**Fusarium Head Blight (FHB) of Cereals**

**A Disease of Concern For Alberta!**

**Symptoms of fusarium head blight caused by Fusarium graminearum**
- Partially blighted wheat heads are most common
- Healthy (right) and blighted wheat head (left)
- Blighted barley and wheat florets showing orangish sporulation (sporodochia)

**Impact of Fusarium Head Blight**
- Reduced yield, thousand kernel weight, kernel plumpness, grade, and end-use quality characteristics
- Mycotoxin contamination of harvested grain
  - Chemicals produced by *F. graminearum* during host infection
  - Deoxynivalenol (DON) most common and important mycotoxin
  - Reduced feed intake and weight gain in monogastrics (e.g., hogs)
  - Rejection of barley for malt

**Fusarium Damaged Wheat**
- Healthy kernels
- White kernels
- Pinkish kernels
- Fusarium damaged 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

**Managing Fusarium Head Blight**
- Use healthy seed with no detectable levels of *F. graminearum*
  - Avoids introducing pathogen into areas where *F. graminearum* is not established on crop residues
- Increase seeding rates
  - More uniform and shorter flowering period for crop
    - More tillering means more variation in crop growth stage
    - Shortens the period the crop is flowering, which is the growth stage most at risk for infection
    - Minimizes the period during which irrigation should be limited
    - May help to improve fungicide performance as most if not all of the crop will be at the key growth stage for application
- Variety
  - Varieties with resistance are available, but do not eliminate the risk
  - Consult the annual provincial variety guide for more information
- Crop rotation
  - Continuous or short rotation cereals or corn allows for build up of infected residues
  - Avoid corn in rotation (use field pea, canola, etc.)
    - *F. graminearum* causes stalk and ear rot in corn
    - Infected corn residue can serve as a source of the fungus (inoculum)
    - Avoid planting next to a field with infested cereal or corn residues
- Stagger planting dates
  - Humid weather during flowering (anthesis) in wheat or heading in barley favors 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
    - Reduce damaged kernels, seed infection, and mycotoxin contamination
    - Not an option for barley and oats
    - May blow highly infected light-weight grain back on the field where it can act as a source of disease
- Post-harvest management
  - Thorough chopping, and uniform spread and distribution of straw
    - Encourages decomposition of infected straw in all cropping systems

**Disease symptoms that resemble fusarium head blight**
- Premature ripening due to take-all root rot
- Advanced ripening due to take-all (note sooty mold growth on dead tissue)
- Root rot caused by *Fusarium sp.* or *G. sativus* will cause premature ripening
- Copper deficiency causes patchy ripening. Roots are normal. Large areas may be affected
- Wheat stem maggot will cause single stems to prematurely ripe
- Wheat stem maggot inside stem
- Barley grain overwintered in the swath can look moldy and even pinkish. These symptoms are not caused by *F. graminearum*, but by *F. avenaceum*, which does not produce DON

- 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 110/631-1, AAFFD) and variety guides for more information