

## ***Pest Management News***

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**Letter #2**

**June 30, 2016**

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### **Are You Being Annoyed by Fleas?**

John D. Hopkins

The most common fleas people encounter are found on cats and dogs year-round, but are most common during warm and humid weather. Fleas are attracted to animals by body heat, movement and the carbon dioxide that animals exhale. Adult fleas can jump up to 150 times the length of their body to reach a host. Adult fleas feed on blood while the immature larval form of the flea feeds on organic debris. The typical life span of the flea is more than 100 days – enough time for a pair of fleas and their descendants to produce millions of offspring. Under ideal conditions and assuming that none die; a pair of fleas has the potential to produce more than 20 trillion descendants in one year.

The cat flea ranges in size from 1/12 to 1/6 inch long. They are small and have no wings, and therefore do not fly. Instead, they jump or spring. Their bodies are narrow if viewed from the sides (said to be laterally compressed), ideal for a life spent moving among hairs. Because their bodies are covered with spines projecting backwards, they are difficult to remove by shaking or scratching.

Adult fleas (the biting stage seen by pet owners) spend most of their time on the animal, not on the floor or in the carpet. This is why treatment of the pet in conjunction with the pet's environment is an essential step in ridding fleas from a home.

Adult female fleas lay all of their eggs on the pet (up to 50 per day and up to 400 in their lifetime). However, the eggs soon fall off the animal into carpeting, beneath furniture cushions, and wherever else the pet rests, sleeps or spends most of its time. This is where homeowners should focus control measures.



Photo by John D. Hopkins

Flea eggs hatch into flea larvae within a few days to several weeks, depending upon conditions of temperature and humidity. After hatching, the tiny, worm-like flea larvae remain hidden deep in carpet fibers, beneath furniture cushions and in other protected areas. The larvae feed mainly on adult flea feces (dried blood) which accumulates, along with the eggs, in pet resting and activity areas.

Before becoming adult fleas, the larvae transform into pupae within a silk-like cocoon. Pupae remain inside the cocoon for 2 to 4 weeks, sometimes longer if a suitable

host is unavailable. Under warm conditions, increased vibrations or the increased presence of carbon dioxide, adult fleas may suddenly emerge from this protective pupal cocoon to seek a host. The cocoon is resistant to insecticides and this is why some adult fleas can be seen for an extended period, even after the home and pet are treated.

The various flea stages will be found most concentrated in the areas that the pet spends most of its time. Proper flea management must cover the infested animal's entire environment, focusing largely on areas where the animal spends the majority of its time; i.e. sleeping/resting areas and foraging/walking areas.

The best time to start a flea management program is usually in the late spring, prior to an infestation. Since adult fleas comprise only a small percentage of the total flea population, a thorough inspection is required. Proper pest identification is also important to be sure fleas are what you are dealing with and not springtails, mites, lice or something else.

Ridding a home of fleas can be a frustrating and costly endeavor. Unlike some pests encountered around the home, fleas cause discomfort and irritation to both pets and people. Fleas account for more than half of all dermatological conditions requiring veterinary assistance, and even a single flea bite to a hypersensitive animal or person may cause intense itching and irritation. Fleas are also important vectors of disease. The most important diseases that fleas transmit to man are plague and flea-borne typhus (transmitted primarily by rodent fleas). Fleas also serve as intermediate hosts for some tapeworms (which infest rodents, dogs, and occasionally man) and a filarial worm of dogs. They may also serve as vectors of tularemia.



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For successful flea control, the home, pet and oftentimes, the yard must be treated. Yet the manner in which these treatments are performed can greatly influence the results. The following information will help frustrated pet owners effectively rid their homes and pets of fleas.

To deal with flea infestations, it's best to remember where they live and reproduce. Flea larvae develop in floor level cracks and crevices, furniture used by pets, and in rugs and carpets, making them difficult to eliminate. Thorough cleaning is one of the best ways to reduce the amount of flea larvae and eggs found in the home environment. Carpeted areas need to be vacuumed and treated with a residual flea control product plus insect growth regulator (IGR) labeled for indoor carpets. *Foggers/Bug Bombs are most effective in controlling flying insects and are **NOT** recommended for flea control.* Daily vacuuming is recommended. Concrete floors may be treated with the same flea control product, but remember to first vacuum and wash concrete floors thoroughly with soap and water to remove dust, flea larvae and flea eggs.

