

Pest Management News

Dr. John D. Hopkins, Associate Professor and Extension Entomologist – Coeditor
Dr. Kelly M. Loftin, Professor and Extension Entomologist – Coeditor

Contributors

Dr. Jon Barry, Assistant Professor and Extension Forester
Dr. Rebecca McPeake, Professor and Wildlife Extension Specialist
Dr. Bob Scott, Professor and Extension Weed Scientist
Sherrie E. Smith, Plant Pathology Instructor, Plant Health Clinic Diagnostician

Letter #2

June 30, 2017

Millipede Management for Homeowners

John D. Hopkins

With all the recent rains, millipedes have been migrating to higher ground and this has generated numerous calls from homeowners concerned with the millipede invasion of driveways, patios, carports, swimming pools, and pool areas.

There are small and large species of millipedes but the smaller species are the ones making a nuisance of themselves. Millipedes are similar to centipedes, but have two pairs of legs per body segment. Some people mistakenly refer to them as “wireworms”. Wireworms are the larval stage of a beetle that feeds on roots of plants. Millipedes are usually brown to blackish in color. The elongated body is rounded, not flattened, and unlike centipedes, they have no poison claws/legs. They usually coil up when disturbed, similar to the behavior exhibited by pillbugs (a related invertebrate).

Millipedes are usually restricted to moist places where they feed on organic matter. In the fall, they may become a nuisance because they migrate away from feeding areas and invade homes. Because they crawl along the ground, they are usually found in lower floors and basements. Once inside the home, they usually die due to desiccation, although in moist basements, they can survive longer.

Millipedes feed primarily on decaying organic matter, but may attack roots and leaves of seedling plants. Millipedes also live in organic matter (leaves, mulch, or piles of wood or wood chips) and other material close to the house. Over-mulching and/or overwatering in the garden can result in millipede attack on vegetable plants. Removing the organic debris or mulch materials near your home will help reduce the potential for invading millipedes.

To discourage millipedes near the house, remove adjacent mulch and dead vegetation. Outdoors, you may wish to create an insecticide treated barrier/strip around the house perimeter in addition to treating exterior foundation/basement walls, window frames and door sills (**Be sure to read and follow specific label directions as they may vary among products**). Over-the-counter pyrethroid insecticides with active ingredients such as bifenthrin, bifenthrin + zeta-cypermethrin, cyfluthrin, cypermethrin, deltamethrin, gamma-cyhalothrin, lambda-cyhalothrin, or permethrin are recommended for control of millipedes because they are fast-acting and provide residual control. People and pets should stay off wet insecticides, but can safely walk on the yard once the insecticide is dry. When

treating inside the home, baseboards, cracks, crevices or other hiding places such as under clothes washers and dryers in utility rooms may be sprayed with appropriately labeled pyrethroid products. Contact sprays of pyrethrins may be applied directly to millipedes and centipedes for quick control, however, pyrethrins do not provide residual control.



Small and Large Variety Millipedes

Appropriately labeled granular pyrethroid or carbaryl insecticides may be used on turf. They generally perform better than dusts or sprays in this situation.

The safest and most environmentally sound way to control millipedes and centipedes, that are already in the house, is to use a vacuum or broom to sweep them up. However, damp hiding places can be treated with indoor insecticides labeled for this use.

Millipedes are not poisonous, but many species have repugnatorial glands capable of producing irritating fluids which may cause allergic reactions in individuals sensitive to insects or insect secretions. A few millipede species are capable of squirting these fluids over a distance of several inches. Persons handling millipedes may notice a lingering odor on their hands and this fluid can irritate the eyes. It is not advisable to handle millipedes, but when one has been held, hands should be washed with soap and water until the odor is completely gone.

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Sample List of Over-The -Counter Insecticides Labeled for Millipede Control

