

## ***Pest Management News***

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**Letter #2**

**June 30, 2015**

### **Survey Indicates Bed Bug Infestations Slightly Higher During Summer**

John D. Hopkins

The most recently released biennial “Bugs Without Borders” survey queried U.S. pest professionals on the prevalence of bed bugs in American’s daily lives and was conducted by the University of Kentucky and the National Pest Management Association. Results indicate that bed bug infestations in the United States continue at high rates. The survey revealed that 99.6 percent of respondents (pest management professionals) had treated for bed bugs in the past year. This number, which has been consistent for the past few years, is significantly higher than 15 years ago, when only 25 percent of pest professionals reported treating for bed bugs.

Top places where pest professionals found and treated for bed bugs were, as in the past, residential settings and hotels. With summer vacations on everyone’s mind the savvy traveler would be well advised to be vigilant during and after their trip to insure they do not pick up unwanted hitchhikers...aka bed bugs! Travelers should always be vigilant about their surroundings during hotel stays, when using public transportation, and particularly when inspecting luggage and clothes upon return from vacation.



Listed below are the top five findings from the “2015 Bugs Without Borders” Survey:

1. Almost all (99.6%) pest professionals treated for bed bugs in the past year, unchanged from 2013, but higher compared to five, 10 and 15 years ago.
2. The top three places where pest professionals report finding bed bugs were apartments/condominiums (95 percent) and single-family homes (93 percent) and hotels/motels (75 percent). Past surveys have shown these environments to consistently be the top three where bed bugs have been encountered.
3. Bed bugs were also found almost everywhere else and in higher numbers. Bed bugs were commonly found in nursing homes, college dorms, offices, schools and daycare centers, hospitals, public transportation and others:
  - Nursing homes - 58 percent (46 percent in 2013)
  - Office buildings - 45 percent (36 percent in 2013)
  - Schools and day care centers - 43 percent (41 percent in 2013)
  - Hospitals - 36 percent (33 percent in 2013)
  - Doctor’s offices/outpatient facilities - 33 percent (26 percent in 2013)
  - Transportation (train/bus/taxi) - 29 percent (21 percent in 2013)
  - Retail stores - 20 percent (15 percent in 2013)
  - Movie theaters - 16 percent (10 percent in 2013)

**NOTE: Percentages denote professionals reporting treating bed bugs in specific locations.**

4. In addition to the environments above, pest professionals report finding bed bugs in some very unusual places, illustrating how problematic this pest can be: A prosthetic leg; in a casket with a deceased body; vent above the bathtub; dance club; 911 Call center; and in a tow boat on the Ohio River. Bed bugs remain the most challenging pest to treat according to 68 percent of survey respondents, slightly lower than the 76 percent who said so in 2013, showcasing the industry’s greater understanding of ways to effectively combat bed bugs.
5. Although not a seasonal pest, 61 percent of respondents said they received more calls at certain times of the year. Of those, two-thirds (66 percent) said summer was the busiest season. People may unknowingly be transporting more bed bugs back home during the summer due to increased travel, use of public transportation and hotel stays compared to other times of the year.

The 2015 Bugs Without Borders Executive Summary can be seen at the following link:

<http://www.pestworld.org/news-and-views/pest-articles/articles/2015-bugs-without-borders-executive-summary/>.

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## **Update on Last Month's Article on Odorous House Ants**

John D. Hopkins

In last month's Pest Management News newsletter (*Letter #1 May 31, 2015*), the article "Are Odorous House Ants Invading your Home?" indicated that when crushed between the fingers, the odorous house ant (OHA) emits an odor similar to that of a rotten coconut or resembling pine scent. Well, it turns out that more light has been shed on the subject. In the current issue of *American Entomologist*, the research article, "The True Odor of the Odorous House Ant" by Clint A. Penick and Adrian A. Smith (DOI: <http://dx.doi.org/10.1093/ae/tmv023> 85-87 First published online: 8 June 2015) explores this very question: what exactly is the odor given off by the odorous house ant, *Tapinoma sessile*, when crushed? Being able to recognize this odor is extremely helpful when making ant identifications in the field. Currently the most common answer to this smell question has been rotten coconuts. But, just what does a rotten coconut smell like? Everyone knows what fresh coconut smells like, but how many of us have truly smelled a rotten coconut? Penick and Smith set out to scientifically analyze the odor of crushed OHAs. Chemical analysis of volatiles from live odorous house ant workers, fresh and rotten coconut, and blue cheese found that blue cheese had the greatest similarity, though rotten coconut shared some of the same methyl ketones found in the workers and cheese. The researchers also buried a coconut for a week and then put it through the smell test. The excavated coconut was covered in blue mold that smelled like blue cheese and this mold produced the same methyl ketones. Thus, the old adage of OHAs smelling like rotten coconuts is true, except, they really smell like the blue mold colonizing the rotten coconut.