By treating infested pets and the interior of the home, most flea problems can be eliminated. However, treatment of the yard may be necessary when pets spend most of their time outdoors. A good way to tell if your yard is infested with fleas is to walk around the property wearing knee-high white socks. As you walk, fleas will jump onto the socks and can be easily seen against the white background.

Outdoor flea treatments should target areas where pets rest, sleep, and run (doghouse, kennel areas, under decks, along fences, next to the foundation). Rarely is it necessary to treat the entire yard or open areas exposed to full sun. Insecticide formulations containing a pyrethroid insecticide are somewhat effective for outdoor flea treatment and these can be applied with a hose-end or pump-up sprayer. Long-term suppression of fleas infesting kennels or outdoor areas can be improved by using insecticide formulations containing an IGR such as methoprene or pyriproxyfen.

You can successfully control a flea problem by following the **Flea Management Steps** listed in the next section. However, if you lack the time to do your own flea control or are uncomfortable applying pesticides, you may wish to enlist the services of a pest management professional (PMP). In addition, professional pest control firms will have additional control materials available to them that are not available for homeowner use.

In a recent nationwide survey of commercial pest management companies (PCT 2016 State of the Flea Market survey compiled by Readex Research, a privately held research firm based in Stillwater, MN), 3434 owner/operators of pest control business were selected randomly from the PCT database. Data on price for a typical residential flea control service of was collected from 337 respondents (10% response rate) via an online survey from Jan. 28 to Feb. 8, 2016. The margin of error for percentages based on the 337 usable responses is  $\pm 5.2\%$  at the 95% confidence level and can be seen in the accompanying figure.



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## Flea Management Steps:

Step 1. With veterinarian supplied products that are currently available, control of fleas in small to moderate sized infestations is likely to occur by using those pet treatment products alone. It may take 2 months to completely break the flea life cycle. If pet treatment alone does not provide sufficient control, initiate a complete control program.

Step 2. Vacuum infested areas twice a week and prior to treatment to remove eggs, larvae, adults and organic matter. Steam cleaning your carpet may also reduce populations. Eliminate fleas from pets, bedding and premises before departing on vacation.

Step 3. Treat pet resting areas indoors and clean or remove pet bedding on the same day. The use of insect growth regulators is important to break the flea life cycle. A combination of an insect growth regulator and an adulticide may be the most efficient insecticide formulation to use. **Keep pets and people out of treated areas (indoors and outdoors) until spray dries.** Remove all pets from the premises during the treatment process and according to label compliance procedures for materials being used; (usually several hours for any liquid materials to completely dry on treated surfaces). Be sure the control material has the treatment site and fleas on the label; also heed any warnings regarding fish, birds, etc. (It is a good idea to remove birds from the home. Cover or remove fish and tanks, and turn off any re-circulating air pumps.) Also cover and be watchful of all pet water and food dishes. If you also plan to incorporate an insect growth regulator (IGR) in your tank mix with the product of choice, please be aware that IGR's may also negatively affect pet invertebrate animals like hermit crabs, shrimp, snails, etc. Be sure to keep all pet animals out of the treated area until the material has dried; in compliance with the application material labels.

Step 4. Outdoors, mow grass, keep weeds down, and trim shrubs to expose flea eggs and larvae to lethal desiccation. Irrigating areas surrounding buildings, but not against building, may kill fleas by drowning. If fleas are surviving outdoors, apply an insecticide carefully following the directions on the label.

**Recommended materials for flea control** (indoor, outdoor, and on animals) may be found in the HOUSEHOLD AND STRUCTURAL PEST CONTROL and the AMINAL INSECT CONTROL Sections of the current MP144 "Insecticide Recommendations for Arkansas" by clicking on the following link:

<http://www.uaex.edu/publications/mp-144.aspx>

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.

