



# Pest e-alerts



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Entomology and Plant Pathology, Oklahoma State University  
127 Noble Research Center, Stillwater, OK 74078  
405.744.5527

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## Bermudagrass Stem Maggot Showing up in Oklahoma

Tom A. Royer, Extension Entomologist

The bermudagrass stem maggot is a new pest of bermudagrass hay pasture. Introduced from south Asia, it was first found in Hawaii around 1974, then in California and Georgia around 2010. First reports in Oklahoma were received within the past 2-3 years. This fly pest only infests bermudagrass and stargrass, both in the Genus *Cyndon*. Initially, it was seen as a turf pest, but it seems to be increasing in incidence in bermudagrass pastures.



The adult is a small (3.0-3.5 mm), yellow fly that lays eggs on the stem of the bermudagrass plant. Mature maggots measure 3 mm long and are whitish-yellow. The eggs hatch and the maggots move to the top node on a grass stem and burrow into the shoot to feed on the sap. They continue to feed up to 10 days, and then drop to the soil and pupate for about 7-10 days. Adult flies emerge, mate and females lay eggs for up to 20 days. Once established, they will have multiple generations during the growing season. Current evidence suggests that they do not overwinter outside of the Gulf Coast states, but build and migrate as the summer progresses.

The damaging stage is the immature maggot. Larval feeding results in leaf yellowing within three days. Damaged fields appear to be “frosted” because the upper 2-3 leaves die from the feeding activity, while the rest of the plant is still green. To confirm an infestation, split the stem just below the dead leaves to see if there is a tunnel and possibly the maggot. You might not be able to find the maggot if it has already pupated, but the tunnel will remain. The damaged shoot simply stops growing but the plant may compensate by producing side shoots.



**Management:** This pest does not typically infest actively grazed pastures because the livestock eat the eggs and larvae. For pastures that are intended for hay production, several steps should be taken.

1. Inspect fields regularly, and if 10-20 percent of plants show damage, plan a harvest.
2. Harvest the crop, bale it, and remove it from the field as soon as possible. Any maggots still feeding will die as the crop dries out.
3. Follow up with an application of a foliar-applied insecticide about 7 days after harvest.

Research in Georgia indicated that the lowest rate of a pyrethroid insecticide that is registered for use in bermudagrass pastures (beta cyfluthrin, cyfluthrin, gamma-cyhalothrin, lambda-cyhalothrin or zeta-cypermethrin) is effective. Typically, one application should suffice.

Photos courtesy of Will Hudson, University of Georgia, Bugwood.org

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#### **Wheat Disease Update – 14-Aug-2017**

Dr. Bob Hunger, Extension Wheat Pathologist

Dr. Tom Royer, Extension Entomologist

Department of Entomology & Plant Pathology

Oklahoma State University

### **Considerations to Make before Planting Wheat this Fall**

**Planting date:** Much of the winter wheat in Oklahoma is sown with the intent of being used as a dual-purpose crop. In such a system, wheat is grazed by cattle from late fall through late winter/early spring and then harvested for grain in early summer. In a grain-only system, wheat is generally planted in October, but in a dual-purpose system wheat is planted in early to mid-September to maximize forage production. Planting wheat early significantly increases the likelihood that diseases and insect pests such as mite-transmitted viruses, the aphid/barley yellow dwarf complex, root and foot rots, and Hessian fly will be more prevalent and severe. For more detailed information on planting date and seed treatment considerations on wheat, see CR-7088 (Effect of Planting Date and Seed Treatment on Diseases and Insect Pests of Wheat) at:

<http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-7836/CR-7088web2012.pdf>