Active Ingredient	Trade Name
bifenthrin	Bonide Eight Insect Control Flower & Vegetable Above & Below Soil Insect Granules
	Ferti-lome Broad Spectrum Insecticide
	Ferti-lome Broad Spectrum Insecticide Ready-To-Spray
	Ferti-lome Broad Spectrum Insecticide Ready-To-Use
	Hi-Yield Bug Blaster Bifenthrin 2.4
	Hi-Yield Bug Blaster Bifenthrin 2.4 Ready to Spray
	Ortho Bug B Gon Max Insect Killer for Lawns
	Ortho Home Defense Insect Killer Granules 3
	Ortho Home Defense Max Insect Killer Granules
	Ortho Home Defense MAX Insect Killer for Indoor & Perimeter
Ortho Home Defense MAX Outdoor Perimeter Insect Killer Ready-Spray	
bifenthrin + zeta-cypermethrin	Ortho Bug B Gon Insect Killer For Lawn & Gardens Concentrate
	Ortho Bug B Gon Insect Killer For Lawns & Gardens Ready to Spray
	Ortho Home Defense MAX Insect Killer for Indoor & Perimeter1
cyfluthrin	Bayer Advanced Home Pest Control Indoor & Outdoor Insect Killer Ready-To-Use
	Bayer Advanced PowerForce Multi-Insect Killer Ready-To-Spread Granules
cypermethrin	Demon Max
	Enforcer Overnite Pest Control Concentrate
	Martin's Viper Insecticide Concentrate
deltamethrin	DeltaDust Insecticide
	Green Light Many Purpose Dust
	Hi-Yield Kill-A-Bug Dust II
gamma-cyhalothrin	Spectracide Acre Plus Triazicide Insect Killer for Lawns & Landscapes Concentrate
	Spectracide Bug Stop Home Barrier
	Spectracide Triazicide Insect Killer for Lawns Granules
lambda-cyhalothrin	Martin's Cyonara Lawn & Garden Insect Control
	Spectracide Ant Shield Insect Killer Ready-to-Use
	Spectracide Triazicide Insect Killer for Lawns & Landscapes
permethrin	Bonide Eight Insect Control Garden & Home Ready to Use
	Bonide Eight Insect Yard & Garden Ready to Spray
	Ferti-lome Indoor/Outdoor Multi-purpose Insect Spray
	Green Thumb Concentrate Lawn & Garden Insect Control
	Green Thumb RTU Garden & Home Insect Control
	Green Thumb RTS Lawn & Garden Insect Control
	Green Thumb Granules Lawn Insect Control
	Hi-Yield Lawn, Garden, Pet & Livestock Insect Control
	Hi-Yield Kill-A-Bug II
	H-Y I/O Broad Use Insecticide
	Martin's Permethrin 10% MP Insecticide
pyrethrins	EVERGREEN Pyrethrum Concentrate
	Harmonix Insect Spray
	MotherEarth 2% Py Contact Insecticide

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: Painful Bite for such a Small Fly

Kelly M. Loftin

Around mid-June, I received a couple of specimens identified as biting midges, which is surprising given their minute size. Although they do feed on other areas of our body, they often feed around the ankles to the point that long pants seem to be the only clothing option. If you are bitten by something that flies and you can barely see it, the likely culprits are biting midges, also known as “no-see-ums” or “punkies.” Fortunately, biting midges are not known to transmit disease pathogens to humans but can cause localized allergic reactions that result in severe itching. These extremely annoying pests

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are tiny biting flies in the Family Ceratopogonidae. These almost microscopic biters are a nuisance to campers, fishermen, gardeners or anyone active outdoors in the early morning or late evening.

Biting midges are a wildlife and livestock concern. Some members of this family are potential vectors of the bluetongue virus in sheep and cattle, as well as epizootic hemorrhagic disease (EHD) in wild ruminants such as deer. Occasionally, 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 springs, streams and ponds, swampy areas, tree holes, muddy substrates and sometimes, aquatic or semiaquatic habitats formed by water from air conditioning units (Fig. 2). I’ve also found them breeding in septic systems and muddy, wet barnyards.



Photo by:
Univ. of Calif. Co-op Ext.

Fig. 1. Photo of biting midge. University of California.



Fig. 2 Typical biting midge breeding sites.

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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 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 as permethrin. Also, try turning on the ceiling fan on your porch; ceiling and window fans will often keep biting midges away because they are weak 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, but can provide relief to the animal. Permanent larval habitat modifications can help to reduce insect populations over the long term.

Livestock & Forage Pest Update: Fall Armyworms & Face Flies

Kelly M. Loftin

Face Flies

This marks the third year in a row we have face fly (*Musca autumnalis*) infestations well above the economic injury level. In mid-June, face fly abundance of over ten flies per face has been observed on several herds in north Arkansas. When face fly abundance is high, grazing is disrupted resulting in weight and milk production losses. In addition, this fly can be a mechanical vector of *Moraxella bovis*, a principal pinkeye pathogen. Face flies spend little time on the animal and intermittently feed. Because a face fly may feed on multiple animals on the same day they can spread the pinkeye pathogen to several animals.



Face flies (*Musca autumnalis*) clustered below an animal's eye.