## **Fall Armyworms**

Kelly M. Loftin

Last week, Les Walz reported fall armyworms in a pasture/hayfield in Cleveland County. This serves as a good reminder that now is the time of year when fall armyworms make their appearance. 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 may occur from now through September.

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This pest does not overwinter in Arkansas, instead the adult moths catch wind currents and gradually move into the state from the south and lay eggs.

To minimize impact, producers should begin looking for fall armyworms or signs of their presence. Grass blades, stems and organic debris at plant base, and soil should be examined carefully. It is best to take at least 10 one-foot-square 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 sampling. Also, make note of the size of the armyworms. Knowing their size will help producers make sound management decisions. A one-square-foot sampling device made of stiff wire or PVC pipe will make the sampling process much easier.



Fall armyworm larval head.



Dorsal view of a fall armyworm.



Device used to sample fall armyworm (size: 1 square foot constructed from  $\frac{1}{2}$  inch PVC pipe).half-inch PVC pipe).



Fall armyworms on thatch.

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Other clues to fall armyworm infestations include: 1) field appears “frosted” from small worms feeding on underside of leaves, 2) presence of birds feeding on armyworms or 3) the field has an odor of freshly cut hay. 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 present and new infestations occur more frequently than 30 days.

There are a few tips to remember about fall armyworm control. 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, we may see armyworm abundance decline after a population of small larvae had been observed. Secondly, the fall armyworm has about six 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, 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 the worms 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 few places to avoid the insecticide and are easier to kill in pasture situations.

Consider the size of the caterpillars and maturity of the hay crop before making decisions on 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 applying insecticide. In contrast, if the field is not ready to cut and you have about three 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 (3 worms/square foot) by the time they reach 1/2 inch, then treat. 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 of the damage that they will do. In addition, large worms are harder to kill than smaller ones. 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 of insecticides labeled for use against fall armyworms in pastures and hayfields, check out the Forages section of the “2016 Insecticide Recommendations for Arkansas” available at: <http://www.uaex.edu/publications/pdf/mp144/c-forages.pdf>.

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# **Horse and Deer Flies**

Kelly M. Loftin

Over the last few weeks, the horse flies have been tearing me and my horses up. I know other horse and cattle owners are having similar issues. Aside from the painful bite they inflict on us or our livestock, they can transmit several pathogens that cause disease. Important livestock diseases that can be transmitted by horse flies include anaplasmosis in cattle and equine infectious anemia in horses.

Equine Infectious Anemia (EIA), sometimes referred to as swamp fever, is common in the southeastern US and is mechanically (on the fly's mouthparts) transmitted to horses and other equids. It is a viral disease that causes lethargy, weight loss, and sometimes death in an infected animal.

Anaplasmosis (a Rickettsial bacterial infection - *Anaplasma marginale*), is found frequently in the southeastern US. In adult cattle, this disease can result in anemia, fever, weight loss and possible death. Infected ticks are potential biological vectors of this pathogen.

Horse and deer flies are both members of the Family Tabanidae and can be distinguished from one another by size and wing coloration. Horse flies (Figure 1) are larger (from  $\frac{3}{4}$  to greater than an inch long) than deer flies (slightly larger than house flies), heavy bodied and large headed. Deer flies (Figure 2) have markings on their wings while horse fly wings are clear or of a uniform color. Both are painful biters and readily feed on livestock, wildlife and humans; however, horse flies are commonly associated with feeding on livestock while deer flies frequently attack humans.



**Figure 1. Horse fly. (Photo credit: Sturgis McKeever, Georgia Southern University, Bugwood.org).**



**Figure 2. Deer fly (*Chrysops reicherti*). (Photo credit: Sturgis McKeever, Georgia Southern University, Bugwood.org).**

Most horse fly eggs (Figures 3) are laid in layered masses on vegetation overhanging aquatic habitats or moist soil such as marshes or pond margins. Eggs hatch and larvae develop in aquatic and semi-aquatic habitats. Developing larvae feed on annelids, molluscs or insect larvae. Some are even cannibalistic. Depending on the species, the larval period lasts from one month to over a year (Figure 4). Fully mature larvae migrate to a drier area of their larval habitat and pupate. Adults emerge from the pupal stage from 1 to 4 weeks following pupation.