## **Grasshoppers, Blister Beetles and Fall Armyworms in Pastures**

Kelly M. Loftin

Now is the time of year we begin receiving more calls about forage pests. So far, I have had a few calls concerning grasshoppers. The pests of concern are traditionally armyworms and grasshoppers. In addition, horse owners and hay producers are concerned about blister beetles in alfalfa hay. So far I've not received any fall armyworm calls, however now is the time of year we start seeing infestations. Our hay producers should be encouraged to begin scouting their fields for fall armyworms before severe infestations and significant yield losses occur.

### **Grasshoppers**

Grasshoppers can consume up to 50% of their body weight in forage each day. In contrast, cattle consume up to about 2.5% of their body weight in forage per day. In other words, 50 pounds of grasshoppers would eat about as much as a full grown cow. To make matters worse, grasshoppers compete directly with livestock because they preferentially feed on the most desirable forage plants.

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Several species of grasshoppers occur in Arkansas. Some of the most common species include the red-legged (*Melanoplus femurrubrum*), differential (*Melanoplus differentialis*), two-striped (*Melanoplus bivittatus*), and lubber (*Romalea guttata*). Over the years, most of the call I've received have been on the differential and red-legged grasshoppers.



**Differential grasshopper.**  
Photo by David Riley, Univ. of Ga., Bugwood.org.



**Red-legged grasshopper.**  
Photo by Clemson Univ., Bugwood.org.



**Two-striped grasshopper.**  
Photo by Whitney Cranshaw, Colorado State Univ., Bugwood.org.

The local abundance of grasshoppers is often related to the weather conditions and occurrence of grasshopper pathogens. The naturally occurring fungal pathogens that help lower grasshopper abundance can be suppressed during hot and dry drought conditions.

Grasshoppers are difficult to control particularly the large ones. In addition, grasshoppers will fly a considerable distance in search of suitable food. In some situations, insecticide application can be a viable option. However, it can be difficult to judge whether control is economically warranted. Before treating a pasture or hayfield for grasshoppers, producers should weigh the value of the field as hay or forage against the cost of an insecticide application. In general, broadcast insecticide application is not economically feasible if less than 10 grasshoppers per square yard are found. Another option to consider is spot treating areas where a large number of grasshopper nymphs are observed. This technique can reduce grasshopper numbers in local areas because newly hatched nymphs remain concentrated in the hatching areas for some time. Later on as wings develop, grasshoppers are capable of flying from the hatching area in search of suitable forage.

Two of the most important factors to consider when choosing an insecticide to apply to a pasture are the size of the grasshopper and grazing restriction. If the grasshoppers are larger than ½ inch, they are more likely to survive treatment with an IGR product (such as diflubenzuron). In addition, if grasshoppers are large, use the higher rate of conventional products such as carbaryl or the pyrethroids. Grazing restrictions vary with product. For example, carbaryl cannot be applied within 14 days of harvest or grazing. In contrast, pyrethroids such as lambda-cyhalothrin, beta-cyfluthrin and zeta-cypermethrin have a 0 day grazing restriction when applied to grass. Products such as Besiege (chlorantraniliprole and lambda-cyhalothrin) and Prevathon (chlorantraniliprole) provide longer residual activity than the pyrethroids. See the forage section of the 2015 Insecticide Recommendations for Arkansas (MP 144 <http://www.uaex.edu/publications/pdf/mp144/c-forages.pdf>) for product names, rates and grazing/harvest restrictions.

