Pest e-alerts

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Pasture and Rangeland Pests from East to West

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It seems that rangeland and pasture grasses are very popular with some old nemesis insect pests. Robert Bourne, Bryan Co. Extension Educator Agriculture, reported fall armyworm infestations in some grass pastures southeastern Oklahoma. On the other side of the state, I have received several reports of noticeable grasshopper infestations in western Oklahoma. These pests are addressed individually, so look at the Bold Header to select the pest that you are dealing with.

Fall Armyworm: One female fall armyworm moth can lay up to 1000 eggs over several nights on grasses or other plants. These eggs hatch a few days after being laid. Caterpillars grow through six molts before becoming mature, increasing in size after each molt. Mature caterpillars measure 1½ inches long with a body color that ranges from green, to brown to black and have a prominent inverted white "y" on their head. Small larvae do not eat through the leaf tissue, but instead, scrape off all of the green tissue and leave a clear membrane that gives the leaf a "window pane" appearance. Larger larvae feed voraciously and can completely consume leaf tissue. It is not uncommon to hear anecdotes by producers that said they saw a fescue pasture “disappear” in less than 4 days after they noticed armyworms feeding.

An Auburn University entomologist developed an easy-to-use scouting aid for pasture that consists of bending a wire coat hanger into a hoop, placing it on the ground and counting fall armyworms in the hoop. Examine plants at several locations along the field margin as well as in the interior. Look for “window paned” leaves and count all sizes of larvae.

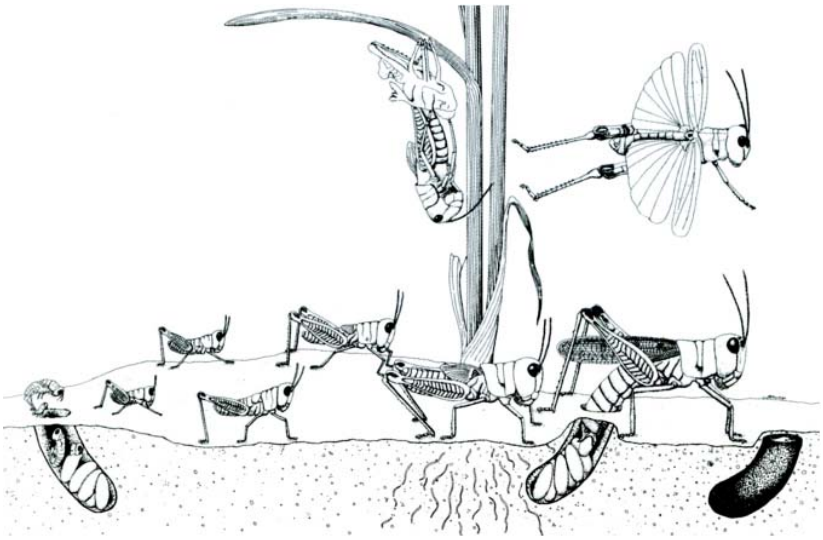
The hoop covers about 2/3 of a square foot, so a threshold in pasture would be an average of two or three ½ inch-long larvae per hoop sample (i.e. 4-5 per square foot).

Target control efforts on smaller caterpillars (1/2 inches or less) for two reasons. First, the caterpillars don't cause really severe damage until they reach on inch long, and secondly, smaller caterpillars are much more susceptible to insecticide control than larger caterpillars.

One spot of good news is that several very effective active ingredients, cyfluthrin, lambda cyhalothrin, and zeta cypermethrin have recently been registered for rangeland and pastures and they are effective and have a very short waiting period for grazing (0 days) and hay harvest (7 days). Cyfluthrin is marketed as Baythroid XL, zeta cypermethrin is marketed as Mustang Max, and lambda cyhalothrin is marketed under various names including Grizzly Z, Karate with Zeon, Lambda-Cy Lambdastar and others. Of course other products are registered for fall armyworm control in pastures as well. For control options, consult OSU Fact Sheet CR-7193 "*Management of Insect Pests in Rangeland and Pasture*". In any case, we will not be out of the woods for a fall armyworm outbreak until we get a good killing frost.

Grasshoppers: Over 130 species of grasshoppers reside in Oklahoma. Most never become a pest because they are either too small or don't become numerous enough. In rangeland and pastures, grasshopper problems develop from "complexes" of grasshoppers, called guilds, which tend to occur together and build in numbers large enough to cause damage. The most economically important species in rangeland and pastures appear to be the twostriped slant-face, migratory, two-striped, redlegged, differential, and Packard grasshopper.

Nearly all grasshoppers produce one generation each year. All have three stages, the egg, nymph and adult. Most grasshoppers overwinter as eggs, but a few overwinter as 4th or 5th instar nymphs. In late summer and fall, eggs are deposited in the soil in "pods" that contain from 8-30 eggs. Eggs hatch in the spring. Hatching time is affected by weather, especially soil temperature. Cold winters



have little effect on the eggs because the pod and soil provide insulation from extreme cold.

