas, two to three generations of chinch bugs occur yearly. Chinch bugs survive winter as adults, and become active when warmer temperatures return in the spring. Eggs are laid in protected areas such as crevices of grass plants near the base. Eggs hatch in about two weeks into nymphs and then begin feeding.

Young chinch bug nymphs are yellowish to reddish brown with a white band running across the back. As nymphs molt into larger nymphs they become black and have visible wing buds. Adults are black with white wings.



© Blake Layton

Southern chinch bugs – adult and nymphs. Photo by Blake Layton, Mississippi State University

Chinch bug damage tends to be less damaging in rapidly growing grasses so adequate fertilization, weed management and water tend to reduce damage. Accumulation of thatch and crop residue favor chinch bug infestation because it provides areas for harborage. Plowing can reduce crop residue and provide fewer harborage sites.

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Chinch bugs are more difficult to control than traditional foliage feeding pests because they often feed at the plant bases. Insecticide treatments are more effective when applied with a high-water volume (at least 20 gallons per acre). Insecticide applications aimed at fields with dying seedling are more likely to pay off by limiting further stand loss. In addition, at this point of plant growth, the canopy is less dense and less likely to interfere with the insecticide penetrating the base. Pyrethroid insecticide formulations containing lambda-cyhalothrin, zeta-cypermethrin or beta-cyfluthrin, such as Lambda Cy, Mustang Max or Baythroid XL, are effective and labeled for use in control chinch bugs in forage.

Fall Armyworm Update

Kelly M. Loftin

To date, I'm not aware of fall armyworm infestations in bermudagrass requiring insecticide treatment. However, Little River and Columbia Counties reported seeing a few in low numbers and I saw a few in the Arkansas River valley over the weekend (June 26, 2020). Also, some have been reported in corn. In recent years, we had already experienced severe infestations in south and southwest Arkansas. Although we haven't experienced any major fall armyworm infestations to date, the threat exists. Now through fall, we should continue scouting pastures and hayfields. Diligence is critical in identifying and managing outbreaks before significant losses occur. Infestations are easily overlooked when the caterpillars are small and eating very little. Once they grow large and consume more grass, damage becomes apparent (Fig. 1).



Figure 1. Fall Armyworms (*Spodoptera frugiperda*).



Figure 2. Mixed sizes of fall armyworms (left) and fall armyworm sampling square (right).

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Clues to fall armyworm infestations include: 1) field appears “frosted” 2) presence of birds in the field or 3) the odor of freshly grass. Armyworm outbreaks usually often occur in waves about 30 days apart. However, when mixed worm sizes occur, overlapping generation are present and new infestations occur more frequently than 30 days. When scouting, carefully examine grass blades, stems and organic debris at plant base for armyworms. It is best to take at least ten one-foot-square random samples across the pasture or hay meadow (Fig. 2). Make note of the armyworm sizes as this will help make good management decisions.

Insecticide application is recommended when an average of two or three fall armyworms per square foot occur within the field. Per-acre insecticide cost will vary from as low as about \$1.50 up to about \$14.00. When calculating cost, always consider the cost per acre and not the cost per gallon of product. Consider residual activity of the product, especially if you are seeing multigenerational populations (all sizes of fall armyworm caterpillars) and heavy armyworm pressure. Pyrethroid insecticides such as Karate® (lambda-cyhalothrin), Mustang Max® (zeta-cypermethrin) and Baythroid XL (beta-cyfluthrin) have short-duration residual activity. In contrast, products such as Prevathon® (chlorantraniliprole), Besiege® (chlorantraniliprole and lambda-cyhalothrin) and Intrepid® (methoxyfenozide) have longer-duration residual activity and can reduce the number of applications necessary to produce a hay crop. Efficacy evaluations in 2017 and 2018 demonstrated that a mixture of lambda-cyhalothrin and Dimilin® (diflubenzuron) would provide longer-duration residual activity at less than one-half the cost of the more expensive products. The rate we evaluated was 3.8 oz. lambda-cyhalothrin and 2.0 oz. Dimilin® per acre. Also remember, if the grass is ready, cutting for hay will avoid the need to make an insecticide application. For additional information on armyworms see “Managing Armyworms in Pastures and Hayfields” and is available at: <http://www.uaex.edu/publications/PDF/FSA-7083.pdf> and the “2020 Insecticide Recommendations for Arkansas” at: <https://www.uaex.edu/publications/mp-144.aspx>.

What’s Eating My Garden Veggies?