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**Figure 3. Horse fly eggs on vegetation. (Photo credit: Sturgis McKeever, Georgia Southern University, Bugwood.org).**



**Figure 4. Horse fly (*Tabanus atratus*) larva. (Photo credit: Sturgis McKeever, Georgia Southern University, Bugwood.org).**

Horse and deer flies are attracted to the carbon dioxide that we and other animals exhale. They also hone in on movement, shiny surfaces and warmth. Once they find a suitable host, they use their knife-like mouthparts to slice the skin and feed on the pool of blood that forms. One USDA publication estimated that 20-30 horse flies feeding for six hours would take about 20 teaspoons (~ 100 ml.) of blood. Horse flies feed during the day and prefer sunny areas, seldom entering barns or heavily shaded areas.

Horse flies can be serious pests of cattle and horses through irritation, blood loss and potential disease transmission. The most important species include the black horse fly (*Tabanus atratus* Fabricius), the black striped horse fly (*Hybomitra lasiophthalma* Macquart), the lined horse fly (*Tabanus lineola* Fabricius) and the autumn horse fly (*Tabanus sulcifrons* Macquart) (Figures 5-8). Horse flies are mechanical vectors of hog cholera, equine infectious anemia, anaplasmosis and tularemia; and biological vectors of *Elaeophora schneideri*, a filarial nematode causing disease in wild ruminants primarily in the Rocky Mountain States.



**Figure 5. Black horse fly (*Tabanus atratus*). (Photo credit: Sturgis McKeever, Georgia Southern University, Bugwood.org).**



**Figure 6. Black striped horse fly (*Hybomitra lasiophthalma*). (Photo credit: Sturgis McKeever, Georgia Southern University, Bugwood.org).**

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**Figure 7. Lined horse fly (*Tabanus lineola*).** (Photo credit: Sturgis McKeever, Georgia Southern University, Bugwood.org).



**Figure 8. Autumn horse fly (*Tabanus sulcifrons*).** (Photo credit: Sturgis McKeever, Georgia Southern University, Bugwood.org).

Horse flies are effective mechanical disease vectors because they take large blood meals and, as a result of their painful feeding, are often interrupted during feeding. They inject an anticoagulant to prevent blood clotting, sponge up the blood and feed until they are replete with blood (usually taking 3 to 5 minutes). If a fly is interrupted during blood feeding, it will either find another spot on that animal or find another animal to feed upon. Anaplasmosis in cattle and equine infectious anemia in horses may be transmitted from an infected or carrier animal to a susceptible animal by bloody mouthparts.

#### **Personal protection:**

Wear light colored clothes when working or recreating in horse or deer fly infested areas. If you are caught off-guard without the proper clothing or repellent, remember that horse and deer flies are less likely to enter shelters and heavily shaded areas.

We can protect ourselves from deer and horse fly bites with the repellents routinely used to protect against mosquitoes. Formulations containing DEET can provide a few hours of protection. Clothing only repellents containing permethrin (Permanone and others) can also provide protection. Never apply permethrin directly to exposed skin and always allow clothing to dry completely before wearing. Closely follow all label directions and precautions for both DEET and Permanone.

#### **Protecting livestock:**

Horse flies are difficult to control for a number of factors. First, the large size of the horse fly increases the dose required to produce mortality. Secondly, the brief time period a fly would be exposed to the insecticide while feeding on a treated animal adds to control difficulty. Also, the horse fly has the ability to fly a considerable distance from the emergence site to the host and occupies a wide range of larval habitats that limit larval control. Horses and other livestock can be temporarily protected with pyrethroid insecticides (such as permethrin). Pyrethroid insecticides are irritating to horse flies and will cause them to leave before they have a chance to bite. Often the flies are only repelled from the treated areas and will bite untreated areas of the animals, so thorough coverage is important. Frequent reapplication is often necessary. Forced-use self-treatment sprayers have been used with some success to manage horse flies on cattle. Some permethrin formulations also contain a synergist (piperonyl butoxide) and an oil based carrier which provide longer lasting effects. Always read the label and follow all directions and precautions when using these insecticides. A good option to protect

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livestock is to provide shelter (horse flies seldom enter structures) for the animals or pasturing them away from infested areas. Some traps have shown promise in providing limited control.