Nymphs begin feeding within a day of hatching, usually on the same plants that they will feed on as adults. These small nymphs remain congregated and are most vulnerable to weather effects, disease, predators and parasites. They grow through 5 nymphal instars, shedding their exoskeleton each time, and become adults in 40-55 days after hatching. Each species hatches and develops at its own rate, so we tend to see a continuous flush of hatching grasshoppers over several months.

Grasshoppers compete for forage with cattle. Heavy infestations can reduce the quality and quantity of forage that is produced, which can affect the rancher's ability to manage the grazing pressure effectively. Research suggests that pound for pound, a grasshopper will eat 12-20 times as much plant material as a steer. One way to look at it is that 30 pounds of grasshoppers will eat as much as a 600-pound steer.

The fact is that it is probably too late to do anything about grasshopper control right now. The best time to control grasshoppers is from mid-May through about July 1, while they are immature. Now they have all sprouted wings and can fly miles to locate a good food source. However, you can assess grasshopper density to see if you need to consider treating next year's grasshopper crop when the "egg bank" begins to hatch.

There are two reliable methods for counting grasshoppers The square yard method requires the surveyor to walk in a straight line across an area, visually delineate a square yard area about 9-12 feet in front of the surveyor, and simply count the number of grasshoppers that can be seen jumping out of the space. About 30 samples should be taken each spaced about 75 feet apart. Take an average of the counts to determine grasshopper density.

With the square foot method, the surveyor counts grasshoppers from 18 different "square foot" areas in much the same manner as is done with the square yard method. After 18 samples have been taken, divide the total grasshoppers counted by 2 to come up with an average number of grasshoppers per square yard.

If the grasshoppers that are causing damage need to be identified, collect some 'hoppers from several different 1 square-yard areas (sweep nets are useful), put them in a container, and send them to someone who can identify, or ship them to the Plant Disease and Insect Diagnostic Lab

for identification. For more information on control of grasshoppers in rangeland and other crops, consult OSU Fact Sheet CR-7193 "*Management of Insect Pests in Rangeland and Pasture*" and OSU Fact Sheet EPP-7196 "*Grasshopper Management in Rangeland, Pastures and Crops*".

Effect of Planting Date and Seed Treatment on Diseases and Insect Pests of Wheat

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Approximately 40 to 60% of the winter wheat in Oklahoma is sown with the intent of being used as a dual-purpose crop. In this system wheat is grazed by cattle from late October to early March and 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 this early significantly increases the likelihood that diseases such as wheat streak mosaic virus, high plains virus, the aphid/barley yellow dwarf virus complex, and root and foot rots will be more prevalent and more severe.

Wheat streak mosaic virus (WSMV), the high plains virus (HPV), and Triticum mosaic virus (TrMV): WSMV and HPV are transmitted by the wheat curl mite (WCM). Within the last 2-3 years, Dr. Dallas Siefers with Kansas State University at Hays, KS identified a third virus, TrMV that also is transmitted by the WCM. TrMV causes the expression of symptoms similar to those caused by WSMV and HPV.

WCMs and these viruses survive in crops such as wheat and corn, 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 the virus to the young wheat plants. Wheat infected with WSMV, HPV, or TrMV in the fall is either killed by the next spring or will be severely damaged. No seed treatments are effective in controlling these viruses. 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 provide some control. It is critical to completely destroy volunteer wheat at least two weeks prior to emergence of seedling wheat because WCMs have a life span of 7-10 days. Thus, destroying volunteer wheat at least two weeks prior to emergence of seedling wheat should greatly reduce mite numbers in the fall. In addition to these cultural controls, two winter wheat varieties (RonL from Kansas and Mace from Nebraska) now have resistance to WSMV; however, their adaptation to production in Oklahoma is not known. For more

information on WSMV and HPV, see OSU Extension Facts 7636 or go to the PDIDL web page at: http://entoplp.okstate.edu/ddd/hosts/wheat.htm.

Aphid/barley yellow dwarf virus (BYDV) complex: BYDV is transmitted by many cereal-feeding aphids. Fall infections by BYDV are the most severe because the virus has a longer time to damage the plant as compared to infections that occur in the spring.
Several steps can be taken to help control BYDV. **First**, a later planting date (after October 1 in northern Oklahoma and after October 15 in southern Oklahoma) helps to reduce the opportunity for fall infections. **Second**, some wheat varieties (e.g., 2174, Duster, Endurance, Overley, Everest) seem to tolerate BYDV better than other varieties; however, be aware that no wheat variety has absolute resistance to the aphid/BYDV complex. **Third**, control the aphids that transmit BYDV. 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 BYDV. Systemic seed-treatment insecticides including Gaucho (imidacloprid) and Cruiser (thiamethoxam) can control aphids during the fall after planting, but in some years aphids are sparse in the fall and planting insecticide-treated seed in a year with no or sparse aphids in the fall would not be as beneficial as in years when aphids are numerous. Be sure to thoroughly read the label before applying any chemical. For more information on the aphid/barley yellow dwarf virus complex, go to the PDIDL web page for wheat.

