



# Pest e-alerts



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Vol. 11, No. 23

<http://entopl.okstate.edu/Pddl/>

Apr 30, 2012

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## Wheat Disease Update

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On 24-Apr I traveled to the Custer City area (north of Clinton OK) and then to Apache (25 miles north of Lawton). On this route I stopped at several variety trials. Wheat was mostly in the full berry to milk stages (Marshall, Kingfisher, Custer City, Thomas, Apache) and over all looked good. Lodging has occurred in some trials, but did not appear to be widespread in many fields. Wheat in the Custer City area needs another rain to help complete the crop this year. Most of the wheat I looked at had anywhere from 12-20 meshes with two full berries and a third on the way.

On 26-27-Apr I traveled to southwestern OK and rated trials near Granite OK and attended the field day 7 miles west of Altus. During the drive to Granite, fields with a whitish/tannish cast begin to be noticeable in the Clinton area. This became more widespread as I approached Granite, and was even more pronounced west of Altus. This was the result of wheat maturing and of lack of rain rather than disease. Often the lower spots in fields or terraces were still fairly green with terrace tops and slopes having more of the whitish/tannish cast. As I examined fields, I could find no evidence of root rot or freeze damage, and nearly all of this wheat also had two full berries/mesh with a third on coming on. Both Dr. Jeff Edwards (OSU Small Grains Extension Specialist) and I received contacts at the end of the week from the Kingfisher to Watonga area asking about whiteheads in fields. Some of these descriptions sounded like root rot damage (see Dr. Gene Milus' description from Arkansas), but we will not be able to confirm or refute this until next week. I am confident however, that the fields I saw in southwestern were turning color due to maturity and dryness rather than from root rot (Fig 1). In fact, at the trial west of Altus I could almost get my foot into some of the cracks in the soil. A rainfall is needed.

Regarding foliar diseases, most of the wheat in southwest OK does not have much foliage left. Where there was foliage, leaf rust was the most prevalent disease, but I could also find some stripe rust. This is also true around Apache and Stillwater where more rain has fallen and

moisture is not a factor. Around Stillwater, I can still find some powdery mildew on susceptible varieties – even up on to the flag leaves in a few cases. However, it is quickly becoming inactive as the temperature the last several days has been in the upper 80s to mid-90s °F.

Next week I'll travel more to northern/north central OK and will report on wheat diseases in that area.



**Fig 1.** Range in wheat maturation in southwest OK.

**Arkansas:** Dr. Gene Milus (Small grains pathologist, University of Arkansas, Fayetteville), 27-Apr: I was in northeast Arkansas earlier in the week. All commercial wheat is in some stage of grain fill. The area is still unusually dry even though some areas got a bit of rain last week. Freeze damage is the most serious wheat problem in the region, and severity varies from none to extremely severe depending on the field. Based on symptoms (dead white heads with no to partial grain development to entire plant dead as if from sudden drought stress) and info in freeze publications, the damage likely was caused during heading stage, but we are still trying to confirm freezing temperatures during that time.



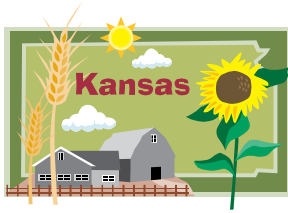
Stripe rust is still active if there is green leaf tissue. Leaf rust present but usually at low severities. Leaf blotch is present but not doing much because of dry conditions. BYD is evident in most fields but not as severe as in the past.

There appears to be several possible causes of white heads showing up in central and northeast Arkansas wheat. In one case, the heads are dead and white coming out of the boot, but the stem and the leaves are still green and healthy. These white heads may be caused by freeze damage that occurred within the last two weeks, although it didn't seem like it got cold enough to cause problems. Symptoms of freeze damage vary greatly depending on the growth stage when the freeze occurred, and it takes several days to a week or more after the freeze event for symptoms to become evident. The links below are to publications on wheat freeze damage that have pictures of the various symptoms.