## **Peach Brown Rot**

Sherrie Smith

The greatest numbers of peach samples that arrive at the Plant Health Clinic for diagnosis have a fungal disease commonly called Brown rot. Brown Rot is one of the most serious and pervasive fungal diseases of stone fruits, attacking peaches, nectarines, apricots, cherries, and plums. Two species of *Monilinia* have been identified as causative agents in the United States; *Monilinia fructicola*, and *M. laxa*. *Monilinia* causes twig and blossom blight in early spring. Flowers turn brown and become a gummy mass. The infection travels down and can girdle the twig. The infected tissue becomes covered with grayish-tan spore mass that provides secondary inoculum for additional infections. Brown rot appears on ripening to mature fruit as a rapidly growing, firm brown decay. Eventually the fruit is covered with the grayish-tan spore masses and eventually mummifies on the tree. Immature fruit that is infected remain on the tree and mummify also. Since *Monilinia* overwinters on mummified fruit, twigs, and cankers, sanitation is very important in the home orchard. However tedious a procedure, it is helpful to clean up as much infected tissue as possible. Homeowners may use Ortho Home Orchard Spray, or Bonide Fruit Tree Spray, or Hi-Yield Captan 50WP, or Bonide Captan 50WP, or Spectracide Immunox, or Bonide Fung-onil Multipurpose Fungicide Concentrate.

### **Peach Brown rot-*Monilinia* spp.**



Sherrie Smith University of Arkansas Cooperative Extension

## **Mole and Gopher Control in Yards**

Becky McPeake

Moles and pocket gophers damage yards with their digging activities. Subsurface tunneling and mounds of dirt are evidence of moles or pocket gophers. Typically either one or the other species is present in a yard, rarely both. A fresh gopher mound typically is crescent-shaped and a mole hill is volcano-shaped. Surface holes are 1 to 1 3/8 inch in diameter and plugged with dirt. Sometimes mole mounds are not present at all, only subsurface tunnels. Both gophers and moles create subsurface tunnels which can kill grass when roots become separated from soil. Pocket gophers consume roots and plant material while moles seek primarily grubs and earthworms.

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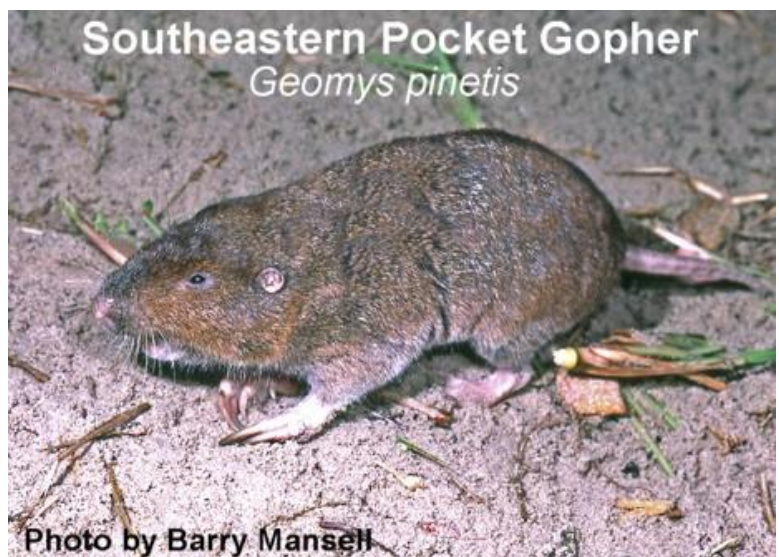
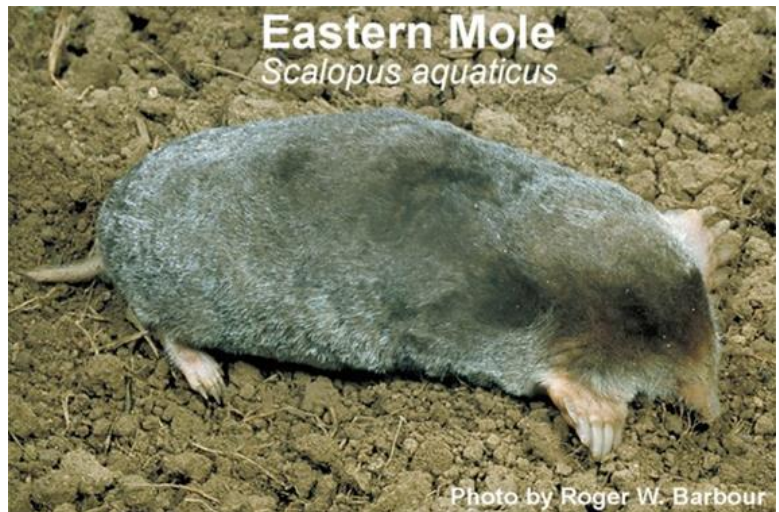
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Both moles and gophers tend to be a problem in well maintained yards – where fertilized and well-watered lawns have more soil invertebrates and ample roots for these underground animals to consume. If possible, consider downsizing watering and fertilizing efforts. Soil invertebrates may migrate deeper into the soil and tunneling moles will follow suit. Gophers may leave when soil becomes more difficult to dig and roots become less palatable.

