

PLANT DISEASE AND INSECT ADVISORY



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Wheat Disease Update Bob Hunger, Extension Plant Pathologist

Testing of wheat produced in Oklahoma in 2004 for the presence of Karnal bunt has been completed. All sixty grain samples from Oklahoma tested negative for the presence of Karnal bunt. This wheat was part of the USDA-APHIS National Survey program that is used to help ensure the marketability of U.S. wheat into the international (export) market.

Common bunt (stinking smut) & loose smut: During this past spring and summer, there have been numerous reports of common bunt in harvested grain in Oklahoma as well as from other states in the Great Plains. Additionally, loose smut often was observed in fields last spring. The similarities of the names of these two diseases can be confusing. Common bunt (also called 'stinking smut') is indicated by a "fishy" or "musty" smell to the grain. In severe cases the grain can appear "dusty" due to the presence of black bunt spores on the kernel surfaces. In severe

cases, the brush-end of the grain is blackened due to the accumulation of spores in the brush. Common bunted kernels are slightly smaller than a wheat kernel and are dark brown or black in color (right). The seed coat on these bunted kernels is easily crushed, which releases the bunt spores and the odor. During harvest, these bunted kernels are broken and the spores are released to spread to the coat of healthy wheat and to the soil. Hence, the common bunt fungus survives the summer in the soil and on the seed coat. These spores



germinate in the soil when temperatures are cool ($>75^{\circ}\text{F}$), the fungus infects young, germinating seedlings, and then the fungus grows with the developing wheat plant through the year. As the plant matures, common bunted kernels rather than healthy kernels are formed in the head. Loose smut has some similarities to common bunt, but also has some significant differences. For example, there is no smell associated with loose smut as there is with common bunt. Spores of the loose smut fungus do not reside in the soil or on the seed coat as they do with common bunt. Instead, loose smut spores released from the heads of infected wheat plants spread to the flowering heads of healthy wheat plants and infect the developing kernels. Hence, the loose smut fungus is carried inside of wheat seed. When that infected wheat seed is planted in the fall, the loose smut fungus grows with the plant through the fall and winter. At head emergence in

the spring, heads covered with a mass of black, powdery spores emerges instead of a typical wheat head (below). These spores spread to healthy wheat heads, and thus, complete the life cycle of the fungus. Hence, wheat grain infected with loose smut does not appear different from uninfected wheat grain, and has no foul odor associated with it as does wheat grain contaminated with common bunt.



As I mentioned above, an elevated level of common bunt has been noted last year and this year in other states throughout the Great Plains as indicated by an article written by Dr. John Watkins (Extension Plant Pathologist) at the University of Nebraska. To see this article and compare the points made by Dr. Watkins with my article, go to <http://cropwatch.unl.edu> and click on the July 23, 2004 title of “Wheat seed quality issues surface again in 2004”.

Control of common bunt and loose smut is most readily accomplished by treating seed with a registered fungicide effective against the bunts and smuts. Most of the fungicides available for control of common bunt are systemic fungicides (fungicides that are taken up by the plant). In general, the systemic fungicides are more effective in controlling common bunt/stinking smut than the protectant fungicides (fungicides that stay on the surface of the plant). In some cases, a treatment is a mixture of a systemic with a protectant fungicide, and sometime the treatment includes an insecticide along with the fungicide. HENCE, be sure to read the labels to see which are effective against common bunt and loose smut. Remember, a systemic fungicide is critical for controlling loose smut because the fungus that causes this disease actually resides inside of the seed. Hence, a protectant fungicide on the seed coat will not enter the germinating seedling and will not control the disease. ALSO, be sure seed is completely and thoroughly covered to obtain effective control. Planting treated seed every year (or at least every other year) is a sound practice to follow to avoid the initiation and increase of common bunt and loose smut. Controlling common bunt and loose smut is particularly important because of the always-present threat of Karnal bunt, which is a bunt that has the same “fishy” or “musty” smell as common bunt. Hence, elimination of common bunt and loose smut also helps to avoid the risk of common bunt being misidentified as Karnal bunt.

For more information on common bunt, Karnal bunt & loose smut, see <http://entoplp.okstate.edu/ddd/hosts/wheat.htm>, consult the, “2004 OSU Extension Agents’ Handbook of Insect, Plant Disease, and Weed Control (OCES publication E-832),” and/or contact your County Extension Educator.