When an average of ten flies per face occur in the herd, economic loss can result and control should be initiated. To monitor face flies, count the number of flies on the face of 10-15 animals. If average number per animal begins to approach ten flies per face, treatment is warranted. Face flies can be difficult to control because: 1) they are primarily found on the hard-to-treat animal's face; 2) only a

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very small percentage of the population is found on the host at any given time; and 3) face flies are intermittent feeders and spend little time on the animal.

Face flies are normally treated with self-treatment devices or insecticide impregnated ear tags. A few pour-on insecticides that allow for application to the face are effective. Forced-use back rubbers equipped with Face Flyps charged with a pyrethroid such as permethrin or an organophosphate such as coumaphos are effective. Paired insecticide dust bags will also provide control when hung properly. Some of the insecticide impregnated ear tags for cattle will provide control while others simply reduce the population. Be certain to read the ear tag label. Label statements that read “controls face flies” are generally more effective than ear tags with labels that read “reduces face flies”. Because face flies only develop in cattle manure, feed-through larvicides/IGRs (insect growth regulators) such as ClariFly® will prevent new flies from emerging. However, proximity to untreated herds and the longer flight range of face flies can reduce the level of control. Products registered for use against insect pests of cattle are listed in the “Animal Insect Control” Section of the 2017 Insecticide Recommendations for Arkansas (<http://www.uaex.edu/publications/mp-144.aspx>).

Fall Armyworms

And we thought fall armyworms were early last year! This year, fall armyworms of mixed sizes and well above the treatment threshold occurred in early June. Now through early fall, we should regularly scout pastures and hay meadows to identify infestations before significant losses occur. Infestations can be 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 cut grass is present. Armyworm outbreaks often occur in waves about 30 days apart. However, when mixed worm sizes are found, overlapping generations are present and new infestations occur more frequently than on a 30 day interval. When scouting, carefully examine grass blades, stems, and organic debris at the 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 size and number as this will help you make good management decisions.



Fall Armyworms (*Spodoptera frugiperda*).

Insecticide application is warranted when three or more fall armyworms per square foot occur in a field. Per-acre insecticide cost will vary from as low as about \$3.00 up to over \$12.00. 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 overlapping generations (all sizes

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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 plus lambda-cyhalothrin), and Intrepid® (methoxyfenozide) have longer-duration residual activity and can reduce the number of applications necessary to produce a hay crop. 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,” available at: <http://www.uaex.edu/publications/PDF/FSA-7083.pdf> and the “Forages Section” of the “2017 Insecticide Recommendations for Arkansas” at: <https://www.uaex.edu/publications/pdf/mp144/c-forages.pdf>.

Laurel Wilt of Arkansas’s Sassafras Trees

Jon Barry

Laurel wilt was first identified in North America in 2004. In our area it was identified in three Louisiana parishes in 2014 and in Bradley County, Arkansas, in 2015. In 2016 it was found in Cleveland and Union Counties. We don’t know how widespread this disease is in Arkansas. To understand how, or even if, we can manage this disease; we need to know how widespread it is.

Laurel wilt is caused by a fungus spread by the redbay ambrosia beetle (Fig. 1). The redbay ambrosia beetle is a native of Asia, so it is assumed that the fungus is, too. In North America, the disease attacks trees and shrubs in the laurel family. This includes redbay, avocado, and sassafras.

Sassafras is the only tree native to Arkansas that has proven susceptible to laurel wilt. The wilt starts in the upper crown of the tree and proceeds downward with leaves drooping then turning a reddish or purplish color (Fig. 2). It is often accompanied by stiff strings of dust protruding from the bark of the tree through entrance holes made by the beetles (Fig. 3). Finding the strings of dust may require a close examination of the tree when the infestation is light.



Fig. 1. Redbay ambrosia beetle. Photo by Joseph Benzel, Screening Aids, USDA APHIS ITP, Bugwood.org.



Fig. 3. Dust strands pushed out by redbay ambrosia beetles. Photo by Jon Barry, UA CES.



Fig. 2. Sassafras with laurel wilt. Photo by Chip Bates, Georgia Forestry Commission, Bugwood.org.

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Trees showing external symptoms should be checked for further evidence of redbay ambrosia beetle activity and laurel wilt. Peel some of the bark from the tree. Redbay ambrosia beetles carve galleries under the bark and in the wood. If the tree is heavily infested, these galleries will be visible (Figure 4). An infected tree will eventually develop a dark blue or black stain caused by the fungus in the sapwood (Figure 5). The stains can be seen if the bark and some of the sapwood is shaved off the tree or on the end of cut logs.

