Fusarium Head Blight (FHB) of Cereals

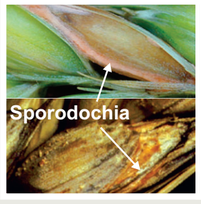
A Disease of Concern for Alberta

Actual disease symptoms

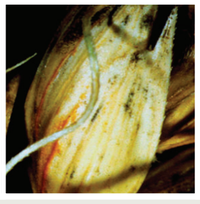
Partially blighted wheat heads are most common

Healthy (right) and blighted wheat head (left)

Blighted wheat heads



Blighted barley and wheat florets showing orangish sporulation (sporodochia)

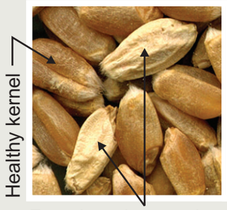


Blighted wheat floret

Discoloured barley heads

Discoloured barley heads

Fusarium-damaged wheat



Fusarium-damaged kernels

Healthy kernels

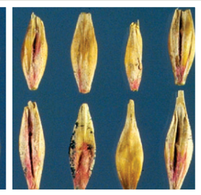
White kernels

Pinkish kernels

Not all Fusarium Damaged Kernels (FDK) will be pinkish. If kernels are infected with *Fusarium graminearum,* they may contain the mycotoxin Deoxynivalenol (DON). A 5% level of FDK (by weight) with *F. graminearum* generally translates into 5 ppm DON.

Fusarium-damaged barley

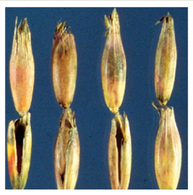
Healthy kernels



Pinkish kernels

Fusarium-damaged oats

Healthy kernels



Pinkish kernels

Impact of Fusarium Head Blight caused by *Fusarium graminearum*

- Reduced yield, thousand kernel weight, kernel plumpness, grade and end-use quality characteristics
- Mycotoxin contamination of harvested grain (DON)
  - reduced feed intake and weight gain in monogastrics (e.g. hogs)
  - rejection of barley for malt

Managing Fusarium Head Blight

Use healthy seed with no detectable levels of *F. graminearum*

- keeps pathogen out of areas where disease is not on crop residues

Increase seeding rates

- more uniform and shorter flowering period for crop (high risk of infection stage)
- more tillering means more variation in crop growth stage and may help fungicide performance

Variety

- varieties with resistance are available, but do not eliminate the risk
- consult annual provincial variety guide for more information

Crop rotation

- continuous or short rotation cereals or corn allows for buildup of infected residues: avoid corn in rotation (use field pea, canola, etc.)
- avoid planting next to a field with infested cereal or corn residues

Stagger planting dates

- humid weather during flowering in wheat or heading in barley favours infection
- avoid having all cereals on-farm flowering at the same time

Irrigation management

- limit irrigation during the flowering period to help limit risk

Fungicide application (wheat)

- provides suppression only and may only reduce mycotoxin level
- application prior to infection is critical

Harvest management (combine adjustment)

- adjust combine to blow out light-weight infected kernels: not an option for infected barley and oats
- reduce damaged kernels, seed infection and mycotoxin contamination

Post-harvest management

- thorough chopping, uniform spread and distribution of straw to encourage decomposition of infected straw

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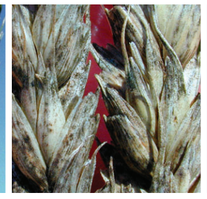
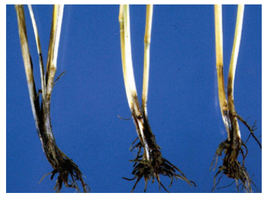
Look-a-like symptons

Premature ripening due to take-all root rot



Advanced ripening due to take-all (note sooty mould growth on dead tissue)



Blackened stem and roots confirm take-all root rot

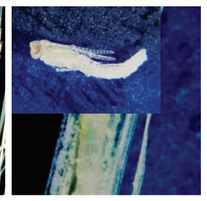
Root rot caused by *Fusarium spp.* or *C. sativus* will cause premature ripening

Copper deficiency causes patchy ripening. Roots are normal. Large areas may be affected

Blighted wheat head and sporulation due to another *Fusarium* species

Discolouration of barley heads due to spot blotch and net blotch

Wheat stem maggot will cause single stems to ripen prematurely



Wheat stem maggot inside stem

Barley grain overwintered in the swath can look mouldy and even pinkish. These symptoms **are not** caused by *F. graminearum,* but by *F. avenaceum,* which does not produce DON

• Prepared by T.K. Turkington, AAFC, I. Evans, AAFRD, J. Calpas, AARD and L. Harrison, AARD (Updated February 2010, T.K. Turkington) • Photographs courtesy of the Western Committee on Plant Disease and R.A Martin, I. Evans, R. Clear, A. Tekauz, J. Gilbert and T.K. Turkington

• Consult provincial factsheets (e.g. *Fusarium Head Blight of Barley and Wheat,* Agdex 110/632-1, Alberta Agriculture and Rural Development (AARD) and variety guides for more information