

## Fusarium Head Blight

By Ed Lentz – OSU Extension, Hancock County

Wheat has headed out in the area and finished flowering the past week. Most people do not notice the flowering period because wheat flowers have no petals.

Farmers pay attention to the flowering period because it is the time that one of the most devastating diseases may infect wheat: Fusarium Head Blight, more commonly known as Head Scab. Not only can this disease dramatically lower yields and grain quality, it can also produce a toxin that is harmful for human consumption.

Head scab is caused by the fungus *Fusarium graminearum*. Infection does not occur unless the wheat variety is susceptible, fungal spores are abundant in the air, and weather conditions are conducive for spore germination and development.

There are no completely resistant wheat varieties and only a few with moderate resistance (the moderate resistant lines generally yield considerably less with no disease pressure).

Corn stalks are the common source of fungal spores in wheat. The same Fusarium fungus that causes head scab also causes stalk and ear rot in corn. Prior to the 1990's, farmers generally plowed under corn stalks burying the fungal spores.

In the 1990's farmers began to adopt conservation tillage practices to reduce soil erosion that left corn stalks and residue on the surface. These surface corn stalks can harbor the fungus for many years. Since soybean and wheat are often planted no-till, these stalks are still present to provide spores that can infect the wheat at flowering.

Even if a farmer plows his field before planting wheat, fields many miles away with surface corn stalks can provide spores for infection. Thus weather at the time of flowering heavily determines whether wheat becomes infected with head scab.

Spores are produced and released from the residue when temperatures are above 59°F and the relative humidity is more than 90%. Thus conditions are right for wheat infection if a warm and rainy period sets in several weeks before and during flowering.

Under these right conditions, the fungus infects the wheat head during flowering and will cause developing kernels to shrivel and have a chalky white color. Infected heads may also have a bright pinkish color.

Evidence of head scab infection is often not visible until about two to three weeks after flowering. At this time, infected kernels will have a dull white color and uninfected kernels will be green. It is not uncommon for only part of the head to be infected.

Infected kernels may produce a vomitoxin called deoxynivalenol (DON). Monogastric animals such as swine and humans are sensitive to this toxin. Farmers, grain

merchants, and processors work together to insure that DON concentrations are below toxic levels in the food chain.

Farmers have only a few fungicides available to partially control head scab, but they have to be applied at flowering to be effective. They do not work if applied earlier or later.

These products are quite expensive and the farmer may face a logistical application problem since fields may be too wet at flowering for land application and then can only be applied aurally.

Extension researchers from Ohio State University and other land grant institutions have developed an Internet program that predicts the risk of head scab for a given area based on current weather and crop information. Farmers use this program at flowering to determine if the risk for head scab infection is great enough to warrant fungicides.

The program has shown low risk for head scab in our area in 2015. Temperatures were cool during rain events and rain did not fall during the warmer temperatures. Thus conditions were not right for infection.

There still may be some isolated grains infected but the level should be low enough to not be a major grain quality concern. Overall, wheat is doing well in our area and has the potential to produce an excellent crop.

Head scab is a major disease in our area and the U.S. Plant breeders continue to search for genes to develop resistant varieties and the plant health industry continues to identify compounds to make fungicides more effective. Farmers follow management practices to limit the impact of the disease.

As you eat a wheat product this morning, such as cereal, bagel, toast, pancakes, or biscuits, be grateful that a whole industry that includes farmers, Extension, researchers, retailers, and processors have worked together to provide you a safe breakfast.

Additional information on Fusarium head scab may be found at the following web addresses:

<http://plantpath.osu.edu/research/impact/tool>

<https://www.extension.purdue.edu/extmedia/BP/BP-33-W.pdf>