Peanut Disease Update

John Damicone, Extension Plant Pathologist



The peanut crop is off to a great start in 2004. However, weather conditions have been very favorable for peanut disease development. The rain and cool temperatures in June and early July resulted in the establishment of early leaf spot (left). In addition to OSU research stations at Ft. Cobb and Perkins, I have recently visited commercial fields near Frederick and Erick, and in Love Co. Most locations are showing light to moderate levels of leaf spot. Levels are higher in continuous fields compared to rotated fields. At Perkins where Tamspan 90 is

planted in a continuous peanut field, about 25% of the leaflets already have symptoms. It appears that we are in for a heavy leaf spot year. The recent cool night temperatures (cold for this time of year) have resulted in prolonged dew periods which will support further disease increase. These dew periods are reflected in the rapid accumulation of infection hours in the MESONET Early Leaf Spot Advisory Program (<http://agweather.mesonet.org/>). A rigorous spray program, at least through August, is recommended where leaf spot has become established. Many fungicides such as chlorothalonil (e.g. Bravo), Tilt/Bravo, Headline, and Stratego provide excellent leaf spot control. Growers that achieve good leaf spot control through the 1st of September will likely end up making fewer applications than those that will have to fight to keep leaves (and peanuts!) on the plant this fall.

Sclerotinia blight (right) is also of great concern during this unseasonable cold snap where record low temperatures will have likely been reported in many areas of the state. When the row middles are lapped or nearly lapped, the disease is favored by cool and wet conditions. During July, a few reports of Sclerotinia blight already occurring in fields had been made. While symptoms of Sclerotinia blight have not yet been observed at the Caddo Research Station, I have no doubt that the disease will appear shortly. It has been many years since Sclerotinia blight has been a problem this early in the season.



Since about 1998, the disease has appeared mostly in late August and September. However, in the early and mid 1990's when summer rains were more frequent than in recent years, outbreaks of Sclerotinia blight were common in July. Damage from Sclerotinia blight is typically greater where the disease appears early compared late.

There are now two effective fungicides registered for control of Sclerotinia blight in peanut. Omega, first available in 2001, is effective on both Sclerotinia and southern blights. For Sclerotinia blight, it is effective when applied preventively (before symptoms appear) or on demand (shortly after the first appearance of symptoms). Most growers have used the on-demand approach to the timing of Omega. When the disease appears late, growers are able to get by with only a single application of 1 to 1.5 pt/A. In our experience, Omega provides about 21 days protection at 1 pt/A and about 30 days of protection at 1.5 pt/A. Growers treating in July will likely be faced with making two applications.

The second fungicide for Sclerotinia blight is Endura, which controls leaf spot as well as Sclerotinia blight. Endura was registered in 2003, but was not available. OSU research has clearly shown that Endura must be applied preventively (before symptoms appear) to be effective, or at least competitive with Omega in performance. Two or three applications at 9.1 oz/A, made on 3 to 4-week intervals, are required for effective control. The fungicide also provides about 2 weeks of leaf spot protection for each application. It is my understanding that Endura is more expensive than Omega, which many growers may not find acceptable.

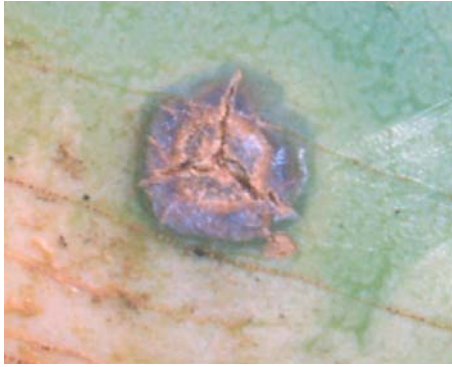
Another factor in control of Sclerotinia blight is variety selection and the new peanut price structure. We have tested Omega on various peanut varieties over a 7-year period and have recalculated the crop values based on the loan rate price under the 2002 farm bill. On average, we know that treating Tamspan 90 with Omega results in economic loss- the cost of the fungicide exceeds the resulting yield increase. Economic return (crop value less the cost of the fungicide) on Tamrun 96 is neutral or break even. Economic returns are positive for Okrun and Georgia Green. There are only two years of available for variety responses to Endura, but the results are similar to those for Omega.

Watermelon Disease Update

John Damicone, Extension Plant Pathologist

I have recently visited several commercial watermelon fields where anthracnose is a significant problem. The disease causes angular brown spots on watermelon leaves, elongated spots on stems (both visible in photo at right), and round spots on fruit (next page). Anthracnose is caused by a splash-dispersed fungus and rainy weather favors anthracnose development. Much of the disease observed in affected fields was probably a result of the June and early July rains. While irrigation alone does not trigger anthracnose, it can aggravate the disease in combination with rain. Due to the dry weather over the past several years, anthracnose has not been a widespread problem.