Currently there is no treatment for trees infected with laurel wilt, however, some sassafras have shown some resistance to the disease. Treatment of sassafras in the forest is logistically impractical because the trees are scattered through the forest. Sassafras yard trees are usually too large to treat effectively. In light of these two constraints, laurel wilt may greatly reduce the numbers of sassafras on our landscapes.

Does the loss of sassafras really matter? It does matter. Sassafras has little value in our traditional forest products markets, but that could change with future discoveries. Sassafras does, however, have ecological value. Many animals rely on sassafras, for example, white-tailed deer browse sassafras, many animals eat sassafras fruits, and the caterpillars of several butterflies feed on sassafras leaves. In addition to the ecological values, sassafras has cultural value. Oils extracted from sassafras are used as fragrances and in some herbal remedies. Sassafras tea, made from sassafras roots, has long been part of Southern culture. The wood is used in some cultural crafts such as boat-building.



Figure 4. Redbay ambrosia beetle gallery in sassafras. Photo by Jon Barry, UA CES.



Figure 5. Sassafras stained by the laurel wilt fungus. Photos by Albert (Bud) Mayfield, USDA Forest Service, Bugwood.org.

The more we know about the distribution of laurel wilt in Arkansas, the better our chance of finding a way to slow or stop the spread of this disease. We encourage those who live and work in our forests to watch sassafras trees for signs of laurel wilt. If you see signs of laurel wilt, please contact one of the extension forestry faculty and report the observation.

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Pocket Gopher Control and Trapping

Becky McPeake



Baird's pocket gopher lives almost its entire life underground having clawed front legs and fur-lined cheek pouches. Photo by Guy Cameron, University of Cincinnati.

Pocket gophers dig tunnels and eat vegetation causing problems for homeowners and agriculture producers alike. Options are limited for gopher control. Where flood irrigation or tilling is feasible, some gopher control may occur by implementing these practices. Neither repellents nor frightening with sound or vibrations have proven effective. Poison baits and fumigants are not an option in Arkansas. According to the Arkansas Game and Fish Code, it is illegal to use poisons, fumigants, or toxins on wildlife, which can harm children, pets, and other non-target wildlife. Pocket gophers are classified as non-game wildlife and therefore fall under this rule.

Trapping is the best control method available. Trapping success depends on a number of factors including trap type, number of traps, density and distribution of gophers,

soil type, size and sex of the pocket gopher, and experience of the trapper. Trapping can be effective against small numbers of gophers, but is labor intensive. As such, it is relatively expensive over large acreages, but reportedly offers greater control compared to baiting in states where poisons are legal. Trapping can occur year-round, and tends to be most effective during the breeding season or when young animals are dispersed. In Arkansas, breeding season is from late January through August, with litters born in March and April, and again in July or August in southern Arkansas.

Many trap types are available on the market using designs developed 100 or more years ago. For example, the popular Macabee™ traps were developed in 1900, Black Hole™ and Cinch™ were patented in 1909, and the Death Klutch 1™ in 1917. Studies comparing effectiveness of trap types have yielded varying results, as indicated in the table below.

Table 1. Studies (year) comparing captures and/or efficiency of trap types for pocket gophers as rated from highest to lowest.

		Pocket Gopher Trap Types			
		Frey and Nelson (2015)	Baldwin et al. (2013)	Pipas et al. (2000)	Proulx (1997)
Highest	Macabee™		Gophinator™	Cinch™	ConVerT™
	Death Klutch 1™,		Macabee™	Macabee™	Black Hole™
	Cinch™ (3" medium)			Black Hole™	Guardian™
Lowest				Victor Easyset™	

The focus on pocket gopher control today is on improved trapping techniques and training to increase efficiency. In a Utah study, Frey and Nelson reported Macabee™ traps were statistically more effective in terms of animals caught per animal visits to the trap, but statistically Macabee™ traps were tripped or plugged more than Death Klutch 1™ and Cinch™ traps. They suggested Macabee™

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traps did not capture larger adult animals as effectively, and therefore were causing some animals to become trap shy and reduce the effectiveness of the control program.

Dr. Roger Baldwin at the University of California – Davis is a leading authority on pocket gopher control. He recommends adding a cable restraint to the front of the Macabee™ to keep larger individuals from escaping capture. His choice is the Gophinator™ which proved more effective in his trap comparison study. Baldwin also recommends that covering the hole left by setting the trap increased their ability to capture heavier (presumably experienced adult) gophers. Some trappers recommend leaving a dime size opening for light to enter between two traps, so the gopher will become ensnared when attempting to plug the hole.