Moles and gophers tend to be solitary and territorial. It is estimated a one-acre lawn can support one or two moles. Only one gopher tends to inhabit a tunnel system, though there may be several tunnel systems in one area. Despite relatively low numbers in a yard, if other suitable habitat is nearby, removing one mole or gopher often does not solve the problem - another will likely take its spot. Moles or gophers may never be entirely removed from a lawn, but continued effort may help reduce the level of damage to the lawn.

Using poisons to control moles and pocket gophers is illegal in Arkansas. Trapping is recommended for removal. Trap types are different for moles and gophers, so it is important to recognize which species is causing damage. To determine trap placement, step on several subsurface tunnels and the next day, check which ones are raised, indicating an active tunnel. Some trappers recommend using latex gloves to reduce human scent on traps, and covering traps with a bucket to prevent wind currents and sunlight from entering the disturbed tunnel. If an animal is not trapped in 24-48 hours, move the trap to another tunnel. Additional information is available in Controlling the Eastern Mole (FSA9095) and Managing Iowa Wildlife: Pocket Gophers (PM1302A). Both are found at the UA Cooperative Extension Service website titled Dealing with Wildlife: <http://www.uaex.edu/environment-nature/wildlife/dealing-with-wildlife/>.



## **Tomato Late Blight Continues**

Jackie Lee

Late Blight is a fungal pathogen of plants that has been found this year at a higher rate than usual. This disease can affect tomato, potato, pepper and eggplant but has been found this year most often affecting tomatoes and some potatoes. This disease infects the foliage and the fruit (Figures 1, 2 & 3)

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**Figure 1. Tomato plants with late blight. These plants are too far gone for treatment and should be destroyed. Photo by Jackie Lee**



**Figure 2. Tomato with late blight symptoms. Photo by Jackie Lee**



**Figure 3. Tomato plant with late blight. Photo by Jackie Lee**

and causes rapid death of the plant. The first sign of the disease is development of necrotic brownish gray tissue on the leaves. It is often referred to as a bottom up disease. It will kill all of the bottom leaves as it moves up the plant (Figure 1). It spreads very rapidly from plant to plant. Spores are released from infected plant tissue and these spores can become windborne to travel several miles and infect healthy plants. Currently, 15 counties in Arkansas have had tomato plants test positive for late blight: Clark, Lee, Hot Spring, Independence, Boone, Conway, Dallas, Garland, Clark, Pulaski, Grant, White, Dallas, and Lonoke. Generally, Arkansas has 1-2 reports per year of this disease. The increase in occurrence could be due to our cool wet spring which provided the perfect environment for this disease to establish and spread.

