Fusarium Head Blight (FHB) of cereals (South Australia)

GRAINS FARM BIOSECURITY PROGRAM

Fusarium head blight (FHB) of cereals is a fungal disease that has been associated with significant yield loss of 20% to 100%. It occurs primarily in durum and bread wheat in limited areas of Australia. Barley, oats, and other cereals crops including maize and sorghum, are also hosts of the FHB pathogens. It is also capable of producing mycotoxins that are a risk to humans and livestock.

Internationally FHB is primarily caused by *Fusarium graminearum* and is also known as head scab, with infected grains often referred to as tombstones. FHB is favoured by warm, humid conditions during flowering and early grain development. In Australia, FHB has also been commonly associated with *F. pseudograminearum* and *F. culmorum*. Spores produced around lower nodes in tillers infected with Fusarium crown rot are transported into heads during flowering through rain splash, resulting in FHB infection.

FHB reduces grain yield, test weight and grain quality. The fungus can produce mycotoxins such as deoxynivalenol (DON), which is a vomitoxin that can impact end use of grain. Loads with visual white or pink grains may be rejected or downgraded at receivals (refer to Trading Standards | Grain Trade Australia). If FHB is suspected, it is essential to have the diagnosis confirmed by an accredited diagnostics laboratory and consult cereal receival standards. Chemical analysis can verify the presence and the amount of DON in infected grains.

What FHB looks like

Fusarium head blight infections are seen as premature whitening or bleaching of spikelets within heads. Whole heads or parts can be affected. Orange spore masses are often also produced at the base of glumes in infected spikelets. In wet weather, whitish or pinkish fluffy fungal growths may also be seen on infected heads.

Brown discolouration of the stem in the head (rachis) where bleached spikelets are attached, and/or in the peduncle, are characteristic of FHB. Diseased spikelets are sterile or can contain shrivelled grain depending on the timing of infection. Light weight shrivelled grains are generally blown out with chaff at harvest. Infected wheat grains are chalky white and may contain a pink tinge. Barley grains have dark brown discolouration.

What FHB can be confused with

Fusarium head blight of cereals can be confused with Fusarium crown rot, stripe rust head infections, frost, melanism (false black chaff) in varieties which have the Sr2 gene, black chaff, glume blotch and the exotic disease wheat blast, which is caused by *Magnaporthe oryzae Triticum*.

Black chaff is caused by bacterium *Xanthomonas campestris pathovar (pv.) undulosa*. FHB head symptoms of tan-brown discolouration and shrivelled grains present like *Septoria nodorum blotch*. White grain disorder caused by *Eutiarosporella* spp. also forms white grains in wheat.

Symptoms of FHB on wheat heads.

Symptoms of FHB in wheat spikelet with discolouration and orange spore masses.

Symptoms of FHB in barley spikelet with discolouration and black spores.

Symptoms of FHB in wheat seeds; healthy plump wheat seeds mixed with FHB infected shrunken/shrivelled wheat seeds with whitish mould over seed coat.

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How FHB spreads

Airborne ascospores cause primary FHB infections with *F. graminearum,* whereas rain splashed macroconidia are the main source of inoculum with *F. pseudograminearum* and *F. culmorum.* Fusarium head blight fungi lie dormant on infected cereal crop stubble, grass weeds, volunteers, and soil borne inoculum. Cereals are susceptible to infection from Fusarium spores at anthesis until early seed development (soft dough).

Where FHB is now

Fusarium head blight is common in wet and humid seasons in Northern New South Wales (NSW), mainly in durum wheat, but is occasionally also present in some bread wheat and barley crops at lower levels. Due to wet conditions in South Australia in 2022, areas including the Mid North, Mallee and South-East are at potential risk of FHB. *F. pseudograminearum* and *F. culmorum* are the most common casual agents of Fusarium crown rot in South Australia.

Where to test suspected FHB cereal heads and grains

Post suspected FHB cereal heads and grains samples in a paper bag with paddock location to the following laboratories:

FHB disease testing
Tara Garrard
SARDI Cereal Pathology
2A Hartley Grove, Urrbrae SA 5064

FHB Mycotoxin testing and level in grains
Doreen Fernandez
Agrifood Technology
260 Princes Highway, Werribee, VIC 3030
1800 801 312 ($260 per sample)

For more information
Shafiya Hussein
SA Grains Biosecurity Officer
Biosecurity SA, PIRSA
shafiya.hussein@sa.gov.au

How to protect your farm from Fusarium head blight

To avoid fusarium head blight of cereals, you are advised to:

- source seed, feed, and fertiliser from reputable, certified suppliers
- apply appropriate fungicide seed dressing to limit seedling blight associated with sowing infected seed
- manage cereal crop residue and dispose of hay appropriately
- use crop rotation, but avoid maize and cereal rotations
- use appropriate fungicides and timely application at early flowering to limit FHB in high-risk situations
- plant cereal varieties that have good resistance to Fusarium crown rot (breeders have yet to deliver a R variety)
- monitor crops on a regular basis to spot anything unusual
- stagger planting, which may help reduce yield losses
- employ good farm hygiene practices.

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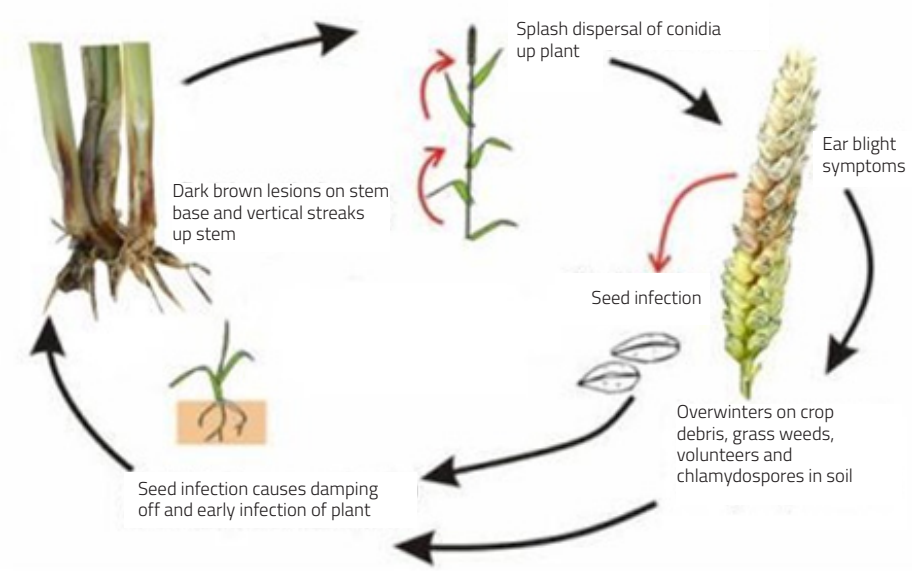
Due to the health risks, proper protective gear should be used during harvest and grain cleaning to prevent fungal spore ingestion. Light weight shrivelled white grains are mostly removed with chaff at harvest.

Early detection is crucial in stopping or slowing progress of a new disease. Monitor your crops regularly for anything unusual and call a specialist without delay to help identify anything unfamiliar. If you suspect an exotic disease, call the **Exotic Plant Pest Hotline** on **1800 084 881**.



Fusarium head blight disease lifecycle in wheat when caused by Fusarium pseudograminearum. Source: medcraveonline.com

For a full list of Grains Biosecurity Officers in your region, visit grainsbiosecurity.com.au/contact

If you see anything unusual, call the Exotic Plant Pest Hotline

EXOTIC PLANT PEST HOTLINE
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