Becky McPeake

After spending time and energy rearing a garden plant, it’s frustrating to find teeth marks on a vegetable or fruit you’ve been tending. Sometimes the whole fruit or vegetable is missing, carried off by a thief watching with much anticipation, and then beating you to the harvest. What to do?

Step 1: Who’s the culprit? Consider the circumstances to narrow the range of possible culprits. Are there tracks or visual evidence of possible suspects? This particular cucumber (see picture) was grown in a container off the ground, making it less likely a turtle or rabbit caused the damage. The bite marks are unlike a turtle, but more like a mammal with teeth. A bird would leave a bill-shaped hole; plus, birds typically prefer fruit, such as apples or strawberries.



Bite marks on a cucumber. Photo by Becky McPeake, University of Arkansas.

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Possible suspects are gray squirrels and chipmunks, which are seen frequently near the container garden. Deer and raccoons are in the neighborhood, but have not been seen inside the fenced yard where the containerized cucumbers are grown.

Step 2: What are their behaviors? Gray squirrels and chipmunks are active during daylight hours. Gray squirrels tend to climb trees and amble on top of the fence, and sometimes are seen on the ground. Chipmunks are seen mostly on the ground, but primarily eat seeds and grain.

Step 3: What are my options? It is legal in Arkansas to live trap and relocate nuisance wildlife, so the plan is to set out a live trap that is sized for a tree squirrel. As added insurance, a smaller trap for a chipmunk could also be set. Check that live trapping is legal in the city, county and/or subdivision where you live. The owner's name and address needs to be affixed to the trap, and the animal removed within 24 hours of capture outside the municipality's boundaries. Since squirrels and chipmunks are active during daylight hours, the traps will be closed at night to prevent capturing non-target animals. A repellent labeled for garden vegetables will also be applied as part of an integrated pest management strategy. If problems continue, add a wire fence with a top that can open and close over the plant container.

Protecting fruits and vegetables from wildlife invaders is never easy. For additional ideas and suggestions about dealing with wildlife, go to www.uaex.edu.

Corn Smut

Sherrie Smith

Corn Smut, caused by the fungus *Ustilago maydis*, can produce startling symptoms, but is generally not considered a serious pathogen. Annual losses seldom exceed 2% where resistant cultivars are grown. Although all above-ground parts of the plant can be infected, Corn smut is most spectacular when kernels are infected. Large galls form instead of normal kernels when the fungus invades the kernels and starts growing. Galls begins as glistening silvery white to greenish white, but eventually darkens and becomes a mass of powdery, dark olive brown to black spores. The incidence of smut is



Corn Smut. By Adam Willis, University of Arkansas Cooperative Extension.



Corn Smut. By Grant Beckwith, University of Arkansas Cooperative Extension.

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higher on nitrogen rich soils, or recently manured soils. Resistant varieties are the best method of control. Infected plant parts should be removed before they can sporulate. In some parts of the world infected ears are considered a delicacy while the galls are in the fresh soft stage. It is sold fresh or canned as huitlacoche, cuitlacoche, or maize mushroom.

Broad Mite Management in Blackberry

Aaron Cato

Blackberry harvest across the state is in full swing and most growers are focused on spotted wing drosophila management (SWD). Managing SWD often involves using weekly sprays of broad-spectrum insecticides such as pyrethroids or organophosphates, which we know can limit the ability of our natural enemies (predators and parasitoids) to suppress pest species like mites or aphids. Broad mite is a species of mite that we usually start to see in the heat of the summer due to its subtropical origin, which coincides with unprotected blackberries that have a disrupted natural enemy complex. With the moderate winter we had this past year, there's no surprise that we've already started to see broad mite in our plots at Clarsville (Picture 1).



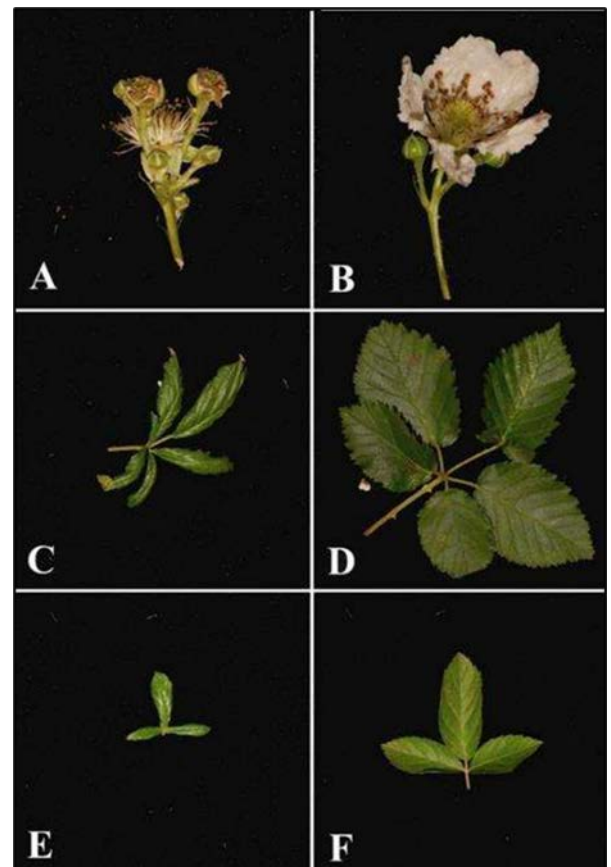
Picture 1 – Broad mite observed on leaves of blackberry primocanes on 6/25/2020.