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The best way to manage this disease is to start a fungicide spray program. The disease can be prevented with fungicide applications and growers should begin a spray program for this disease to ensure their plants do not become infected. It is very difficult to control once symptoms begin to show. Prevention is key. If symptoms are **just beginning**, it may be possible to stop the spread by applying a product registered for tomato and late blight management (Table 1). If the disease has progressed, the plants should be destroyed by burning them or throwing them out in plastic trash bags so that spores cannot escape from infected plants.

**Table 1. Fungicides registered for late blight control. Alternate between FRAC numbers to help deter disease resistance development. Always read and follow the product label. Read label for any restrictions and warnings. For complete listing of products consult the MP154 Arkansas Disease Control Products Guide <http://www.uaex.edu/publications/mp-154.aspx>**

| Commercial Products  | Active Ingredient             | Rate (always check label)       | FRAC #                                     | Days to harvest (PHI-preharvest interval) |
|--|-------------------------------|---------------------------------|--|---|
| Bravo Ultrex 82.5 WDG<br>Bravo WeatherStik 6F<br>Bravo 500 4.17F   | chlorothalonil                | 1.3-1.8lb<br>1 3/8-2pt<br>2-3pt | M5   | 0<br>0<br>0                               |
| Scala SC   | pyrimethanil                  | 7 fl oz                         | 9  | 1   |
| Dithane DF<br>Manzate 75DF<br>Penncozeb 75DF   | mancozeb                      | 1.5-2lb<br>1.5-2lb<br>0.75-2lb  | M3   |   |
| Quadris 2.08   | azoxystrobin                  | 5-6.2 fl oz                     | 11   | 0   |
| Quadris Opti   | azoxystrobin + chlorothalonil | 1.6 pt                          | 11 & M5                                    | 0   |
| Cabrio 20EG  | pyraclostrobin                | 8-12 oz                         | 11   | 0   |
| Flint 50WG   | trifloxystrobin               | 4 oz                            | 11   | 3   |
| Gavel 75DF   | mancozeb + zoxamide           | 1.5-2 lb                        | M3 & 22                                    | 5   |
| Kocide 2000<br>Kocide 4.5 LF   | copper hydroxide              | 1.5-3lb<br>1 1/3-2 1/3 pt       | M1<br>M1                                   | 0<br>0                                    |
| Ridomil Gold MZ  | mefenoxam                     | 2.5 lb                          | 4  | 14  |
| Home Garden  | Active Ingredient             | Rate (always check label)       | FRAC #                                     | Days to harvest (PHI-preharvest interval) |
| Hi-Yield Copper Fungicide  | copper hydroxide              | M1                              | 3-5 tsp                                    | 0   |
| Ortho garden and disease control<br>Fertilome liquid fungicide<br>Bonide Fung-onil multipurpose fungicide concentrate<br>Garden tech daconil fungicide concentrate | chlorothalonil                | M5                              | 1 tbs<br>2 tbs<br>1 ½ tbs<br><br>See label | 0<br>0<br>0<br><br>0                      |
| Bonide mancozeb  | mancozeb                      | M3                              | 2-5 tbs                                    | 5   |

If infected plants are not properly destroyed spores can quickly move to uninfected plants on the farm or even farm to farm. Discarding infected plants will help lower the accumulation of spores and help prevent spread to plants that are healthy. This will also decrease the disease pressure in the following year, but not eliminate it. These spores will remain active in the soil and susceptible crops should not be planted in the soil were infected plants have been for 3 years. This is a plant disease and it cannot be passed to humans or animals.

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# **Name That Weed**

Bob Scott

One man's flower is another man's weed! This saying could not be more true for this month's weed, uh ur, flower, how about plant. As a wild flower this one's bright yellow flower adds beauty to Arkansas in late spring and early summer. If you google its common name you will find you can order seed to be planted for just this purpose and even a few improved or selected types with different colored flowers. As a weed in burndown situations or wheat this member of the Asteraceae or composite or sunflower family can be quite troublesome and difficult to control. Be the first to email me with the correct common name of this weed/flower at [bscott@uaex.edu](mailto:bscott@uaex.edu) and win a prize. Please do not hit reply or reply all to this message.



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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