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## Corn ear molds and mycotoxins in fall 2003

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# Corn ear molds and mycotoxins in fall 2003

## **Abstract**

There has been elevated concern again 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*.

## **Keywords**

Plant Pathology

## **Disciplines**

Agricultural Science | Agriculture | Plant Pathology

# INTEGRATED CROP MANAGEMENT

## Corn ear molds and mycotoxins in fall 2003

There has been elevated concern again 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*.

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 major problems 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.



**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](#) [1]



**Gibberella ear rot is caused by the fungus *Gibberella zeae*, also known as *Fusarium graminearum*. It usually begins at the tip of the ear and is red or pink. *Gibberella* can produce vomitoxin and zearalenone.**

[Enlarge](#) [2]



**Aspergillus ear rot and storage mold of corn. *Aspergillus flavus* can produce aflatoxins. It is an olive-green, powdery mold. The fungus can be detected by fluorescence under black light, but black light does not directly detect the presence of aflatoxins.**

[Enlarge](#) [3]



**Fusarium ear rot on corn.**

[Enlarge](#) [4]

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](#) [5] (free), and PM 1698, *Corn Ear Rots, Storage Molds, Mycotoxins, and Animal Health* (\$1.50 plus shipping).

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[1] [http://www.ent.iastate.edu/imagegal/plantpath/corn/cladosporium/cladosporium\\_on\\_corn.html](http://www.ent.iastate.edu/imagegal/plantpath/corn/cladosporium/cladosporium_on_corn.html)

[2] [http://www.ent.iastate.edu/imagegal/plantpath/corn/gibberella/gibberella\\_ear.html](http://www.ent.iastate.edu/imagegal/plantpath/corn/gibberella/gibberella_ear.html)

[3] [http://www.ent.iastate.edu/imagegal/plantpath/corn/aspergillus/aspergillus\\_ear\\_rot.html](http://www.ent.iastate.edu/imagegal/plantpath/corn/aspergillus/aspergillus_ear_rot.html)

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[5] <http://www.extension.iastate.edu/Publications/PM1800.pdf>

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