

Fusarium Head Blight (Scab)

Damon Smith, Trenton Stanger*, and Craig Grau, UW-Madison Plant Pathology

What is Fusarium head blight? *Fusarium head blight (FHB) or scab is a fungal disease that affects wheat, barley, oats, and many grasses. FHB is important, not only because it reduces yield, but because it reduces the quality and feeding value of grain. In addition, the FHB fungus may produce mycotoxins,*



Bleached spikelets on a wheat grain head due to Fusarium head blight.

including deoxynivalenol (also known as DON or vomitoxin), that when ingested, can adversely affect livestock and human health. Maximum allowable levels of DON in feed for various animals (as set by the U.S. Food and Drug Administration) are ≤ 10 parts per million (ppm) for beef and feedlot cattle, ≤ 10 ppm for poultry, and ≤ 5 ppm for swine and all other animals.

What does Fusarium head blight look like?

Diseased spikelets on an infected grain head die and bleach prematurely. Healthy spikelets on the same head retain their normal green color. Over time, premature bleaching of spikelets may progress throughout the entire grain head. If infections occur on

the stem immediately below the head, the entire head may die. As symptoms progress, developing grains are colonized by the FHB fungus causing them to shrink and wrinkle. Often, infected kernels have a rough, sunken appearance, and range in color from pink or soft gray, to light brown.

Where does Fusarium head blight come from? *FHB is caused by the fungus Gibberella zeae (also known as Fusarium graminearum), which is not only a pathogen of wheat, but also of corn. The fungus can overwinter in infested stubble and straw of cereals and weed grasses, and on stalks and rotted ears of corn. The severity of FHB varies greatly from year to year. Infection is favored by extended periods of high moisture or high (>90%) relative humidity, and moderately warm temperatures (59 to 86°F), particularly when these conditions occur just before or during wheat flowering (Feekes 10.5). If favorable weather conditions persist, infections can continue to occur through the early dough stage (Feekes 11.2). Extended periods of infection can be especially problematic in wheat stands where plants have varying levels of maturity.*

How can I save a small grain crop with Fusarium head blight?

Fungicides are available for FHB control. Triazole fungicides [Fungicide Resistance Action Committee (FRAC) class 3] are recommended. In particular, fungicides containing prothioconazole and tebuconazole, or a mix of these two compounds,

have provided the best control of FHB in university research trials. Avoid using strobilurin fungicides (FRAC class 11) as research indicates that use of these products can result in an increase in DON levels in harvested grain. A web-based FHB risk assessment tool (<http://www.wheatcab.psu.edu>) is available to help make



Fusarium head blight can cause grain heads to become completely bleached.

decisions about fungicide applications. The tool also provides real-time, local commentary by extension personnel about the status of diseases in wheat. When using fungicides for FHB control, be sure to read and follow all label instructions to ensure that you use the product in the safest and most effective manner possible.

How can I avoid problems with Fusarium head blight in the future?

DO NOT plant small grains into small grain or corn residue. Also, avoid planting grain crops near areas where there are large amounts of small grain or corn residue on the soil surface. When possible, plant small grains following a legume crop (e.g., soybeans) and maintain a rotation with two to three years between small grain crops. Deep plow all infested plant debris, where feasible. **DO NOT** apply manure containing infested straw or corn stalks onto fields planted to small grains. Certain grain varieties have moderate levels of resistance to FHB. Consider using these varieties as a means to reduce disease severity and increase grain quality. Finally, plant several varieties of a small grain that vary in flowering date. This will decrease the risk that an entire crop will be vulnerable to FHB when weather conditions favor the disease.

For more information on Fusarium head blight: Contact your county Extension agent.

*The original version of this fact sheet was completed as partial fulfillment of the requirements for Plant Pathology 559 – Diseases of Economic Plants at the University of Wisconsin Madison.

© 2005 by the Board of Regents of the University of Wisconsin System doing business as the division of Cooperative Extension of the University of Wisconsin Extension.

An EEO/Affirmative Action employer, University of Wisconsin Extension provides equal opportunities in employment and programming, including Title IX and ADA requirements.

References to pesticide products in this publication are for your convenience and are not an endorsement or criticism of one product over similar products. You are responsible for using pesticides according to the manufacturer's current label directions. Follow directions exactly to protect the environment and people from pesticide exposure. Failure to do so violates the law.

Thanks to Diana Alfuth, Bryan Jensen and Jim Stute for reviewing this document.