## **Blister beetles**

Blister beetles are a concern to livestock producers (especially horse owners) not because of the forage they consume but potential poisoning of livestock that consume hay contaminated with

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cantharidin producing blister beetles. The most common concern is related to feeding alfalfa to horses. Although cattle, goats and sheep are potentially susceptible to cantharidiasis (blister beetle poisoning), horses are the most susceptible. Although all blister beetles produce cantharidin, species that contain large amounts of cantharidin and those that are more prone to congregate on preferred host plants are of more concern. The two species that pose the most risk for livestock poisoning are the three-striped blister beetle (*Epicauta vittata*) and the striped blister beetle (*Epicauta occidentalis*). Table 1 shows the estimated number of beetles (containing high and low amounts of cantharidin) that would need to be consumed to cause mortality in horses of various weights. The minimum lethal dose of cantharidin for horses is estimated at 1 mg per kilogram of body weight.

### Estimated lethal numbers of blister beetles of two cantharidin concentrations that must be ingested by horses of different weights

	Horse Weight (lbs.)			
	250	500	800	1200
Cantharidin (mg / beetle)	Number of Blister Beetles			
0.5	227	450	719	1090
5.0	23	45	72	109

Source: L.H. Townsend, University of Kentucky.

Although literature on cantharidin poisoning in birds is limited, a medical and veterinary entomology textbook (Medical and Veterinary Entomology, 2<sup>nd</sup> Edition, Edited by Gary Mullen and Lance Durden, Copyright 2009, Academic Press) indicated that emus and chickens were susceptible to poisoning from direct consumption of blister beetles. The emu case involved chicks feeding on blister beetles that were attracted to light from the chick barn. Commercial poultry production practices in enclosed structures have likely reduced the incidence of cantharidin poisoning in chickens. I am unaware of any cases of cantharidin poisoning in Arkansas chickens.



**Black Blister beetle.** Photo by Joseph Berger, Bugwood.org.



**Striped Blister Beetle.** Photo by Univ. of Tennessee.



**Three-striped blister beetle.** Photo by Clemson Univ., Bigwood.org.

Blister beetles belong in the Family Meloidae with about 300 species occurring in the U.S. Most blister beetles have only one generation per year. Adult beetles lay eggs in the soil. Eggs will hatch into blister beetle larvae that can molt several times before transforming into pupa (the overwintering stage). Subterranean grasshopper eggs are the main prey of blister beetle larvae. Adults emerge from the soil throughout the growing season, however, the period of peak emergence varies with the species. Adults feed on alfalfa flowers and foliage as well as soybeans, clover, peanuts, peas, and weeds (goldenrod, pigweed, goathead and puncturevine). Blister beetles are gregarious and often congregate in large swarms within alfalfa fields and on other host plants listed above.

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The major concern is blister beetle contaminated hay. Contamination of hay usually occurs when beetles are crushed during the crimping process or if beetles are crushed by equipment wheels prior to baling. Once contaminated, the hay does NOT lose toxicity because cantharidin remains stable in dead beetles and does not degrade with heat or drying.

Concerns with respect to blister beetles in alfalfa hay cannot be totally eliminated. However, specific harvesting practices can reduce the potential for blister beetle contamination. These practices include:

1. Cut hay without using crimpers (additional drying time might be required).
2. Use a sickle mower without a conditioner (usually slower and can allow time for beetles to get out of the way).
3. Avoid driving equipment on cut hay (helps prevent crushing beetles into the hay).
4. Cut hay prior to 10% bloom (hay cut in the early bloom stage minimizes beetle attraction to the flowers).
5. Use small square bales for horse hay so that hay flakes can be inspected for beetles as it is being fed.
6. Match cutting with the market (first cutting alfalfa (May) and late September alfalfa are before and after the major blister beetle season and are the best cuttings to target for horse buyers).
7. Thoroughly inspect and scout fields just before and during harvest to detect blister beetle presence.

## **Armyworms**

Most of you will recognize this brief review on fall armyworm biology, scouting and control. Hopefully, this may help answer some of the questions for those of you that might be new to armyworms. Fall armyworms do not overwinter in Arkansas, instead the adult moths catch wind currents and gradually move into the state from the south and lay eggs. Fall armyworm damage can appear almost overnight. Infestations can be easily overlooked when the caterpillars are small and eating very little. Once caterpillars grow large and consume more grass, damage becomes apparent. Fall armyworm infestations can be expected from now through September.

