Wheat Disease Update – 31 May 2019

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Harvest in southern OK started just this week, so this report will focus primarily on wheat in central, northern, northwestern and the panhandle of Oklahoma. It appears that the wheat crop is well along in its development and needs some dry and warmer weather to finish (as well as to allow harvest!). The primary issues this past week have been deterioration of leaves and head discoloration. The wet environment certainly is contributing to both of these issues. In wheat around Stillwater, heads are being discolored due to black chaff (a bacterial disease; Figure 1) as well as Septoria/Stagonospora that cause leaf spotting as well as head discoloration (Figure 2). There also is a general darkening of heads, called melanism, which results not from a disease but rather is related to genetics and environment Figure 3. This melanism is difficult to distinguish from the other diseases that are present, especially because this year there seems to be all these happening at once.

Figure 1. Leaf discoloration (top photo; Josh Bushong; NW OK Agron Extn Speclst) and awn banding (left photo; note arrow) due to a bacterium that cause bacterial leaf streak and black chaff. The right photo (Dr. J. Edwards; Oklahoma State University) shows head and stem discoloration also often associated with this bacterial disease.

Figure 2. Fungal discoloration and lesions caused by the fungus Septoria on a wheat leaf. Note the small, black "pepper spots" (called pycnidia) of the fungus in which spores are produced.

Figure 3. General darkening of heads not due to disease(s), but the result of an interaction between the genetics of the plant and the environment.

Other diseases that are likely to be observed at this point in time are white heads due to foot rots (see wheat disease update on 5-24-2019 available at http://entoplp.okstate.edu/pddl/advisory.htm), Fusarium head blight, and sooty mold. I've described and discussed Fusarium head blight in a previous update (5-16-2019 available at http://entoplp.okstate.edu/pddl/advisory.htm). Sooty mold on heads occurs when wheat has turned but cannot be harvested in a timely manner. Wet and humid conditions promote fungal growth on those heads (Figure 4). With time, these fungi can also partly start to grow on wheat seed still in the head, especially at the germ end of the seed. This can lead to a poorer quality of wheat and reduced seed germination

Figure 4. Wheat sooty mold. Photo to the left shows sooty mold on mature wheat plants as indicated by the darker, greyish colored areas. Photo to the right shows a healthy head next to a head covered with sooty mold. The bottom photo (credit to Dr. Erick DeWolf, Kansas State University) shows wheat grain ranging from grain harvested from a healthy head to grain harvested from a head with a high incidence of sooty mold.

Figure 4 continued: Below (credit to Dr. Erick DeWolf, Kansas State University) shows wheat grain ranging from grain harvested from a healthy head to grain harvested from a head with a high incidence of sooty mold.

What is described above is confirmed for northwestern OK and the OK panhandle by Josh Bushong (NW OK Area Extn Agron Speclt) who reported seeing overall leaf health as deteriorating across NW OK as well as at field days this past week at Hooker, Balko and Goodwell (all in the OK panhandle). However, the wheat in these parts of Oklahoma should be sufficiently far along (mostly in dough stage) so that the

impact on yield should be minimal. Be aware though that head diseases such as Fusarium head scab and sooty mold can affect grain quality and create major problems when the wheat is taken to the elevator.

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