

## ***Pest Management News***

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**Letter #4**

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## **Cicada Killers - Alarmingly Large Native Wasps**

John D. Hopkins

The cicada killer, *Sphecius speciosus* (Dury) is a large ground dwelling wasp and gets its common name from the fact that it hunts and provisions each nest cell of its underground burrow with a cicada (Homoptera: Cicadidae) as food for its young. These wasps can become an urban nuisance pest when they select an area of bare ground around a structure for use as a nesting site. People become alarmed because they look like giant yellowjackets. In the United States, they are found east of the Rocky Mountains.

The cicada killer is about 1-1 5/8" long and its color varies from black to rusty with yellowish markings on the first three abdominal segments. The thorax has a short collar-like pronotum and the front wing has 3 submarginal cells with the second being rather squarish. The middle tibia has two apical spurs. The cicada killer's appearance is similar to the European hornet (*Vespa carbo*), however the European hornet is brownish with orange stripes on all abdominal segments. Other wasps either lack the size and/or characteristic pale abdominal markings.



**Cicada Killer Adult**

Cicada killers are solitary wasps and do not live in colonies but both male and female adult cicada killers can be seen around the same area. Many individuals may fly over a lawn and/or they may use the same general area for nesting purposes, but they do not share nests. Each female digs her own burrow which is about 1/2" in diameter and may extend up to 10" deep. She then locates a cicada, stings it, and brings the paralyzed cicada back to the burrow. One or 2 cicadas may be placed in each burrow and an egg is deposited on one. The wasp larva feeds on the paralyzed cicada. Full-grown larvae overwinter in their burrow, pupate in the spring, and emerge as adults during the summer, usually in July and August. Females will construct and provision many such burrows.

Typically, areas of bare ground are used as nesting sites. Many individuals may use the same general area for nesting purposes. While digging their burrow, the females excavate a sizeable pile of soil which can be disfiguring to a lawn. Females in general will not sting unless handled or stepped on, such as by barefooted children. Males will buzz people but cannot sting.



**Cicada Killer Burrow**

Cicada killers are beneficial insects and help to control cicada populations. If they must be controlled, dusting the bare nesting area with an appropriately labeled pesticide is effective.

Pyrethroids and carbaryl are particularly effective.

After such treatment has reduced this summer's adult population, usually within 2-3 days, each burrow should be dusted, aerosol treated, or flooded via a compressed-air sprayer with an appropriate residual to kill the underground developing wasps in order to reduce next year's wasp population. Bare-ground areas in the lawn should be eliminated as a long-term solution to discourage nesting by cicada killers.

### **Recommended Insecticides**

<b>Active ingredient</b>	<b>Examples of product names</b>
5% carbaryl	GardenTech Sevin-5 Ready to Use 5% Dust
0.05% deltamethrin	Enforcer BugMax Insect Powder
0.05% deltamethrin	Hi-Yield Multi-Use Dust
10% permethrin	Hi-Yield Lawn, Garden, Pet & Livestock Insect Control

**All chemical information is given with the understanding that no endorsement of named products is intended, nor is criticism implied of similar products that are not mentioned. Before purchasing or using any pesticide, always read and carefully follow the directions on the container label.**

### **Biting Midges: Not Just a Nuisance**

Kelly M. Loftin

Around our place applying insect repellents is an everyday activity and it's not to repel mosquitoes or ticks. This summer we have a bumper crop of biting midges, also known as punkies and no-see-ums. Our problems arose following construction of a pond about 200 yards from our home. This pond leaks down to a low level resulting in a nutrient rich "broth" with an ample perimeter of mud, the ideal egg-laying site for biting midges.

Although they feed on other areas of our body, they particularly troublesome around the lower legs and ankles. Without repellents, long pants seem to be the only option. If you are bitten by something that flies and you can barely see, the likely culprits are biting midges. Localized allergic reactions to

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biting midge bites result in severe itching. These extremely annoying pests are tiny biting flies in the Family Ceratopogonidae. These almost microscopic biters are a nuisance to campers, fishermen, gardeners or anyone active outdoors.

