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To: Oregon wheat growers and industry representatives

Re: Fusarium head blight (FHB) of winter wheat risk management following corn

From: Christina Hagerty

Dear growers and stakeholders,

We released the following short field day video about Fusarium head blight:

<https://www.youtube.com/watch?v=ycoBKPuQ-B0>

This document is compiled as a follow up to the video, and is aimed as an informational resource for producers who plan to plant winter wheat, directly following corn.

Increased opportunities for corn production in the PNW can also create increased risk of Fusarium head blight (FHB) in the following wheat crop. Fusarium head blight is also known as “head scab”.

Fusarium species that cause FHB are ubiquitous in soils and plant debris of the PNW, but grassy species such as wheat and especially corn can allow fusarium to proliferate. Fusarium fungi also infect grassy weeds as stem, crown, foliar and seed head pathogens.

In our region, we can see Fusarium infection as causing early season damping off, or more commonly as later season Fusarium crown rot (FCR). Seed treatments can effectively control seedling blights but are not as effective in reducing FCR.

When timely rains occur at wheat flowering and/or wheat is grown under irrigation, Fusarium may be splash-dispersed into the wheat flowers to initiate FHB infection. Fusarium spores can also be wind-dispersed for miles, particularly from corn residue. Small grain residue decomposes rapidly, whereas corn debris can last years, especially in our dry climate. As such, the corn debris serves as a longer-term source of FHB inoculum. Even when wheat is not planted into corn residue, air borne inoculum released from either nearby or down-wind fields is also a source of potential infection.

Fusarium head blight significantly reduces yield by up to 45%, and results in the accumulation of fungal mycotoxins in harvested grain. These toxins are very harmful for humans and animals.

The main mycotoxin of concern is deoxynivalenol also known as "DON" toxin and infamously known as "vomatoxin" (or VOM for short). It is called vomatoxin due to the induction of vomiting in humans and other monogastric animals. However, even dairy and beef producers are unwilling to use DON contaminated grain due to detrimental effects on the cattle health.

The FDA limits DON concentration in finished food products to a very low threshold of 1 part per million (ppm) for human consumption, but some PNW wheat buyers may have lower thresholds. For barley malt production, detectable levels up to 0.5 PPM of DON may result in rejection of barley. In some regions, DON testing is performed frequently on grain delivered to the elevator. It depends on the year and region (particularly in southern Idaho and the Columbia basin where FHB can frequently occur). When early testing occurs and DON toxin is discovered in grain, then more frequent testing is conducted. Grain above the allowable threshold is rejected, and typically cannot be used as animal feed.

If your operation has corn production as an opportunity, it is critical to consider breaking the disease cycle with a non-grass crop following corn. **When possible, tillage following the corn rotation before planting wheat is highly encouraged to help bury and break down corn residue and reduce the inoculum source.**

While I am not an expert on Fusarium head blight, please feel free to reach out with any questions. If I am unable to answer your questions I will engage my colleagues who are experts on this dangerous disease.

I thank my colleague, Dr. Juliet Marshall at University of Idaho, for reviewing this document.

The following resources are helpful if you would like to learn more:

<https://scabusa.org/>

<https://twitter.com/USWBSI>

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

https://scabusa.org/pdfs/nfhbf13_5MGMT_Bergstrom.pdf

Sincerely,

Christina