Damage and Threshold

Broad mite is a relatively new pest to blackberry in Arkansas and it is beginning to be an almost yearly issue for many growers. Unlike mite species such as the two-spotted spider mite, broad mite is microscopic and generally goes unnoticed until symptoms of feeding on new growth and reproductive structures is observed (Picture 2). Damage from broad mite feeding resembles injury from auxin herbicides such as dicamba and will lead to stunting in a similar manner. Broad mite numbers often build very rapidly and work by Dr. Donn Johnson has indicated that reaching 5 mites per leaf can lead to significant losses. The main risk of yield loss is in primocane fruiting varieties that fruit late in the summer. We haven't hit the broad mite threshold in any location yet, but with continued SWD sprays and a relatively favorable environment, we need to be on the lookout for this pest.

Broad Mite Control Options

Management of broad mite can often be complicated. First, until 2020 Agri-Mek was the only effective miticide available. Magister now has a 2(ee) label which allows its use in Arkansas, and efficacy data from Dr. Donn Johnson indicates that it should work as good as Agri-



Picture 2 – Broad mite damaged (left) and normal (right) blackberry flowers and leaves. Photo credit Vincent et al. 2010.

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Mek. With these two products, growers effectively can make 3 effective applications in a single year for broad mite (2 Agri-Mek and 1 Magister), which is still less options than many growers would prefer. Second, both products have a 7-day preharvest harvest interval. With numbers building now during floricane harvest, this means some growers could develop serious issues before control is feasible.

Effective Management Plan

Broad mite generally shows up too late in Arkansas to affect the floricane crop and this year doesn't look to be any different. Control efforts need to be focused on limiting damage to this year's primocanes, which could translate to yield loss in primocane fruiting varieties and lowered yield potential in next year's floricane production. Scout for leaf injury as seen in Picture 2 and confirm that it is broad mite damage by sending in samples to the Plant Health Clinic. If you are observing damage and there is more than 1 broad mite per leaf across a significant portion of a plant, Agri-Mek (plus a surfactant) is a good first option. Save Magister for a second shot as a rotation tool if necessary. You will need thorough coverage (100 GPA is preferable) to get acceptable control as this pest is often feeding deep inside terminal leaf material. Give Aaron a call at 479-249-7352 if you have any questions.

What Herbicide Is It?

Tommy Butts

This month's weed science contest is: What Herbicide Is It?

This herbicide class is used in numerous row cropping systems including corn, cotton, peanuts, soybean, and wheat, and is also used in turfgrass systems. These herbicides only provide preemergence (PRE) soil residual activity; there is no postemergence (POST) foliar activity on weeds. For this herbicide group to kill plants, the plant must first germinate and try to grow through the herbicide in the soil, but is then killed prior to seedling emergence (Picture 1). This herbicide group controls grasses and small-seeded broadleaves.



Picture 1.



Picture 2.



Picture 3.

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Crop injury can occur even on labeled row crops such as the buggy-whipping visible on corn in Picture 2 or the drawstringing leaves on soybean as in Picture 3. Due to some of these crop injury concerns, they even make safened versions of some of these herbicides to be applied to labeled crops. Additionally, these herbicides can be extremely damaging to rice if herbicide drift occurs prior to emergence (Picture 1).

Be the first to email me at tbutts@uaex.edu with the correct WSSA group number, mode-of-action, OR site-of-action and win a prize! Good luck!

To The Readers

Please offer any suggestions for Urban or Livestock Integrated Pest Management topics (insect pests, plant diseases, weed problems, wildlife control problems) that you would like to see – *OR* – feel free to submit an article that you have prepared. Kelly and I will be glad to include it (subject to editing). Send feedback to jhopkins@uaex.edu or kloftin@uaex.edu

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