There are several fungicides or fungicide combinations that are effective on anthracnose. However, timing these fungicides is critical. While prevention is the key for most plant diseases, it is critical for anthracnose. Starting a fungicide program after symptoms first appear is far less effective than the preventive approach for anthracnose control. This is why I have been recommending a base program of three applications on 14-day intervals beginning at first bloom. The bloom spray is critical to head off early disease establishment. Application intervals may then be shortened or fungicide selected based on weather or the appearance of a particular disease. It is my observation that either anthracnose, powdery mildew, or downy mildew will develop in two out of every three years. Therefore a preventive program with a broad-spectrum fungicide is warranted on watermelons. Effective fungicides include Bravo 6F or another chlorothalonil formulation at 2 pt/A, Dithane 75DF or another mancozeb formulation at 3 lb/A, Topsin 70W at 0.5 pt/A + Dithane 75DF at 2 lb/A, Quadris at 12.3 fl oz, and Cabrio at 12 oz/A. Applications initiated after the disease becomes established will result in loss of at least the leaves and vines that had symptoms prior to the first fungicide application, and some degree of fruit spotting.

Consider Diseases When Determining Planting Date for Wheat

Bob Hunger, Extension Plant Pathologist

Wheat is commonly used as forage for cattle and to produce grain in Oklahoma, which enhances the economics of farming. In such a dual-purpose system, wheat is planted as early as late August to maximize forage production, whereas in a grain-only system, wheat would be planted in October. Although disease development depends on many factors including the presence of inoculum, temperature, rainfall, and variety planted, early planting increases the likelihood that diseases such as wheat streak mosaic virus, the aphid/barley yellow dwarf virus complex, and the root and foot rots will be more prevalent and more severe.

Wheat streak mosaic virus (WSMV) & the high plains virus (HPV):

WSMV and HPV were both prevalent across the western half of Oklahoma, western Kansas, and in the Texas panhandle in 2004. Both of these virus diseases are caused by viruses that are transmitted by the wheat curl mite. These mites and viruses survive in crops such as wheat and corn, as well as grassy weeds and volunteer wheat. In the fall, mites spread to emerging seedling wheat, feed on that seedling wheat, and transmit the virus to the young wheat plants. Wheat infected with WSMV or HPV in the fall is either killed by the next spring or will be severely damaged. Planting late 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 of WSMV and HPV. It is critical to destroy volunteer wheat at least two weeks prior to emergence of seedling wheat because the wheat curl mites have a life span of 7-10 days. Thus, destroying volunteer wheat at least two weeks prior to emergence of seedling wheat will reduce or eliminate mite numbers in the fall. Given the high incidence and severity of these two virus diseases in the 2004 crop,



producers should be extra diligent in controlling volunteer wheat before planting their 2005 wheat this coming fall. For more information on WSMV and HPV, see OSU Extension Facts 7636 (WSMV) or go to: <http://entopl.okstate.edu/ddd/hosts/wheat.htm>.

Aphid/barley yellow dwarf virus (BYDV) complex: BYDV is transmitted by many cereal-feeding aphids, and hence, is associated with aphid infestations. 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 OK and after October 15 in southern OK) helps to reduce the opportunity for fall infections. Second, some wheat varieties (e.g., Custer, 2174, and Ok102) tolerate aphids and/or BYDV better than others; however, please 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 such as Gaucho 480 (Imidacloprid - Gustafson Corp.) and Cruiser (Thiamethoxam - Syngenta) can effectively control aphids after planting, but in some years aphids do not occur and hence the treatment may not be as beneficial as in years

when aphids are numerous in the fall. Be sure to thoroughly read the label before applying any chemical. For more information on the aphid/barley yellow dwarf virus complex, go to: <http://entopl.okstate.edu/ddd/hosts/wheat.htm>.

Root and foot rots: These include several diseases caused by fungi such as dryland root rot, Rhizoctonia root rot (sharp eyespot), common root rot, take-all, and eyespot (strawbreaker). Controlling the root and foot rots is difficult. There are no resistant varieties or fungicide treatments that control all of these diseases at a consistently high level. Although late planting (after October 1 in northern OK, and after October 15 in southern OK) helps to reduce the incidence and severity of root rots, it will not entirely eliminate their presence or effects. If you have a field with a history of root rot, plant that field as late as possible or plan to use it in a “graze-out” fashion. In addition to planting date, take-all is greatly favored by a high soil pH (>6.5). Thus, when liming fields to correct for acid soils, be sure not to raise the pH above this level. Elimination of residue also helps control take-all, and can be somewhat helpful in reducing many of the other root rots. 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 F-7622 or go to: <http://entopl.okstate.edu/ddd/hosts/wheat.htm>.

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