

MEASURE AND MANAGE

Moldy Corn

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Most of the significant corn ear diseases in Ontario are caused by fungus. The body of the pathogenic fungi consists of a mass of thread like hyphae called mycelium. We often call it mold. The asexual reproductive stage is usually associated with mycelium while the sexual stage is associated with fruiting bodies. Spores can be produced from both stages. The shape, location and size of the 2 stages can be used to identify which fungal disease may be present. These fungi can attack all parts of a corn plant. Some remain localized at the site of infection (ear) others are systemic and can move throughout the plant.

This fall we are seeing some ear mold develop in the corn fields across the province. Some of the common ones are listed below.

Gibberella Ear Rot (Pink Rot, Red Rot)

Caused by: *Fusarium Graminearum*

The symptoms of gibberellin ear rot are a pink to reddish pink coloured mold. Often starting at the tip or from an insect wound and grows down the cob. Cobs are usually quite spongy and rubbery, easily twisted without breakage. A powdery cottony pink mold may form later; black coloured perithecia (fruiting bodies) may be visible on the husk.

The pathogen survives in the soil. Spores are produced in wet weather and dispersed by wind, rain, insects and birds. Infection takes place through insect or bird wounds, silks are highly susceptible 2-6 days after emergence. Kernels are susceptible until physiological maturity.

The significance of this fungal pathogen is the ability to produce mycotoxins. The main pathogen is DON, also called vomitoxin. Zearalenone is another pathogen that can be present. Both are highly toxic to pigs and humans. See pricing on Vomitoxin and zearalenone testing.

Feed refusal by feeder pigs is one symptom of vomitoxin. Swollen vulva of gilts and aborted litters in sows is a characteristic of zearalenone contamination.

The solution is to know the level of mycotoxin in the corn and dilute with clean corn to less than 1 ppm of vomitoxin in the final ration. Avoid barley unless it is tested, as barley can also have extremely high levels of vomitoxin.

Mycotoxins are not evenly distributed in the grain. This fact makes it absolutely imperative that a representative sample be submitted for analysis. Submitting a sample from a single location may produce unreliable results.

It is best to sample from a moving stream of grain at the unloading facility and grab samples at random as the load is being emptied. Collect at least 20 grab samples and place in a clean container and from that submit a half kilogram sample size to Agri-Food Laboratories. Ziploc freezer bags are sufficient.

Reduction in mycotoxins can be accomplished in number of ways. Crop rotation the *Fusarium Gramineraium* also affects wheat so avoid following wheat with corn. Fall tillage to bury infected trash, use of BT hybrids to reduce insect damage. Adjust combines to blow light weight infected kernels out the back of the machine and reduce damage to other kernels serves to reduce mold growth in storage, dry grain quickly and screen to remove fines prior to storage, test for mycotoxins.

Fusarium Ear and Kernel Rot

Caused by: *fusarium verticilliodes*, *fusarium moniliforme*, *gibberellin moniliforme*,

Characteristics of this infection are an ear rot that shows whitish to pink mold often starting at the butt of the ear commonly from insect feeding. With *fusarium verticilliodes* symptomatic mold tends to be scattered randomly on individual kernels unlike *Gibberella* that covers large portions of the ear. Husk may become bleached and adhere tightly to kernels and black fruiting bodies may be present on the husk.

The pathogen survives in soil and plant debris. Reduction of this pathogen involves the same practices as for *gibberella* ear rot. The mycotoxin of main concern is fumonisins which are highly toxic to livestock especially horses and humans.

Diplodia Ear Rot

Caused by: *Diplodia maydis*

Diplodia ear rot shows as bleached husks while the rest of the plant remains green. Kernels may be covered in a whitish grey mold. Kernels appear to be glued to the husk. If the infection occurred later in the season close examination will reveal a white thread like mold growing between the kernels. Symptoms are most severe if it occurs after silking. This mold is not known to produce any mycotoxins. However like all molds it causes light weight kernels and reduced yield. Controls to reduce the incidence are as previously mentioned.

Corn that is destined for the food and feed trade should be tested for the presence of mycotoxins. While it is maybe nice to know which mold maybe infecting the crop, seldom is just one present; we usually see a cocktail of molds present. Testing is a prudent practice even for on farm feeding.

Agri-Food Laboratories testing services can help you by providing high quality analysis combined with years of seasoned agronomy knowledge in crop production.

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