Biting midges are an important wildlife and livestock concern. Some members of this family such as *Culicoides* spp. are potential vectors of the bluetongue virus in sheep and cattle, as well as epizootic hemorrhagic disease (EHD) in wild ruminants such as deer. In addition, scientific evidence has shown that biting midges are biological vectors of vesicular stomatitis virus (VSV) in cattle and horses. Recent research (Pathogens. 2020 Apr 24;9(4):316. doi: 10.3390/pathogens9040316) with *Culicoides soronensis* indicates that VSV can be venereally transmitted from infected males to naive females and from infected females to naïve males. Other species of *Culicoides* are potential vectors of *Haemoproteus*, a blood parasite of birds such as quail.

Also, some horses experience equine allergic dermatitis or a localized allergic reaction to biting midge bites. This dermatitis usually occurs on the withers, mane, tail or ears of sensitive horses. The name no-see-um is appropriate because they are difficult to see and their bite is disproportionate to their size.

Adults are less than 1/8 inch (3 mm) sometimes closer to 1/16 of an inch in length (1.5 mm) (Fig. 1). Wings are covered with dense hairs that result in pigmented patterns on the wings. Mouth parts are well developed with elongated mandibles adapted for blood sucking. Both males and females feed on nectar but only the female feeds on blood. She must consume blood for her eggs to mature. Biting midge eggs are only about 1/100 of an inch (0.25 mm) in length and laid on moist soil. Eggs hatch into wormlike larvae with short brush like breathing structures that allows them to breathe in an aquatic environment. Although larvae are not strictly aquatic or terrestrial, they cannot develop without moisture. After adults emerge from the pupal stage, they feed and mate. Common breeding areas include along the edges of ponds, swampy areas, tree holes, muddy substrates, around muddy livestock waterers and sometimes, the aquatic or semiaquatic habitats formed by water from air conditioning units). I've also found them in leaky septic systems and muddy, wet barnyards.

These tiny flies are ferocious biters causing painful and irritating bites in many people. Allergic or sensitive individuals may develop long-lasting, painful and itchy lesions. Outdoor enthusiasts can protect themselves with insect repellents. Repellents containing DEET, Oil of Lemon Eucalyptus or picaridin, typically used against mosquitoes and ticks, are also effective against biting midges. Always follow the label precautions and apply before exposure to these biters. Occasionally, biting midges will also enter houses and screened patios through standard 16 mesh screening or damaged areas of the screen. If this is the case, you can replace damaged screen with tighter mesh screen or treat existing screen with an approved insecticide such permethrin. Also, try turning on the ceiling fan on your porch; ceiling and window fans will often keep biting midges away because they are not strong fliers. When using an insecticide or repellent read and follow label directions.

Protection of livestock from biting midges using insecticides or repellents is unlikely to affect the overall biting midge population. Permanent larval habitat modifications can help to reduce insect populations over the long term.

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*Culicoides* spp. biting midge. Photo by Whitney Cranshaw, Colorado State University, Bugwood.org



Typical biting midge breeding sites.

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# **Don't Forget to Scout Cool Season Annuals for Fall Armyworms**

Kelly M. Loftin

Over the past month we have experienced fall armyworms (FAW) above treatment thresholds in bermudagrass forage in multiple regions. In some areas, FAW populations are spotty. While other areas, particularly the western portion of the Arkansas River Valley and northeast Arkansas, experienced more severe and widespread FAW damage. Although many producers are currently growing their last bermudagrass hay crop, we need to remain mindful that significant FAW damage could continue through September and into October.

Producers are reminded that cool season annuals such as annual ryegrass and small grains (wheat, cereal rye and oats) are vulnerable to FAW damage. An ill-timed FAW infestation on newly emerged cool season annuals can result in significant stand loss. Continued scouting in bermudagrass and newly emerging cool season annuals is essential. We need to identify and manage outbreaks before 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.

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 often occur in waves about 30 days apart. However, when mixed worm sizes are present in the field, new infestations occur more frequently than 30 days. And in 2020, we did experience overlapping generations in a few areas. 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. Make note of the armyworm sizes as this will help make good management decisions.