**Mite-transmitted virus diseases.** These virus diseases are transmitted by wheat curl mites (WCMS) (Figure 1), and include wheat streak mosaic (WSM), high plains disease (also called wheat mosaic), and Triticum mosaic (TrM). WCMS and these viruses survive in crops such as wheat, corn, and sorghum as well as many grassy weeds and volunteer wheat. In the fall, WCMS spread to emerging seedling wheat, feed on that seedling wheat, and transmit virus to the young wheat plants. During 2016 and 2017, these mite transmitted virus diseases (especially WSM) were severe across much of the wheat growing areas of Oklahoma as well as in many of the other Great Plains states. Weather is a determining factor in the increased incidence and severity of these virus diseases, but another major contributor is the lack of control of volunteer wheat and other grassy weeds that serve as alternative hosts for the mite and the viruses. Often an infected field of commercial wheat is growing immediately adjacent to a field left fallow during the fall and winter (Figure 2). The fallow field contained abundant volunteer wheat and grassy weeds from which WCMS carrying *Wheat streak mosaic virus* (WSMV) spread into the commercial field. Wheat infected in the fall will be severely damaged the next spring. Hence, it is imperative to do yourself and your neighbors a favor by controlling volunteer wheat and grassy weeds in fields left fallow – especially, if they are adjacent to commercial wheat fields.

Figure 1. Wheat curl mites and symptoms of wheat streak mosaic.



Photo credit: Texas A&M Univ.



Photo credit: Univ. of Kentucky



Figure 2. A commercial wheat field (right) growing adjacent to a field (left) in which volunteer wheat and grassy weeds were not controlled until the spring. The commercial field begin to show WSM symptoms in late March and the disease became severe as the spring progressed.



Seed treatments and insecticides are not effective in controlling the mites or these mite-transmitted virus diseases. However, planting later in the fall (after October 1 in northern OK and after October 15 in southern OK) and controlling volunteer wheat are two practices that can be employed to help manage these diseases. It is extremely critical that volunteer wheat is completely dead for at least two weeks prior to emergence of seedling wheat because WCMs have a life span of 7-10 days. Thus, completely killing or destroying volunteer wheat for a period of at least two weeks prior to emergence of seedling wheat will greatly reduce mite numbers in the fall. There are several winter wheat varieties that have resistance to either WSM or the curl mites, but the adaptation of these varieties to Oklahoma is limited, and the resistance is not an absolute resistance to the disease. Hence, severe and continuous disease pressure can overcome the resistance although disease effects typically is less as compared to a susceptible variety. For more information on mite-transmitted virus diseases, see OSU Fact Sheet 7328 (Wheat Streak Mosaic, High Plains Disease and Triticum Mosaic: Three Virus Diseases of Wheat in Oklahoma) at: <http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-8987/EPP-7328.pdf>

**Aphid/barley yellow dwarf (BYD) complex:** Viruses that cause BYD are transmitted by many cereal-feeding aphids (Figure 3.). BYD infections that occur in the fall are the most severe because virus has a longer time to damage plants as compared to infections that occur in the spring. Several steps can be taken to help manage BYD. First, a later planting date (after October 1 in northern Oklahoma and after October 15 in southern Oklahoma) helps reduce the opportunity for fall infection. Second, some wheat varieties (e.g., Duster, Billings, Gallagher, Iba, Bentley, Tatanka, and Winterhawk) tolerate BYD better than other varieties; however, be aware that no wheat variety has a high level of resistance to the aphid/BYD complex. Third, control aphids that transmit the viruses that cause BYD. This can be done by applying contact insecticides to kill aphids, or by treating seed before planting with a systemic insecticide. Unfortunately, by the time contact insecticides are applied, aphids frequently have already transmitted the viruses that cause BYD. Systemic seed-treatment insecticides containing imidacloprid or thiamethoxam can control aphids during the fall after planting. This may be particularly beneficial if wheat is planted early to obtain forage. Be sure to thoroughly read the label before applying any chemical.

Figure 3. Spot in field (left) of barley yellow dwarf (BYD) as would be seen in March or April. Many types of aphids (for example, greenbug; right) transmit the viruses that cause BYD.



