



FUSARIUM HEAD BLIGHT IN OREGON DRYLAND WHEAT

Fusarium is a soil and stubble-borne fungus that can be detected in nearly all wheat fields of the Columbia Basin. There are three main species of Fusarium in dryland Oregon wheat fields; all three species produce the same symptoms on winter wheat. Fusarium can infect at three crop stages:

1. Seedling stage – this infection causes “damping off”
2. Mid-production stage – this infection causes “Fusarium crown rot”
3. Flowering stage – this infection causes “Fusarium head blight”

This document focuses on Fusarium Head Blight (FHB) or scab. In dryland Oregon wheat fields, FHB has been historically rare and of little economic importance due to limited springtime rainfall. However, the rainfall coinciding at flowering/anthesis in spring 2022 has contributed to more FHB infected Oregon wheat fields in crop year 2022. Rainfall at flowering splash disperses the fusarium fungus from the soil up into the wheat florets. Individual florets of the wheat head may be infected, or the entire head may be infected.



Wheat heads expressing Fusarium head blight infection: bleached spikelets along the head indicative of FHB infection.

FHB can cause significant yield loss; but also poses significant health risk to humans and animals. When Fusarium infects the flowering wheat head, the fungus can produce a toxic compound in the grain. This fungus-produced toxic compound, or “mycotoxin”, is called Deoxynivalenol (DON) toxin. DON toxin is also known as Vomitoxin because of its strong emetic effects after consumption by humans and animals. In other words, if too much vomitoxin is consumed, violent vomiting may occur.

DON toxin levels are regulated by the US Food and Drug Administration (FDA) to ensure safe food and feed. DON toxin levels are expressed as parts per million (ppm). One ppm is equivalent to one pound in one million pounds or one wheat kernel in 80 pounds of wheat. Blending of low and high DON grain may provide some reduction. However, a 50:50 blend of high and low DON wheat will not result in the same mid-point value as can be achieved with blending protein. The FDA restricts finished human food products (such as flour) 1-ppm DON; however export markets and some millers may have stricter requirements.



Threshed wheat kernels at soft dough stage: “tombstone” or “ghost” kernel infected with Fusarium head blight (upper left) compared to a healthy uninfected kernel (lower right).

MONITORING FOR FHB

Limited preliminary testing conducted in July 2022 indicate some fields infected with FHB reflect presence of DON toxin. There is no indication of a presence that would reach market limits, but growers should be monitoring their fields and controlling, if needed.

FHB CONTROLS

If your field is infected with FHB, combine fan speed may be increased to blow infected, lightweight, “tombstone” kernels out of the back of the combine, thus reducing risk of DON contamination of the wheat lot.

REDUCING THE RISK

FHB risk can be reduced with the following actions:

1. **Do not follow corn with a wheat rotation.** Corn can build high fusarium inoculum levels.
2. **Variety Selection.** Complete genetic resistance to FHB is not available in PNW-adapted material, however, some varieties are better than others. Limited Oregon varieties are screened for FHB tolerance by Dr. Juliet Marshall at University of Idaho – please consult her variety testing results (<https://bit.ly/3RTr17k>)
3. **Spring Fungicide Application.** Fungicide can be applied at flowering to prevent severe FHB infection, this may be critical if rainfall and humid conditions occur at flowering. SDHI fungicides (Group 7) perform best for FHB control.

LEARN MORE

Watch the field day video for additional information on FHB:
<https://www.youtube.com/watch?v=ycoBKPuQ-B0>

DO YOU HAVE QUESTIONS ABOUT FHB?

Do not hesitate to reach out to talk about any questions you may have on FHB.

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2a. Individual wheat spikelet with pinkish-orange fungus on the bleached floret and brownish rachis indicative of *Fusarium* head blight infection. 2b. Upper portion of a wheat head with bleached spikelets and pinkish-orange mycelium indicative of a severe *Fusarium* head blight infection.