Although we continue to compare and correlate sweepnet verses worms per square foot counts to develop a treatment threshold using sweepnetting; currently, we still rely on worms per square foot for management decisions. Insecticide application is recommended when two or more fall armyworms per square foot occur in a field. Per-acre insecticide cost will vary from as low as \$2.00 up to about \$14.00. Consider residual activity of the product, especially if you are seeing overlapping generations (all sizes of fall armyworm caterpillars) and heavy fall 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 or protect a newly emerged cool season grass. Recent studies and control experiences in Arkansas have shown that a mixture of lambda-cyhalothrin and diflubenzuron (Dimilin) provided similar efficacy and residual activity to Besiege® (chlorantraniliprole and lambda-cyhalothrin (> 3 weeks residual control). A tank mix of generic lambda-cyhalothrin at 3.8 oz./acre and Dimilin® or Unforgiven (diflubenzuron) at 2 oz./acre would cost about \$5.00 per acre. As always, 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>.

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**Fall armyworms above treatment threshold.**



**Mixed fall armyworm instars.**

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# **Post-Harvest Disease Management in Blackberry**

Aaron Cato

Blackberry harvest is almost fully completed in Arkansas with the last bit of primocane fruit coming off now. Focus for many growers has now shifted towards plant and field maintenance. Disease management is still important in the time between harvest and dormancy as there are several diseases that can affect the yield potential of canes the following year. We are beginning to see many of these diseases take over plantings with the sustained heat and humidity we generally experience this time of year. Below we will discuss what diseases to keep an eye out for and what management tactics should be prioritized.

## **Cultural Control Tactics**

1. Remove all harvested floricanes (second-year canes) and burn them outside of the planting. This will lower disease inoculum within plantings significantly.
2. Maximize efforts in weed management to help increase airflow between rows of blackberries. The base of first-year canes are generally hardened-off enough by August to not be injured by directed applications of paraquat.
3. Clean up field edges and hedgerows to maximize airflow into plantings and remove all nearby wild blackberries where possible.
4. Excess nitrogen should be avoided as it can lead to excessive foliage and overall decreased airflow around canes.
5. Overhead irrigation should be avoided if possible. Anthracnose infection is much more likely when canes and leaves stay wet for extended periods of time.

## **Diseases to be Concerned with Post-Harvest**

### **Anthracnose**

Anthracnose, caused by the fungus *Elsinoe veneta*, is often the most serious disease in Arkansas that infects canes after harvest. Spores moved around during rain events can infect the stems of plants and lead to loss of yield and quality in the following year. Cane lesions (Picture 1) can begin to depress and lead to cracks in the stem that lead to yield and quality loss. Protectant fungicides like captan will help to prevent this infection from occurring, and fungicides with some systemic activity such as Quilt Xcel (FRAC 11 +3) or Pristine (FRAC 11 + 7) should offer some curative benefits for present cane lesions.

### **Cane and Leaf Rust**

A disease we observed last year in September was leaf and cane rust, which is caused by the fungus *Kuehneola uredinis*. This disease is often confused with orange rust, which has no means of control except removing the plant. Leaf and cane rust (Picture 2) can be suppressed by many fungicides and is something we should be scouting for and responding to as it can lead to severe defoliation and



**Picture 1. Anthracnose cane lesions present on a first-year blackberry cane caused by *Elsinoe veneta*.**

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potentially impact next year's yield. If leaf or cane rust is observed on primocanes after removal of second-year canes, apply Abound (FRAC 11) or Cabrio (FRAC 11) or Quilt Xcel (FRAC 11 +3) or Rally (FRAC 3) or Tilt (FRAC 3) or Pristine (FRAC 11 + 7).

### Leaf Spot Diseases

Leaf spot diseases such as Cercospora, Psuedocercospora, or Septoria often begin to appear in the bottom of the canopy where leaves stay wet for extended periods (Picture 3). In late summer these diseases can begin to move up the plant and lead to a large level of defoliation if not managed. These diseases will often be cleaned up when combination fungicides such as Quilt Xcel or Pristine are used for Anthracnose or leaf and cane rust control. A fungicide application of Quilt Xcel (FRAC 11 +3) or Pristine (FRAC 11 + 7) or Cabrio (FRAC 11) or Abound (FRAC 11) or Tilt (FRAC 3) should be made if symptomology is widespread on the lower canopy and appears to be moving farther up the canopy.