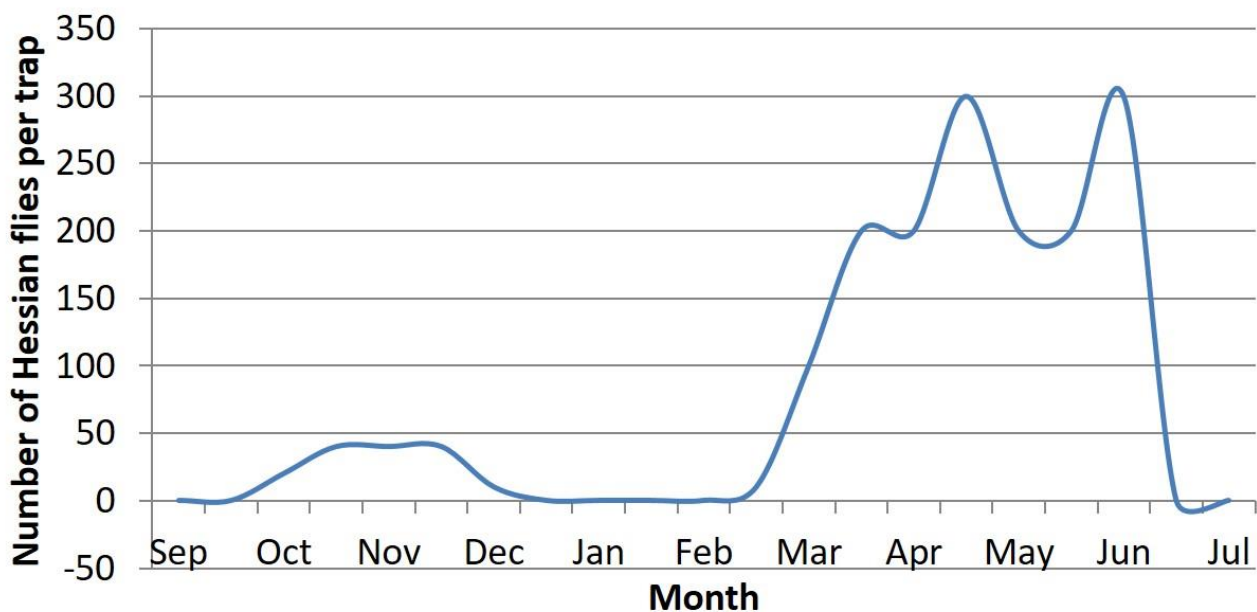
**Hessian fly:** Hessian fly (Figure 4.) infestations can occur in the fall and spring. Fall infestations arise from over-summering pupae that emerge when climate conditions become favorable. In states north of Oklahoma, a “Hessian fly free” planting date often is used to help limit fall infestations by Hessian fly. However, such a planting date does not apply in Oklahoma because Hessian fly can emerge in Oklahoma as late as December (Figure 5.).

Figure 4. Adult Hessian fly (left) and larvae and pupae of the Hessian fly (right)



Figure 5. Emergence of Hessian fly in Oklahoma by month from 2011-2013.

### Hessian Fly Emergence Patterns in Oklahoma 2011-2013



Delayed planting (after October 1 in northern Oklahoma, and after October 15 in southern Oklahoma) can help reduce the threat of Hessian fly, but a specific “fly free date” does not exist for most of Oklahoma as it does in Kansas and more northern wheat-growing states. This is because smaller, supplementary broods of adult flies emerge throughout the fall and winter. Some wheat varieties are either resistant (e.g. Duster, Gallagher, SY-Flint, and LCS Wizard) or partially resistant (e.g. Billings, Doublestop CL+, Everest, Iba, Ruby Lee, SY-Gold, and T-153) to Hessian fly infestations. Hessian fly infestations can be reduced somewhat by destroying volunteer wheat in and around the field at least two weeks prior to emergence of seedling wheat. Seed treatments that contain imidacloprid or thiamethoxam will also help reduce fly fall infestations,

especially if combined with delayed planting and volunteer destruction. For more information on Hessian fly, see OSU Fact Sheet: EPP-7086 (Hessian fly Management in Oklahoma Winter Wheat) at: <http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-6189/EPP-7086web2015.pdf>

**Root and foot rots:** These are caused by fungi and include several diseases such as dryland (Fusarium) root rot, Rhizoctonia root rot (sharp eyespot), common root rot, take-all, and eyespot (strawbreaker) (Figure 6). During the late spring of 2016 and 2017, several samples of wheat were received that were diagnosed as being affected by take all and other root rots. This could indicate a greater incidence of wheat root rots in 2017-18, but the incidence and severity of root rots is highly dependent on weather conditions so it is impossible to predict their incidence and severity this early.