In some cases of dead heads coming out of the boot, the peduncle (stem below the head) is also dead. Some plants with this symptom were found to have sharp eyespot lesions on the lower stem. See the link below for information on sharp eyespot.

The third case involves white heads in which the entire stem, or most frequently, the entire plant is dead. These symptoms are likely caused by *Bipolaris* or *Fusarium* fungi that infect roots, crowns, and lower stems. The diseases are called common root and foot rot, dryland root and foot rot, or *Fusarium* root, crown and foot rot. These diseases are common in regions of the Great Plains and the Pacific Northwest where wheat frequently experiences drought stress during grain fill. Wheat roots in Arkansas likely are infected by both of these fungi every year, but disease symptoms (prematurely dead plants) only occur when the plants are drought stressed after heading. Low water potential in the plants triggers the fungi to grow up infected roots into the crown and lower stems, killing the plant. Where these diseases are common, the recommended management practices are to rotate crops, use moderately resistant varieties, and to reduce seeding and fertility rates so that there are fewer and smaller plants competing for available water. In Arkansas, our normal seeding and fertility rates are optimized for "normal" precipitation that does not cause drought stress. When precipitation is less than normal, the large number of big plants use up the available water and cause drought stress.

Patches of dead plants could be caused by take-all, but no take-all has been documented in Arkansas yet this year. The link below has a publication on take-all in Arkansas.



**Kansas:** Dr. Erick De Wolf (Wheat Extension Pathologist, Kansas State University), 25-Apr: "Stripe rust continues to be the primary disease issue affecting wheat in Kansas. Stripe rust was detected in research plots Republic County (north central KS bordering NE). Wheat in this area of the state is at the boot or heading stages of growth in many fields. Some fields have just finished flowering. The disease was well established with >80% incidence in the mid canopy and at 2% incidence on the flag leaves of Everest and Armour. This is especially important because these varieties were considered resistant to stripe rust in 2010 when the disease caused major problems in KS. Evaluation of the variety performance test at Belleville KS (Republic County) indicates that stripe rust is most severe on varieties Everest, Armour, and Jagalene, Garrison, and Ruby Lee. Stripe rust was also present in other varieties including Jagger, Santa Fe, Fuller, and PostRock. These varieties all have the Yr17 resistance gene that was overcome by the stripe rust in 2010. The stripe rust was developing more slowly in these varieties but still could be a significant threat. I also noted stripe rust in the variety Winterhawk, which was also resistant in 2010. The variety Cedar had significant lesions from stripe rust but the fungus was not reproducing as heavily in these lesions indicating some source of moderate resistance may still be active in this variety. Stripe rust was also reported Ellis County (central), Phillips County and Thomas County (North Central) this week. Hot dry weather (High temperatures >90°F and low near 60°F) the past few days may slow the development of stripe rust in parts of western KS. However, cooler temps and possible rain is forecast to return in the next few days suggesting the stripe rust pressure is likely to continue. Areas that receive rain or have enough moisture to more than 6 hours of dew at night are most at risk.

Leaf rust is also active in Kansas but has not been observed at damaging levels yet. Leaf rust was detected on the flag leaves of susceptible varieties Overley, PostRock and Fuller in Sedgwick and Reno (South central KS). Overley had just finished flowering in Sedgwick County and was still heading in Reno County at the time of the observation (early last week). Trace levels of leaf rust were also noted in Republic County (North central) yesterday. Wheat at this location was still heading. The detection of leaf rust early in the growth and development of the wheat crop suggests that leaf rust may also be a significant factor in KS soon.

Significant barley yellow dwarf was noted in some fields in central, north central and north eastern KS this past week. Severe wheat streak mosaic is also an issue of some fields with some fields with nearly 100% inc and severe yellowing and stunting observed.

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Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Robert E. Whitson, Director of Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Vice President, Dean, and Director of the Division of Agricultural Sciences and Natural.