Producers should carefully examine grass blades, stems and organic debris at plant base, and soil surface in a 1-square-foot area. It is best to take at least 10 random samples across the pasture or hay meadow. Female fall armyworm moths prefer to lay eggs in areas of abundant growth so be sure to include a few of these areas in your 10 samples. Also, make note of the size of the armyworms. Knowledge of their size will help producers make sound management decisions. A 1 square-foot sampling device made of stiff wire or PVC pipe will make the sampling process much easier. Remember, armyworm outbreaks often occur in waves about 30 days apart, indicating the need for routine scouting. In infestations where various sizes of worms are present, overlapping generations are occurring and new infestations can occur more frequently than 30 days.

There are a few tips to remember about fall armyworms. First, do not treat when armyworms are tiny, however, get prepared. Several natural enemies such as parasites, predators, and pathogens occur and can possibly eliminate or reduce populations in a short period of time. At times, most of us have seen have seen armyworm abundance decline after a population of small larvae had previously been observed. Secondly, the fall armyworm has about 6 larval instars. The last few and particularly the fifth and sixth instar are when most of the damage to pastures occurs. Of the total foliage consumed,

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greater than 80-85 percent will be consumed by these stages. The best advice is to not get over-anxious and treat before necessary. Likewise, do not wait until they become too large. Harvesting an infested hay meadow is an option if the hay is mature. Most of the products recommended will work well on medium sized larvae. Unlike cotton, corn or other crops, the larvae have no place to avoid the insecticide and are easier to kill in pasture situations.

Factors such as the size of the caterpillars and maturity of the hay crop should be considered before making an insecticide application. For example, if a field is heavily infested and the grass is ready to harvest, consider cutting and baling as soon as possible rather than making an insecticide application. In contrast, if the field is not ready to cut and you have about three or four very small (from 1/8 to 1/4 inch) fall armyworm caterpillars per square foot, continue scouting and if their abundance does not decline below threshold by the time they reach 1/2 inch, then treat with an insecticide. Don't wait until the armyworms are 1 1/2 inches long because they are about ready to pupate and have probably already caused most all of the damage that they will do, and because, large worms are hard to kill. Additional information on armyworms can be found in "Managing Armyworms in Pastures and Hayfields" and is available at:

<http://www.uaex.edu/publications/PDF/FSA-7083.pdf>.

Per-acre insecticide cost will vary from as low as about \$3.00 up to over \$10.00. When calculating cost, always consider the cost per acre and not the cost per gallon of product. Also consider residual activity of the product especially if you are seeing an overlapping population (all sizes of fall armyworm caterpillars) and heavy armyworm pressure. Remember, pyrethroid insecticides such as Karate® (lambda-cyhalothrin), Mustang Max® (zeta-cypermethrin) and Baythroid XL (beta-cyfluthrin) have shorter-duration residual activity. In contrast, other products such as Prevathon® (chlorantraniliprole), Besiege® (chlorantraniliprole and lambda-cyhalothrin) and Intrepid® (methoxyfenozide) do have longer-duration residual activity and can reduce the number of applications necessary to produce a hay crop. A section 2 (ee) label for Prevathon® recommends 10-13 ounces of product per acre for control of fall armyworms, which is considerably less than the product label rate. Research has shown that this lower rate is effective. For additional information on insecticides labeled for use against fall armyworms in pastures and hayfields, check out the Forages section of the "2015 Insecticide Recommendations for Arkansas" available at:

<http://www.uaex.edu/publications/pdf/mp144/c-forages.pdf>.



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## Characteristics of fall armyworm larvae.



Device used to sample fall armyworm (size: 1 sq. ft. constructed from ½" PVC pipe).



Fall armyworms on thatch.

## ***Phytophthora Stem Canker of Annual Bedding Plants***

Sherrie Smith

The prolonged wet spring has caused disease problems in annual flowers beds. The development of *Phytophthora* Stem canker is favored by extended hot wet weather, overhead irrigation or rain, and excessive amounts of nitrogen fertilizer. Under those conditions Petunias, lobelia, pansy, verbena, and annual vinca, among others, are extremely susceptible to *Phytophthora* stem canker, caused by *Phytophthora parasitica*. Stem canker is the most common problem seen at the Plant Health Clinic in annual vinca. The first noticeable symptom is yellowing and wilting of the foliage. Stem lesions develop that are somewhat slimy to the touch. *Phytophthora* can spread rapidly through a planting simply from the leaves of an infected plant touching the leaves of a nearby plant. Any wilting plants should be immediately removed from the planting. Overhead watering should be discontinued or limited to absolute necessity. Watering early in the day will allow foliage to dry. Good soil drainage and adequate air circulation is **extremely important**.