Controlling root and foot rots is difficult. There are no resistant varieties, and although fungicide seed treatments with activity toward the root and foot rots are available, their activity usually involves early-season control or suppression rather than control at a consistently high level throughout the season. Often, there also are different “levels” of activity related to different treatment rates, so again, CAREFULLY read the label of any seed treatment to be sure activity against the diseases and/or insects of concern are indicated, and be certain that the seed treatment(s) is being used at the rate indicated on the label for activity against those diseases and/or insects. Later planting (after October 1 in northern Oklahoma and after October 15 in southern Oklahoma) also can help reduce the incidence and severity of root rots, but planting later will not entirely eliminate the presence or effects of root rots. If you have a field with a history of severe root rot, consider planting that field as late as possible or plan to use it in a “graze-out” fashion if that is consistent with your overall plan. For some root rots, there are specific factors that contribute to disease incidence and severity. For example, a high soil pH (>6.5) greatly favors disease development of the root rot called take-all. OSU soil test recommendations factor in this phenomenon by reducing lime recommendations when continuous wheat is the intended crop. Another practice that can help limit take-all and some of the other root rots is the elimination of residue. However, elimination of residue by tillage or burning does not seem to affect the incidence or severity of eyespot (strawbreaker).

Figure 6. White heads indicative of root rot (left); darkened roots indicative of take all root rot.



**Seed treatments:** There are several excellent reasons to plant seed wheat treated with an insecticide/fungicide seed treatment. These include:

1. Control of bunts and smuts, including common bunt (also called stinking smut) and loose smut. The similarity of these names can be confusing. All affect the grain of wheat, but whereas common bunt and flag smut spores carryover on seed or in the soil, loose smut carries over in the seed. Seed treatments are highly effective in controlling all the bunts/smuts. If common bunt (stinking smut) was observed in a field and that field is to be planted again with wheat, then planting certified wheat seed treated with a fungicide effective against common bunt is strongly recommended. If either common bunt or loose smut was observed in a field, grain harvested from that field should not be used as seed the next year. However, if grain harvested from such a field must be used as seed wheat, treatment of that seed at a high rate of a systemic or a systemic + contact seed treatment effective against common bunt and loose smut is strongly recommended. For more information on common bunt & loose smut, see: <http://www.entopl.okstate.edu/ddd/hosts/wheat.htm> and consult the "2017 OSU Extension Agents' Handbook of Insect, Plant Disease, and Weed Control (OCES publication E-832)," and/or contact your County Extension Educator.
2. Enhance seedling emergence, stand establishment and forage production by suppressing root, crown and foot rots. This was discussed above under "Root and Foot Rots."
3. Early season control of the aphid/BYDV complex. This can be achieved by using a seed treatment containing an insecticide. Be sure that the treatment includes an insecticide labeled for control of aphids.
4. Control fall foliar diseases including leaf rust and powdery mildew. Seed treatments are effective in controlling foliar diseases (especially leaf rust and powdery mildew) in the fall, which may reduce the inoculum level of these diseases in the spring. However, this control should be viewed as an added benefit and not necessarily as a sole reason to use a seed treatment.
5. Suppression of early emerged Hessian fly. Research suggests that some suppression can be achieved, but an insecticide seed treatment has little residual activity past the seedling stage.