Hessian fly: Hessian fly infestations occur in the fall and spring. Fall infestations arise from over-summering pupae that emerge when climate conditions become favorable. 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 and Centerfield) or partially resistant (e.g. Hatcher, Shocker, 2145, 2174, Chisholm, Ike, OK 102 and Okfield) 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.

Root and foot rots: These include several diseases caused by fungi such as dryland (Fusarium) root rot, Rhizoctonia root rot (sharp eyespot), common root rot, take-all, and eyespot (strawbreaker). 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). For more information on wheat root rots, take-all and eyespot (strawbreaker), see OSU Extension Facts F-7622 or go to the PDIDL web page for wheat.

Seed treatments: There are several reasons to consider planting treated seed including:

1) Control of common bunt (also called stinking smut) and loose smut. The similarity of these names can be confusing. Both affect the grain of wheat, but whereas common bunt spores carryover "**on**" seed or in the soil, loose smut carries over "**in**" the seed. Seed treatments are highly effective in controlling both diseases. If common bunt 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 is to 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, go to the PDIDL web page for wheat, consult the "2010 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." Refer to Table 1 for a more detailed description.
3) Early season control of the aphid/BYDV complex and Hessian fly. This can be achieved by using a seed treatment containing an insecticide. Refer to Table 1 for a more detailed description of seed treatments with insecticidal activity.
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) Partial control of Hessian fly. This was also discussed previously, see Table 1.

Often a combination of chemicals is present in seed treatments, which can include a combination of fungicides for a broader spectrum of activity, or a combination of fungicides with an insecticide so activity against diseases and insects is achieved. Examples of this last type of compound include CruiserMaxx, Gaucho XT, and Rancona Crest, which contain an insecticide and fungicides so control and/or suppression of aphids (and hence BYDV), Hessian fly, wireworms, smuts and bunts, and seedling root rots is available in one treatment (Table 1). Other seed treatments such as Raxil MD, Dividend Extreme, Charter PB, and Charter F2 contain only fungicides, but can easily be mixed with an insecticide such as Gaucho 600 or Cruiser to obtain activity against bunts, smuts, seedling root rots and insects as well. Therefore again, I would emphasize that if a seed treatment is used, **be sure to carefully read the label to ensure that the treatment is intended (and labeled) for your desired goal, and that it is applied at a rate labeled for the desired activity**. For more information on seed treatments, their intended uses and rates consult the "2010 OSU Extension Agents' Handbook of Insect, Plant Disease, and Weed Control (OCES publication E-832)," and/or contact your County Extension Educator.

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Table 1. Common Seed Treatments for Use against Wheat Diseases and Insect Pests

This information is provided only as a guide. It is the responsibility of the pesticide applicator by law to read and follow all current label directions. No endorsement is intended for products listed, nor is criticism meant for products not listed. NOTE: Many seed treatments have a required post-planting interval before grazing is allowed; check the label!

Product & (company)	Active ingredients	Rate (oz/cwt)	Activity against diseases/pests[A] Ins/BYDV	Sm/Bu	RR	DO	FFol
CruiserMaxx (Syngenta)	thiamethoxam difenoconazole mefenoxam	5.0	A[B]	A	A	A	A
Cruiser 5FS (Syngenta)	thiamethoxam	0.75-1.33	A	NA[B]	NA	NA	NA
Dividend Extreme (Syngenta)	difenoconazole mefenoxam	1.0-4.0[C]	NA	A	A	A	A
Gaucho 600 (Bayer CropScience)	imidacloprid	0.8-2.4	A	NA	NA	NA	NA
Gaucho XT (Bayer CropScience)	imidacloprid metalaxyl tebuconazole	3.4	A	A	A	A	A
Raxil MD (Bayer CropScience)	tebuconazole metalaxyl	5.0-6.5	NA	A	A	A	A
Rancona Crest (Chemtura)	ipconazole	5.0-8.33	A	A	A	A	A
The following alone or in various combinations (all are BASF products):							
Charter	triticonazole	3.1	NA	A	A	NA	A
Charter PB	triticonazole + thiram	5.5	NA	A	A	A	A
Charter F[2]	triticonazole + metalaxyl	5.4	NA	A	A	A	A
Stamina F3 HL	pyraclostrobin + triticonazole + metalaxyl	1.0	NA	A	A	A	A
Axcess	imidacloprid	0.8-2.4	A	NA	NA	NA	NA
Acquire	metalaxyl	0.1-0.375	NA	NA	A	NA	
Stamina	pyraclostrobin	0.4-0.8	NA	NA	A[D]	NA	NA

[A] Ins/BYDV=insects (aphids, Hessian fly, wireworms)/barley yellow dwarf virus; Sm/Bu=smuts/bunts; RR=root rots; DO=damping-off; FFol=fall (early season) foliar diseases.

[B] A=active (indicates a range of control from partial to complete – check label for details); NA=not active.

[C] Activities listed are for the 4 oz rate.

[D] Activity against root rots caused by *Rhizoctonia solani* and *Fusarium* spp.

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