Fungicides are not very effective unless applied well in advance of disease development. Aliette fungicide has been found to suppress the disease when applied every 2 weeks as a foliar spray. The use of resistant cultivars is strongly recommended. Cora has proven very resistant. Ageratum,

Bedding Plant Susceptibility to <i>Phytophthora</i>		
Highly Susceptible	Slightly Susceptible	Resistant
Annual vinca	Wax begonia	French Marigolds
Snapdragon	Impatiens	Zinnias
Salvia		Mums
Verbena		Dianthus
Pansy		Geranium
Petunia		Coreopsis
		Portulaca
		Rudbeckia

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marigolds, lantana, morning glories, alyssum, moss rose are tolerant of stem canker, and may be tried in areas with a history of aerial Phytophthora.



**Annual vinca stem canker. Photo by Sherrie Smith.**



**Annual lobelia stem canker. Photo by Sherrie Smith.**



**Annual osteospermum stem canker. Photo by Sherrie Smith.**

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# **Keeping Unwanted Pests from Hummingbird Feeders**

Becky McPeake

Many hummingbird enthusiasts desire to keep their feeders available to hummingbirds only. Unwelcome visitors include wasps, bees, and ants. They not only steal the sugary food, but may also keep hummingbirds from visiting.

**Wasps and bees:** Fortunately, many newer feeders are designed with bee guards (little plastic screens) and longer tubes which give hummingbirds the advantage. A hummingbird's tongue can reach much longer than the proboscis of a wasp or bee. If given a choice, avoid purchasing yellow guards, as yellow attracts bees. Other options are moving the feeder to another location, or taking the feeder down completely for a day or two. Bees and wasps will give up looking for the feeder sooner than hummingbirds.

**Ants:** Prevent ants from discovering the feeder by purchasing a dripless feeder. Bottle style feeders may drip when placed in the direct sun.

Pressure builds and expands in the empty space in the bottle, causing some of the sugar water to leak. One option is apply petroleum jelly to the wire or string holding the hummingbird feeder where ants are gaining access. Be sure this substance doesn't get on the feeder itself, as it could gum up bird feathers. Another option is a barrier which ants cannot cross. Some feeders are designed with little moats that can be filled with tap water. You can build your own moat by placing hanger wire through a spray can top, then use silicone or hot glue to seal and waterproof the hole.

**Other songbirds:** Occasionally other songbirds such as finches or orioles are guests at hummingbird feeders. These heavier birds tip the feeder upon landing, and take a drink of the splashed sugar water. For hummingbird purists who want to keep these birds away, use a hummingbird feeder without a perch. A hummingbird will hover over the opening when feeding, as they do when extracting nectar from a flower.

For those interested in feeding hummingbirds, the Lab of Ornithology at Cornell University recommends one-fourth cup sugar per cup of water. During colder conditions in early spring or late fall, the amount of sugar can be increased to one-third cup sugar per cup of water. The Lab of Ornithology recommends **not** using red food color in sugar water. When mixing small quantities of sugar water, boiling is unnecessary. But keeping the feeder clean is critical. Sugar water needs to be changed every three to five days, or even more frequently during hot weather, to prevent mold and deadly fermentation. Use hot water and a bottle brush to clean the feeder (not soap or detergent). A dilute bleach solution can be used occasionally, but rinse bottle thoroughly and allow to air dry completely before refilling.



Ruby-throated hummingbird at a bottle feeder. Photo courtesy Alfred Viola, Northeastern University, [bugwood.org](http://bugwood.org).

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## **Name That Weed**

Bob Scott

Although a native to Arkansas, this rice weed is more commonly found in Louisiana rice fields. It has a distinctive bracted rachis seedhead which distinguishes it from other similar plants which are commonly referred to, as a group, as water Bermudagrass.

Be the first to email me at [bscott@uaex.edu](mailto:bscott@uaex.edu) with the correct common name and win a prize!!



All chemical information provided in this newsletter is given with the understanding that no endorsement of named products is intended, nor is criticism implied of similar products that are not mentioned. Individuals who use pesticides are responsible for ensuring that the intended use complies with current regulations and conforms to the product label. Before purchasing or using any pesticide, always read and carefully follow the label directions.

## **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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