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#### **Peanut Disease Update--14-Aug-2017**

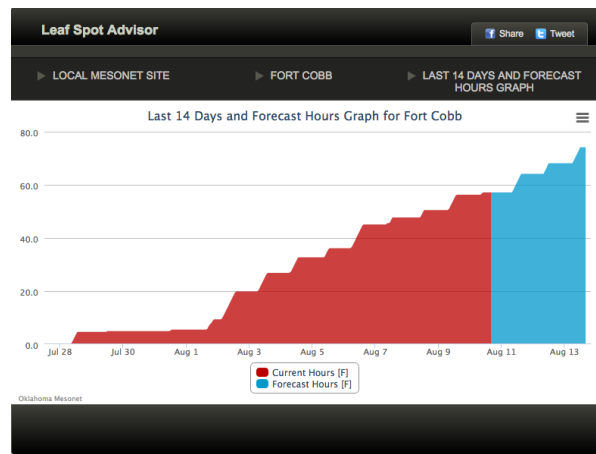
John Damicone, Extension Plant Pathologist  
Department of Entomology & Plant Pathology  
Oklahoma State University

Peanut acreage is up this year and the crop is looking good with few disease problems thus far except for early leaf spot (Figure 1). Recent rains and relatively cool temperatures in southwestern OK peanut production areas have resulted in periods of favorable weather for early leaf spot development. Leaf spot causes leaflet defoliation, which can drastically reduce yield when defoliation levels exceed 50%. In plots at the Caddo Research Station, the Peanut Leaf Spot Advisor (<http://www.mesonet.org>) has already recommended 2 to 3 sprays for leaf spot depending on planting date. With more rain in the forecast, favorable weather for leaf spot is expected to increase (Figure 2). Leaf spot is already showing up in our plots that are in continuous peanuts. Leaf spot is also showing up in commercial fields with short or no rotations, but not yet in well rotated fields. There are a lot of acres planted to spanish varieties which are particularly susceptible compared to runners. Growers are encouraged to stay ahead of leaf spot by making timely preventative fungicide applications.

**Figure 1: early leaf spot**



**Figure 2: Leaf Spot Advisor**



We have not yet seen Sclerotinia or southern blights (Figures 3 and 4), but look for those to develop shortly with recent rains and cool weather. Soilborne diseases such as pod rot, southern blight, and Sclerotinia blight generally begin to appear in August and treatment programs for those diseases should be based on field history and early symptom detection. Spanish varieties typically do not respond to fungicide treatment for Sclerotinia blight. The new runner variety “Lariat” is also highly resistant. Other runner and virginia varieties should be treated for Sclerotinia blight shortly after symptoms first appear. Due to the widespread use of generic tebuconazole for leaf spot control in Oklahoma, growers have generally been getting good southern blight control in the process of spraying for leaf spot.

**Figure 3: Sclerotinia**



**Figure 4: Southern Blight**



Growers should also watch for web blotch (Figure 5) on spanish varieties. The disease is favored by cool rainy weather and is not effectively controlled by tebuconazole. If web blotch is observed in spanish peanuts, growers should immediately revert to a 14-day schedule with chlorothalonil (e.g. Bravo). Include fungicides containing pyraclostrobin fungicide (e.g. Headline or Priaxor) into the spray program for enhanced control. Once web blotch gets started, it is difficult to control. The disease is rarely seen on runner types.

**Figure 5: Web Blotch**





## Corn Disease Update--14-Aug-2017

John Damicone, Extension Plant Pathologist  
Department of Entomology & Plant Pathology  
Oklahoma State University