**Picture 2. Cane and leaf rust present on blackberry leaves in September 2019 after removal of second-year canes.**



**Picture 3. Leaf spot on first-year Ponca blackberry plants.**

### **Guidelines for Disease Management Post-Harvest**

Maximizing cultural control will be key in preventing serious disease issues. Anything that can be done to increase airflow and decrease the amount of inoculum present should be prioritized. In addition to these cultural practices, regular fungicide applications should continue after harvest to lower the amount of inoculum present. Captan every 10-14 days (depending on rainfall) should be used as a baseline protectant program post-harvest. An addition of Quilt Xcel with captan should be considered to enhance prevention of Anthracnose issues and cleanup both leaf spot diseases and cane and leaf rust.

Checkout the Southeast Caneberry IPM Spray Guide <https://smallfruits.org/files/2019/06/Caneberry-Spray-Guide.pdf> for fungicide recommendations and give Aaron Cato a call at 479-249-7352 if you have any questions.

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# **Shedding Light on Deer-Vehicle Collisions**

Becky McPeake

Research from USDA's Wildlife Services indicates using rear-facing LED light bars to illuminate the front of a vehicle will reduce white-tailed deer-vehicle collisions at night. Wildlife Services is applying for a patent for this new lighting system and is seeking a partner with manufacturing and marketing this technology.

Light bars illuminate a larger portion of the vehicle's front surface. In a study with free-ranging deer, the incidence of "dangerous interactions" decreased from 35% with headlights alone to 10% using headlights and the light bar. The addition of light bars resulted in more instances where deer moved away from the vehicle's path, rather than "freezing" or becoming immobile as the vehicle approached.



**These images from USDA Wildlife Services demonstrate how traditional headlights (top) and the addition of rear-facing LED light bars (bottom) change the vehicle's visibility.**

Wildlife researchers theorize that additional light provides deer with a larger looming image of an approaching vehicle. An object which looms is perceived to become larger as it approaches. The additional light system assists deer with interpreting the vehicle as looming rather than stationary. A looming vehicle is then interpreted as an approaching predator, causing deer to flee.

Those interested in becoming a licensing partner for this product should contact the National Wildlife Research Center's Technology Transfer Program Manager, [john.d.eisemann@usda.gov](mailto:john.d.eisemann@usda.gov). In the interim, those who want to devise their own lighting system should first check with law enforcement or other authorities. Arkansas has specific regulations regarding lighting on vehicles, e.g., <https://codes.findlaw.com/ar/title-27-transportation/ar-code-sect-27-36-210.html>. It is illegal to blind an oncoming driver with glare, which could result in a fatal accident.

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## **Elm Black Spot**

Sherrie Smith

We are seeing some defoliation of elm, in some cases severe. A fungal disease called Elm Black Spot is the important foliar disease on North America elms (*Ulmus* spp.). This disease is also called elm leaf scab, elm leaf spot, or anthracnose. The causal agent of this disease is the fungus *Stegophora* (syn. *Gnomonia*) *ulmea*. Most elm species are susceptible to this disease, but *Ulmus americana* is the most susceptible. This disease is considered a minor disease on mature trees, but can cause significant defoliation and twig dieback in nursery production on susceptible cultivars. Symptoms start out as small, whitish or yellowish flecks or blotches on the upper surface of the leaf that later enlarge with black specks developing inside. These black specks can merge together to form a single, irregular shaped stomata that is 0.5 to 3.0 mm in diameter. In general, individual stomata remain separate surrounded by a yellow white band of dead tissue, but sometimes these stomata can grow so close together to appear to cover the entire discolored area. When this happens, the symptoms can look similar to *Rhytisma tar spot*. Besides infecting the leaves, this fungus can infect and girdle petioles and shoots. Successive seasons of twig blighting can cause the formation of witches' broom. Disease infection often begins early in the growing season and can be very damaging during wet summers. Management of this disease includes removing infected leaf debris and dead shoots. Avoid overhead irrigation and close spacing of cuttings and young trees. Chemical control of this disease is generally not warranted for large trees. For small nursery trees, preventive fungicide applications of chemicals such as mancozeb, copper, or chemicals with the active ingredient chlorothalonil may be made starting at budbreak in the spring and continuing at regular intervals until leaves are fully developed.



