

INTEGRATED CROP MANAGEMENT

Corn ear molds and mycotoxins

There has been elevated concern this year about mycotoxins in grain, especially aflatoxins. Aflatoxins are not a common problem in Iowa, but the dry weather that occurred in some parts of the state caused stress on the plants, which lead to aflatoxin problems. Corn plants that experience drought stress are more susceptible than usual to the fungus that produces aflatoxins, *Aspergillus flavus*. Surrounding states also have been reporting aflatoxins in corn. In Iowa the reports seem to be limited to the southwestern corner of the state. Corn in the earliest harvested fields seemed to be the most problematic, because these fields suffered the worst drought stress. As corn harvest has progressed, reports have died down considerably, and a record-high yield in Iowa seems probable.

Aflatoxins are not the only mycotoxins; other ear molds also can produce harmful chemicals such as fumonisins and vomitoxin. These toxins tend to be higher in corn that has experienced insect damage, so insect-damaged fields should be checked for symptoms of molds. To check for ear rots, strip back the husks on at least 100 plants scattered throughout the field. Scout fields separately according to hybrid, tillage and rotation history, and planting date. It is important to be able to recognize the ear rot diseases because their potential for impact is highly dependent on the particular fungus involved. Once the corn is harvested, it can be more difficult to recognize the symptoms, but if there is a major problem, it will be evident in the grain.

When evaluating an ear rot problem, remember that certain ear rots are a warning sign to suspect toxins, but ear rots do not always lead to toxin problems. When potentially toxigenic ear rots are noticed in the field, grain can be managed so as to minimize toxin development. If more than approximately 10 percent of ears have a significant amount of mold (25 percent of the ear or more), these fields should be harvested and the corn dried as soon as possible. The combine removes some of the moldiest kernels.

The best option for moldy grain is to feed it or sell it instead of storing it. However, *it should be tested for toxins before feeding*. Testing for mycotoxins can be done before putting the grain in storage. The best sampling method is to take a composite sample of at least 10 pounds from a moving grain stream, or to take multiple probes in a grain cart or truck for a composite 10-pound sample. If toxins are present, it is possible that the grain can be fed to a less sensitive livestock species, such as beef cattle, depending on the specific toxin and its concentration. A veterinarian or extension specialist can help with these decisions. If the grain is sold, there may be a reduced price due to mold damage.

Cleaning the grain removes fine particles that are usually the moldiest and most susceptible to further mold development. *Good storage conditions (for example, proper temperature and moisture content, aeration, insect control, and clean bins) and regular inspection are*

essential in preventing mold and toxin development in any stored corn. For additional information on sampling and other aspects of ear rots and mycotoxins, see Iowa State University Extension publications PM 1800, [Aflatoxins in Corn](#) [1], and PM 1698, *Corn Ear Rots, Storage Molds, Mycotoxins, and Animal Health*.



Aspergillus ear rot of corn.

[Enlarge](#) [2]



Cladosporium kernel rot of corn. Cladosporium fungi often infect kernels damaged by insects, hail, or frost. Cladosporium is gray to black or very dark green and can have a powdery appearance..

[Enlarge](#) [3]



Fusarium ear rot on corn.

[Enlarge](#) [4]



Fusarium ear rot is the most common fungal disease on corn ears. The white-to-pink-colored mold is on scattered kernels or insect-damaged kernels. These fungi can produce mycotoxins known as fumonisins.

[Enlarge](#) [5]



Gibberella ear rot is caused by the fungus *Gibberella zeae*, also known as *Fusarium graminearum*. It can be identified most readily by the red or pink color of the mold. In some cases, the color appears white. It usually begins at the tip of the ear. Gibberella will sometimes rot the entire ear. Gibberella ear rot infections occur more commonly when the weather is cool and wet after silking and through the late summer. Gibberella can produce vomitoxin and zearalenone.

[Enlarge](#) [6]



Diplodia ear rot: This fungus initially appears as a white mold beginning at the base of the ear. The mold and the kernels then turn a grayish brown color and rot the entire ear. Diplodia ear rot occurs most often in fields under reduced tillage where corn follows corn and is not associated with mycotoxin problems.

[Enlarge](#) [7]

Source URL:

<http://www.ipm.iastate.edu/ipm/icm//ipm/icm/2002/10-21-2002/molds.html>

Links:

- [1] <http://www.extension.iastate.edu/Publications/PM1800.pdf>
- [2] http://www.ent.iastate.edu/imagegal/plantpath/corn/aspergillus/aspergillus_ear_rot.html
- [3] http://www.ent.iastate.edu/imagegal/plantpath/corn/cladosporium/cladosporium_on_corn.html
- [4] http://www.ent.iastate.edu/imagegal/plantpath/corn/fusarium/fusarium_ear_rot.html
- [5] http://www.ent.iastate.edu/imagegal/plantpath/corn/fusarium/fusarium_insect_inj.html
- [6] <http://www.ent.iastate.edu/imagegal/plantpath/corn/gibberella/1355.44gibberella.html>
- [7] <http://www.ent.iastate.edu/imagegal/plantpath/corn/diplodia/1355.22diplodiaearrot.html>

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