

# PLANT DISEASE AND INSECT ADVISORY



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## Wheat Disease Update Bob Hunger, Extension Wheat Pathologist

Although reports of wheat diseases were negligible during September and the first half of October, over the last two weeks reports have picked-up considerably. Below is a description of what has been reported to me or sent to the Plant Disease and Insect Diagnostic Lab since about the middle of October.

**Wheat leaf rust:** During the past two weeks I have noticed some leaf rust pustules in research plots located near Stillwater, and I have had two reports of extremely high infestations of **leaf rust** – one from western Oklahoma near Woodward on Jagger, and the other from Kansas by Dr. Jim Stack (Extension Wheat Pathologist for Kansas at KSU). Remember, fall infection by leaf rust on a susceptible variety such as Jagger is quite common, but heavy fall infections by leaf rust are not believed to significantly damage wheat. Infected leaves may be removed if the wheat is grazed, or the leaves turn yellow and die as freezing temperatures become more common. This later scenario can cause the field to look terrible, especially if a large amount of foliage was produced. The real problem with fall infections of leaf rust, is that if favorable weather conditions through the winter allow the rust to overwinter, than these loci (=hotspots) of rust inoculum serve to “kick-start” the rust infections in the spring. Hence, I



Fig 1. Heavy wheat leaf rust infestation on seedling leaves. Note that younger leaves are not infected.

wouldn't recommend trying to control the leaf rust in the fall, but I would watch the field more closely the next spring to see if the rust overwintered.



Fig 2. Tan spot on seedling wheat. Note abundant wheat residue on soil surface.

I also have observed **tan spot** and **Septoria leaf blotch/Stagonospora glume blotch** this fall in research plots located near Stillwater, and in a sample brought in by Dr. Jeff Edwards (Extension Wheat Agronomist from OSU) from north of Stillwater (Jagalene wheat). The fungi that cause these diseases over-summer (and over-winter) on wheat residue, so tan spot and Septoria/Stagonospora are more of a threat in no- or minimum-tillage situations. Black fruiting structures called pseudothecia for tan spot and called pycnidia for Septoria/Stagonospora can be found on wheat residue in the late fall through spring. Spores from these fruiting structures infect the lower leaves on wheat seedlings or plants and will continue to move up the plant through the season if the weather is favorable (cool and wet). As with leaf rust, no control recommendations are made in the fall for tan spot, Septoria or Stagonospora in Oklahoma, but fall infections indicate the need to watch for these diseases in the spring because tan spot, Septoria and Stagonospora can cause more severe losses than leaf rust.

Another foliar disease called **spot blotch** also has been observed in many of the samples that have come to the Diagnostic Lab. On leaves, this disease appears as small black lesions. Interestingly, the fungus that causes spot blotch (*Bipolaris sorokiniana*) is the same fungus that causes **common root rot**, which is expressed as a blackening or darkening of the subcrown internode and seedling roots. This fungus has been isolated from the sample brought in by Dr. Jeff Edwards as well from samples taken from breeder plots located near Marshall, OK and one from north of Stillwater. The importance of these diseases is explained in the following summary.



Fig 3. Septoria leaf blotch.

**SUMMARY:** Reports and observations from Oklahoma indicate the primary disease problem this fall is most likely related to the occurrence of common root rot in combination with spot blotch and/or tan spot. In some fields, young seedlings appear to have some damage from common root rot, that when combined with spot blotch and/or tan spot on the foliage has resulted in seedling death. This is especially true when these seedlings are subjected to an additional stress, such as lack of rain (which we had up until a week or two ago). In such a situation, dead spots spread across rows or within a row. Seedlings adjacent to these dead spots often also show similar symptoms but if they were able to “outlast” the stress, these seedlings often recover and appear healthy after the rains come. I have been told in the past that growers often have

replanted these “spots” if they were sufficiently large. From what I was told, the replanting usually was successful, but I don’t have any direct evidence of this. Another approach to this problem would be the use of seed treatments, for which several are labeled for “suppression” or “partial control” of common root rot (see, OSU Extension Agents’ Handbook of Insect, Plant Disease, and Weed Control, OCES publication E-832). However, the difficulty is that there are other root rots and pathogens (for example nematodes) that can be involved in this type of problem, and it is difficult to know before hand what pathogen(s) will be present. Perhaps the best approach is to identify fields or areas of fields in which this problem occurs, and then try an appropriate seed treatment the next year to try to help in stand establishment.



Fig 4. Common root rot. Healthy seedling on left. Note the darkened subcrown internode on seedlings in the middle and the right.



Fig 5. Poor stand most likely due to common root rot.

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