**Elm Black Spot. This disease is also called elm leaf scab, elm leaf spot, or anthracnose.**

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# What Impacts Physical Spray Drift?

Tommy Butts

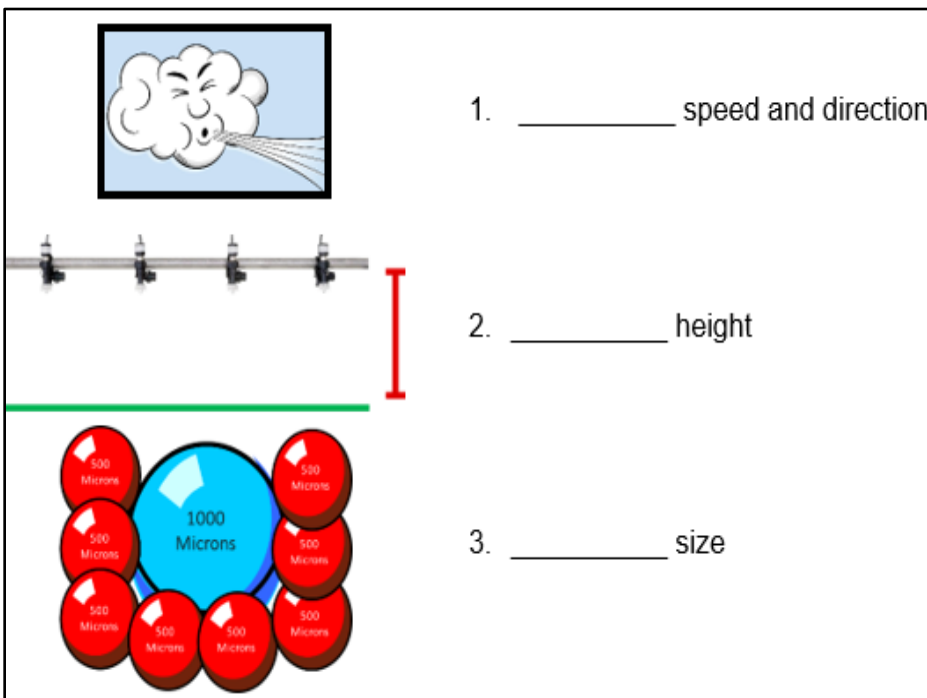


This month's weed science contest, "What Impacts Physical Spray Drift," looks at the spray drift of droplets and how we can begin to manage it.

Physical spray drift continues to be a major problem across the state. Whether from applications to row crops or pastures, there have been numerous instances of injury popping up on susceptible plants (Picture 1). Physical spray drift, the off-target movement of spray droplets, is primarily impacted by 3 main factors from both ground and aerial spray equipment. Your task for this month's contest is to fill in the blank for each of these three factors that impact physical spray drift



**Picture 1. Injury symptoms of herbicide drift observed in 2020 on various crops including rice, soybean, and pumpkin.**



The first factor is the most important variable that influences spray drift. Research has shown that if this factor is doubled, drift can increase up to 700%. However, this factor is impossible to manage for applicators. The second factor is somewhat manageable by applicators, but technically the optimum setting for this factor is determined by nozzle selection and spacing. Research has shown if this factor is doubled, drift can increase up to 350%. Finally, the third factor is the most manageable factor for applicators to reduce drift potential of an application. By increasing this third factor, physical drift potential can be significantly reduced, and numerous nozzle types and adjuvants have been developed for this purpose.

Successful and safe herbicide applications require careful attention to detail, but by accounting for these three factors, physical drift can be mitigated. For more information on herbicide applications,

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spray drift, and how to manage it, make sure to view my webinar at [learn.uaex.edu](http://learn.uaex.edu), “Herbicide Applications: Technologies and Spray Drift and Weeds, O My!”

Be the first to email me at [tbutts@uaex.edu](mailto:tbutts@uaex.edu) with ALL THREE of the correct answers and win a prize!

## **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](mailto:jhopkins@uaex.edu) or [kloftin@uaex.edu](mailto:kloftin@uaex.edu)

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