Pipas et al. reported the Cinch™ (48%) had the highest capture efficiency, far above the Macabee™ (28%). Both Pipas et al. and Frey and Nelson indicated Cinch™ traps were more difficult to set because of a large baseplate. Frey and Nelson suggested setting Cinch™ in lateral tunnels to increase their effectiveness. This advice is counter to others who recommend avoiding little-used lateral tunnels. Yet another source suggested setting traps in lateral tunnels is quicker and easier, can be effective during certain times of the year, and is effective for removing more experienced gophers.

Training and trapper experience is an important factor for successful gopher control. Baldwin reported novice gopher trappers became proficient with only 3 days experience with the Gophinator™, attaining up to 94% of the efficiency obtained by an expert trapper. In his study, novice trappers received a 30-minute training session on how to trap pocket gophers. Training included how to use a probe to locate a fresh pocket gopher tunnel and appropriate trap setting techniques. Trappers were taught to dig into an active main tunnel, place traps into all branches of the tunnel, and stake traps down with wire flags. Trap sets were placed in each separate burrowing system as evidenced by visually surveying mound-clusters occurring approximately 20 feet apart (gophers are generally solitary). Traps were left overnight and evaluated the next morning as to whether the trap-set was (1) a capture, (2) sprung or plugged, or (3) no action.

Baldwin identified one of the most important components of an effective training program is to ensure the trapper identifies active pocket gopher tunnels. He reported pocket gophers often back-fill old tunnels with loose soil that they remove while excavating new tunnels. These inactive tunnels often feel similar to non-filled tunnels when probing. An experienced trapper can discern this difference, which improves chances of success. Baldwin also noted novice trappers may learn more quickly in areas where pocket gophers are abundant, such as where his training site was located. If a trap isn't sprung in 24 hours, find a new tunnel.

Cercospora Leaf Spot in Persimmon

Sherrie E. Smith

Native persimmons, *Diospyros virginiana*, are a common sight in woodlands and along fencerows. Persimmon forms a multi-trunked or single-stemmed deciduous tree to 25 ft. high and at least as wide. They make a handsome small ornamental tree in the landscape. Although native persimmon fruits are edible, most of the persimmons grown for their fruit are Oriental persimmons, *Diospyros kaki*. Oriental persimmons can be divided into two classes—astrigent and non-astrigent. Astrigent varieties have tannins that disappear as the fruit ripens and softens. They will make your mouth

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pucker and give you a “dry mouth” feeling. Non-astringent persimmons, however, can be eaten when still firm and crisp, without any astringency. Our native persimmon is astringent. Whichever variety of persimmon is selected, persimmon fruit are an excellent source of vitamins A and C. They are consumed raw and in cookies, cakes, breads, puddings, and jams among others.

A significant fungal pathogen that may affect yield is leaf spot caused by *Pseudocercospora diospyricola*. Symptoms begin as small necrotic spots that develop into angular lesions. Lesions may coalesce to form larger blotches on the leaf. Leaves turn yellow and fall from the tree prematurely. Severe infections can cause trees to defoliate in late August as the fruit begin to ripen. Problems related to defoliation include failure for fruit sugar to properly accumulate, and poor fruit ripening. Biennial bearing tendencies with low overall yields and increased vulnerability to freeze damage are also factors. Infection occurs at shoot expansion, leaf formation, and flowering in the spring. Control can be obtained by applying a fungicide cover spray during full bloom and again 3 to 4 weeks later. Abound and Daconil Weather Stik are both labeled for control of *Cercospora* leaf spot in persimmon. *Alternaria* sp., *Gloeosporium* spp. and *Phyllosticta* sp. are three additional aggressive pathogens found on persimmon fruit and leaves.

Persimmon *Cercospora* leaf spot - *Pseudocercospora diospyricola*



Photos by Sherrie Smith, University of Arkansas Cooperative Extension

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Name That Weed

Bob Scott

This month's weed is a species of flowering plant in the buckwheat family Polygonaceae. The plant and its subspecies are common perennial weeds. It has green arrowhead-shaped leaves and red-tinted deeply ridged stems, and it sprouts from an aggressive and spreading rhizome. The flowers emerge from a tall, upright stem. Female flowers are maroon in color. It can be a problem in thin poorly drained wheat fields. Be the first to reply to bscott@uaex.edu with the correct common name and win a prize.



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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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