Wheat farmers watch for head scab

Area farmers are seeing the spikes or heads of wheat emerge out of the stem. Flowering generally follows about 5-7 days later.

The spike is the flowering structure of the wheat plant. Each spike contains about 50 flowers, which will pollinate and form grain. 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 when 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.

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 1990s, farmers generally plowed under corn stalks, burying the fungal spores.

In the 1990s, farmers began to adopt conservation tillage practices to reduce soil erosion, leaving corn stalks and residue on the surface. These surface corn stalks can harbor the fungus for many years. Since soybeans 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 degrees F and the relative humidity is more than 90 percent. 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 ensure 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 before flowering. Some benefit may be seen if the fungicide is applied within five days of flowering.

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 the products can only be applied aerially.

Extension researchers from Ohio State University and other land grant institutions have developed an Internet tool that predicts the risk of head scab for a given area, based on current weather and crop information. The risk tool may be found at http://www.wheatscab.ohio-state.edu.

At the end of last week, the tool showed low to medium risk for head scab if a farmer planted a wheat variety moderately susceptible to head scab. The risk was medium to high for varieties that were susceptible. The northern and eastern part of Hancock County has the greatest risk of infection.

Caramba and Prosaro are the only fungicides that will provide some control of head scab and reduce the amount of vomitoxin. Farmers apply these fungicides when 50 percent of the heads have anthers exposed in the middle part of the spike.

The fungicide will not provide 100 percent control, since flowers do not emerge at the same time. Farmers can improve success against head scab by planting moderately resistant wheat varieties and applying fungicides.

At this time, plant breeders have not released a variety with complete resistance to head scab.

It may cost farmers more to produce wheat if they have to use a fungicide. However, if head scab occurs and they did not apply fungicides, vomitoxin levels may be high enough that farmers will be unable to sell their wheat.

Thus for the next 10 days, farmers will be watching their wheat closely during flowering and checking the head blight assessment tool for head scab risk. They hope that conditions will not be favorable for head scab at flowering.

Additional information on head scab may be found at:
https://ohioline.osu.edu/factsheet/plpath-cer-06
https://ohioline.osu.edu/factsheet/plpath-cer-03

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