

## The Fungal Screen™

### A complete seed health profile

Pathogenic Fungi	Common Name/Symptoms
<i>Cochliobolus sativus</i>	Seedling blight, foot and root rot or spot blotch (leaf blight). Roots are severely effected and leaf lesions can occur.
<i>Fusarium graminearum</i>	Fusarium Head Blight (FHB) leads to Fusarium Damaged Kernels (FDK). Chalky white bleached kernels. Yields are reduced.
<i>Fusarium spp.</i>	Seedling blight, root and crown rot, and head blight. Seed and seed germination are impaired. Yields are reduced.
<i>Pyrenophora spp.</i>	Leaf blight (leaf stripe, net blotch and tan spot), and seedling blight (oats). Symptoms include dark brown necrotic leaf lesions possibly becoming yellow (chlorotic). Discolouration of the seed (black point and red smudge) can develop.
<i>Septoria spp.</i>	Shriveled grain similar to FDK, Leaf lesions with dark patches, leaf blotch.
<b>Saprophytes or Weak Pathogens</b>	<i>Alternaria</i> , <i>Cladosporium</i> , and <i>Epicoccum</i> are commonly found saprophytes that can become more aggressive during delayed harvest and through mechanical damage. These fungi can cause seed discolouration. Lower seed grades result in poor flour and bran colour.
<i>Alternaria spp.</i>	
<i>Cladosporium spp.</i>	
<i>Epicoccum spp.</i>	
<b>Storage Molds</b>	Grain may become discoloured, off-odour, rancid, heated, or bin-burnt. This can lower germination and produce harmful toxins. Ensure storage conditions are optimum to prevent seed spoilage.
<i>Aspergillus spp.</i>	
<i>Penicillium spp.</i>	

#### Pathogenic Fungi

- The five pathogens listed in the first category above cause the most severe diseases. Low levels between 0.5% and 2.0% are not uncommon.
- When *Fusarium graminearum* is at 0.5% or higher, planting of the seed should be avoided unless the disease is already established in the area and/or the field.
- When infection levels of any one of these diseases is higher than 8% infection, seed treatments may not provide the necessary control of the pathogen.
- If three or more of these five pathogens total more than 12%, control by seed treatments may not be sufficient.

#### Saprophytes or Weak Pathogens

- These three seed-borne fungi are typically seen at much higher levels.
- *Alternaria spp.* is very widespread and is usually in the 30% to 60% range.
- *Cladosporium spp.* is usually in the 10% to 20% range.
- *Epicoccum spp.* is usually in the 5% to 20% range.

#### Storage Molds

- Molds quickly multiply in warm humid conditions causing the seed to degrade.
- *Aspergillus spp.* and *Penicillium spp.* are typically less than 2% infection.

## Examples of Plates from the Lab

*Cochliobolus sativus* - Common Root Rot on Barley



*Fusarium graminearum* - Fusarium Head Blight on Wheat

