

Wheat Disease Update – 27 April 2020  
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Wheat diseases are active across Oklahoma, but perhaps the bigger story is the freeze damage that Dr. Amanda de Oliveira Silva has observed in south-central and southwestern OK. For information on that, please see her update at: <https://osuwheat.com/>

Around Stillwater, wheat is mostly at or just past flowering with kernels beginning to form. This is similar to the wheat I saw on a trip this past Friday to Chickasha (central OK), Altus and Tipton (southwestern OK). However, Josh Anderson (Senior Research Associate, Noble Research Institute, Ardmore, OK) indicated to me in an email on 24-Apr that, “Most all local lines are well past flowering and at the soft dough stage.”

Based on that trip as well as samples received and input from others, I would offer the following to help explain the browning and death of upper leaves (flag leaf and F-1 leaf). One factor is the freeze, which seems to cause a burning or death to the leaf tip up to the outer third of the leaf [see Dr. de Oliveira Silva’s post for photos of this (<https://osuwheat.com/>)]. Stripe rust is another factor involved, and has been reported to range from a low to a high incidence and severity. Sometimes this striping has sporulation in it of urediniospores (yellowish-orange color – Figure 1-left photo), teliospores (black spore spots – Figure 1; center photo), or, just striping that is chlorotic that becomes necrotic (Figure 1; right photo). Based on my recent trip, it appears that stripe rust across central and southern OK is moving from the urediniospore stage to the teliospore stage. This transition indicates that temperature is becoming too warm for the stripe rust fungus to remain active, so spore production is being switched to teliospores. Reports of leaf rust have been made [e.g., Josh Anderson (Senior Research Associate, Noble Research Institute, Ardmore, OK) in south-central OK and Gary Strickland (Extension Educator; Jackson County)], but presently the incidence and severity of leaf rust seems to be staying low. However, an increase in leaf rust could become a reality as temperature increases and if moisture/dews remain common.

Figure 1. Various expressions of wheat stripe rust observed across Oklahoma the week of April 20th. Leaf with active sporulation of yellowish-orange urediniospores (left photo; Gary Strickland (Extension Educator; Jackson County), leaf with teliospores (center photo) and leaves with yellowing or dead stripes but with no or little sporulation (right photo).



Septoria leaf blotch (Figure 2) is another disease that is contributing to the upper leaf browning this year. Typically Septoria leaf blotch on wheat in Oklahoma is restricted to the lower and mid canopy, and only rarely reaches the upper canopy. This year is one of those exceptions.

Figure 2. Septoria leaf blotch showing the blotchy, irregularly shaped dead areas on leaves with pycnidia (black pepper spots – photo on the right) formed in the dead leaf tissue. Septoria leaf blotch typically is restricted to the lower and mid-canopy, but this year has been observed on upper wheat leaves (flag and F-1 leaves).



Finally, there also appears to be some upper leaf browning and death from a cause not related to a disease/pathogen. The freeze may be involved, but there also may be some other physiologically related cause (Figure 3). This discoloration and leaf death has been observed at multiple locations, and although possibly related to a freeze, it does not seem that freeze alone always can account for the damage. To date, we have not been able to identify a cause for this damage.

Figure 3. Other upper leaf tissue burning and death does not appear to have a biotic (pathogen/disease) cause, but is may involve freeze damage or some other type of physiologically related cause. [photo on right from Mike Schulte; Kingfisher area]



A fungicide application will help manage this upper leaf spotting/burning/browning IF the cause is a pathogen/disease such as stripe rust or Septoria leaf blotch. However, such an application will only protect the remaining green tissue and not be able to reverse any dead area and will not help if the discoloration is due to an environmental factor such as freeze. Also keep in mind that only certain fungicides can be applied through flowering while others have a required time interval between application and harvest. Some have both types of restrictions. Hence, be sure to consult the label to be in compliance with the requirements as described on the label of the fungicide.

Finally, I also should indicated that a few samples have tested positive for the presence of Wheat streak mosaic virus. One such sample was submitted from Kingfisher County, and another photo of a sample came from the Texas panhandle (Figure 4). So, some of the mite-transmitted virus diseases such as wheat streak mosaic are present in Oklahoma and I would suspect as temperature increases more fields with symptoms of these diseases likely will appear.

Figure 4. Photo of wheat from Cimarron County sent in by Josh Bushong (Northwest Area Ext Agron Spelt) that is indicative of a mite-transmitted virus disease such as wheat streak mosaic, wheat yellow mosaic (high plains disease), or Triticum mosaic.



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