



Agronomic Alert

Identify and Manage Corn Ear Molds

- There are at least seven ear mold fungi that can attack corn, reducing yield potential, grain quality, and feed value.
- Ear mold damage is often associated with kernel damage from insects, birds, or frost.
- Potential for damage from ear molds is greatest from silking to harvest.

Management

Pathogens that cause ear rots can remain viable in the soil for several years. Fields with a history of ear rots and stalk rots should be carefully scouted, even if management practices have been employed to decrease disease pressure. Some options to help decrease the risk of ear mold infection include crop rotation, heavy tillage, planting corn products with insect protection traits, and good fertilization.¹ Planting a several different products with varying maturities and growing degree units (GDUs) to flowering, as well as rotating germplasm planted in the same field from year-to-year, are also good practices to help reduce the effect of ear molds.

Proper grain drying and storage are important when these diseases are evident. Here are some tips for harvesting and storing grain from fields with prevalent ear mold infection:

- Corn should be allowed to mature in the field to 22 to 25% moisture content. If lodging concerns exist, early harvest should be considered, since down corn is more likely to mold.
- Consider tillage and rotation away from corn.
- Adjust combines to minimize kernel damage and maximize cleaning.
- Corn should be dried to less than 15% moisture content within 48 hours of harvest.²
- Grain should be stored at cool temperatures (35° F to 45° F) after drying.
- Grain should be checked periodically for temperature, wet spots, and insects.
- Grain should be stirred and aerated during storage to prevent the development of hot spots.
- Consider application of antifungal treatments to grain.

Testing

Because some molds can be toxic to livestock, proper identification is needed before using contaminated grain



Figure 1. *Aspergillus flavus* (left) and *Penicillium* (right).



Figure 2. Scattered kernels infected with *Fusarium* (top). Starburst pattern characteristic of *Fusarium* ear rot (bottom).



Figure 3. White to gray mold on ears infected with *Diplodia*.

for feed. Always send a sample of suspect corn to a toxicology lab for analysis. If concentrations of a mycotoxin are present, a veterinarian or an extension specialist can help determine if it is safe to feed to livestock. Contact your local extension specialist for information on testing labs in your area.

Harvest

Prior to harvest, growers should take a close look at roots, stalks, and ears for disease, insect damage, and moisture content. Under extreme weather conditions, crop status in each field should be monitored to help determine a plan for harvest.

Sources: ¹Robertson, A. 2004. Corn ear rots. Iowa State University. Integrated Crop Management Newsletter. IC-492(21). <http://www.ipm.iastate.edu>; ²Jackson, T. and Ziem, A. 2009. Ear rots and grain molds are common this year. University of Nebraska-Lincoln. CropWatch. <http://cropwatch.unl.edu>; Additional sources: Munkvold, G. 2002. Corn ear molds and mycotoxins. Iowa State University. Integrated Crop Management Newsletter. IC-488(22). <http://www.ipm.iastate.edu>; Corn ear and kernel rots. 1991. University of Illinois Extension. IPM RPD No. 205. <http://ipm.illinois.edu>. Web sources verified: 5/20/15.

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Table 1. Corn ear molds: color, appearance, conditions, and toxicity.

Ear Mold	Color	Appearance	Conditions	Mycotoxin
Aspergillus (Figure 1)	Gray-green or light green	Powdery mold starting at tip of ear	Damaged silks or kernels typically from insects or hail; common in dry years	Aflatoxin: toxic to livestock and humans
Cladosporium (Figure 6)	Gray to black or very dark green	Streaks scattered over ear; can appear powdery; able to rub color off kernel surface	Infects kernels damaged by frost, insects, or hail	No feeding toxicity
Diplodia (Figure 3)	White to gray; severe infection can cause entire ear to appear brown	Usually begins at base of ear and develops towards the tip; grows between kernels; often speck sized black, fungal, fruiting bodies (pycnidia) will form on husks and at the base of kernels	Most often in reduced tillage and continuous corn	Previously not known to produce mycotoxins, but some association with diplodiosis in cattle and sheep
Fusarium (Figure 2)	White to pink	Individual kernels with fungal growth scattered across ear and/or kernels with starburst pattern	Infection points include kernel growth cracks and ear damage from insects; warm and dry weather favors disease development	Fumonisin: toxic to livestock, particularly horses
Gibberella (Figure 4)	Often bright pink; varies from red to white	Usually begins at ear tip and progresses to base	Infection favored by cool, wet weather after silking	Vomitoxin, zearalenone: harmful to livestock
Penicillium (Figure 1)	Blue to green	Grows on and between kernels; powdery	Infects kernels damaged by frost, insects, or hail	Not known to produce mycotoxins
Trichoderma (Figure 5)	Green	Grows on and between husks and kernels	Favored by insect or mechanical damage to the ear	Not known to produce mycotoxins



Figure 4. *Gibberella* ear mold progressing from the tip to the butt.



Figure 5. *Trichoderma* ear mold.



Figure 6. Various views of *Cladosporium* infected ears and kernels.

For additional agronomic information, please contact your local seed representative. Developed in partnership with Technology, Development & Agronomy by Monsanto.

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible. **ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS.** All other trademarks are the property of their respective owners. ©2015 Monsanto Company.130819014104 080114SMK