Last year we found a new foliar disease of corn, bacterial leaf streak, in a few fields in Texas Co. It was confirmed in 2 out of 10 fields in Texas Co, but not in other counties checked. The disease was minor compared to neighboring states such as Kansas and Colorado. Severity on affected leaves was only about 1 to 2% of leaf area and it was difficult to distinguish from immature lesions of gray leaf spot. The disease is caused by *Xanthomonas vasicola*, apparently a new pathogen in the U.S. I visited Texas Co. again in mid July 2017 to check on the status of bacterial leaf streak. The disease was present in 3 of 10 fields checked and was easier to identify as symptoms were more distinct than in 2016 (Figure 6). Some plants had about 5% of diseased foliage in the mid canopy at growth stages ranging from R1 (silking) to R2 (blister). This level of disease could become damaging if the disease were to continue to develop. For example, a similar level of gray leaf spot or southern rust at these early reproductive growth stages might justify a fungicide application depending on the price of corn. However, we do not know enough about the development of this disease over the season to predict final disease outcome. Seed pathologists at Iowa State University have learned that the disease is seedborne. Spread of the pathogen on seed is likely to contribute to long distance spread of the pathogen. It is also likely that minimum and no tillage production systems favor survival of the bacterium from year to year on stubble. While there are no spray treatments for bacterial leaf streak, be sure not to mistake bacterial leaf streak for gray leaf spot. Gray leaf spots have straight margins and lack yellow halos around the spots (Figure 7). Conversely, bacterial leaf streak has wavy borders and are typically surrounded by a yellow halos. Because fungicides do not control bacterial diseases, application of fungicide for bacterial leaf streak is likely to be a wasted expense unless gray leaf spot or southern rust is also present.

**Figure 6: Bacterial Leaf Streak**



**Figure 7: Gray Leaf Spots**



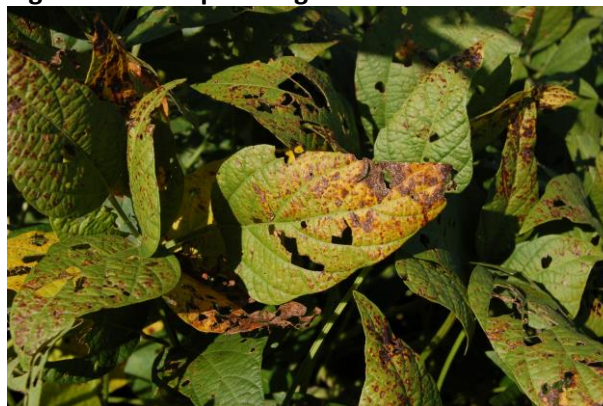
**Soybean Disease Update--14-Aug-2017**  
John Damicone, Extension Plant Pathologist  
Department of Entomology & Plant Pathology  
Oklahoma State University

Recent rains have greatly improved soybean prospects. I have not observed soybean rust in plots but have seen and been contacted about Septoria brown spot. Septoria brown spot is the most common foliar disease of soybeans in Oklahoma. Plants typically become infected early, during vegetative growth stages in fields where soybeans are cropped after soybeans the previous year. Symptoms appear as small brown spots on lower leaves (Figure 8). Heavily infected leaves turn yellow and drop from the plants. In my fungicide trials on soybeans where fungicides have been applied at the R3 growth stage (first pods visible at the top four nodes), brown spot is normally already present at significant levels. According to the literature, brown spot is a cool weather disease that decreases in importance as temperatures rise. It was generally not considered damaging. More recent research in Ohio that used full-season fungicide applications to measure yield loss, showed that brown spot reduced yield by 4 to 6 bushels per acre in high yielding soybeans that averaged 70+ bushels per acre. The research in Ohio further showed that application of strobilurin (e.g. Quadris or Headline) but not triazole (e.g. Folicur or Tilt) applied at R3 effectively controlled brown spot. However, yield responses were only significant in about half of the trials treated only at R3. In Oklahoma, application of fungicides has not resulted in statistically significant yield increases. However, in irrigated trials in Bixby and Stillwater where average yields were greater than 60 bu/A yield responses in the 2 to 6 bu/A range have been observed. Both brown spot and Cercospora blight (Figure 9) were present in the trials. Yield responses were not statistically significant thus I continue to be hesitant about recommending fungicide on soybeans in Oklahoma. More damaging foliar disease such as rust and frogeye leaf spot have not been observed in 2017.

**Figure 8: Septoria Brown Spot**



**Figure 9: Cercospora Blight**



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**Co-Editors: Eric Rebek and Justin Talley; Oklahoma Cooperative Extension Service**

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