

# IN THE FIELD

**Landlord/Tenant Cash  
Lease Workshop  
December 6, 2012  
11:00 a.m. - 3:00 p.m.  
Community Center  
Bloomfield, Nebraska  
No Cost - Meal Provided**

**Nebraska Hay & Forage  
Hotline  
1-800-422-6692**

## Scout Fields for Aspergillus Ear Rot to Avoid Losses Due to Aflatoxin Contamination

The unusually high temperatures and drought this summer are having severe impacts on Nebraska corn. In addition to reductions in test weight and overall yield, secondary problems are developing in some corn fields as a result of these conditions.

Drought and high temperatures promote development of the disease Aspergillus ear rot (Figure 1). The fungi that cause this disease (most commonly, *Aspergillus flavus*) can produce

aflatoxin. Aflatoxin is one of many chemicals in a group known as mycotoxins that are produced by fungi (molds). Mycotoxins, such as aflatoxin, can be toxic to animal and human consumers and, at certain concentrations, can lead to dockage or rejection of grain at elevators.

Corn harvested for grain to this point has been predominantly from fields that sustained substantial drought damage leading to early maturation and plant death. Notable aflatoxin contamination appears to be in a small percentage of southeast Nebraska fields, based on samples submitted to several laboratories in the area.

Mycotoxins are common and can be safely consumed at low concentrations. The concentration of aflatoxin that is considered safe for consumption depends on the age and species of the consumer. An abbreviated summary listing the Action Levels identified by the FDA for aflatoxin is listed in Table 1.



Figure 1. Aspergillus ear rot can be recognized by the yellow- to olive-green spores on damaged kernels. It can lead to an accumulation of aflatoxin, especially in drought and insect-damaged kernels.

**Table 1: FDA action levels for aflatoxin contamination in corn intended for livestock.**

<u>Commodity Action Level</u>	<u>(ppb)</u>
Finishing (feedlot) beef cattle	300
Finishing swine of 100 pounds or greater	200
Breeding beef cattle, breeding swine, or mature poultry	100
Immature animals and dairy cattle	20
For animal species or uses not otherwise specified, or when the intended use is not known	20
Human food	20

Source: FDA Action Levels for Aflatoxin

### Testing for Aflatoxin

Farmers and crop consultants can scout high risk fields for Aspergillus ear rot as an indicator for aflatoxin, but only lab testing of grain samples can accurately identify the concentrations of aflatoxin in the grain. Accurate lab test results for aflatoxin will depend greatly on the quality of the sample that is collected and the laboratory methods used to test it. The test results are only

applicable to the sample that is submitted, so it is very important to collect an adequate sample for the best results. Refer to the publication, [Sampling and Analyzing Feed for Fungal \(Mold\) Toxins \(Mycotoxins\)](#) for recommendations on how to collect and submit a high quality sample for mycotoxin analysis.

Contact and submit samples to a laboratory that is certified by the federal Grain Inspection Service and Grain Inspection, Packers, and Stockyards Administration (GIPSA) for mycotoxin analysis for the most accurate results. A GIPSA website lists laboratories certified to conduct testing in Nebraska. They include:

Fremont Grain Inspection, 402-721-1270; email [fgid@neb.rr.com](mailto:fgid@neb.rr.com)  
Hastings Grain Inspection, 402-462-4254; email Hastings at [hgi Hast@hastingsgrain.com](mailto:hgi Hast@hastingsgrain.com);  
email Grand Island office at [hginsp@hastingsgrain.com](mailto:hginsp@hastingsgrain.com)  
Kansas Grain Inspection Service, Sidney, Nebr., 308-254-3975; email  
Lincoln Inspection Service, Lincoln, 402-435-4386; email [lismf@neb.rr.com](mailto:lismf@neb.rr.com)  
Omaha Grain Inspection Service, 402-341-6739; [omahagrains@gmail.com](mailto:omahagrains@gmail.com)  
Sioux City Inspection and Weighing Service, 712-255-8073; email [tomd@scigrain.com](mailto:tomd@scigrain.com)

A multi-state list of service facilities certified by GIPSA is also available at [http://www.gipsa.usda.gov/fgis/svc\\_provid/providers.html](http://www.gipsa.usda.gov/fgis/svc_provid/providers.html).

Some grain elevators and individuals may be using a black light (ultraviolet light) to detect for fluorescence as a method for rapid screening of grain samples. This practice is NOT recommended when making decisions about aflatoxin contamination in loads of grain. The component that produces fluorescence under black light is called kojic acid. Although kojic acid is produced by the same fungus that produces aflatoxin, its presence is not necessarily an indicator of aflatoxin and might lead to false positive results and unnecessary rejection of grain.

### **High Risk Factors for Aflatoxin Contamination in Corn**

- Drought-damaged fields, including rainfed (dryland) fields and non-irrigated pivot corners
- Fields or areas with higher incidence of corn ear-feeding insects, such as the corn ear worm
- Grain damaged before or during harvest or after harvest while in storage

### **Scouting For Aspergillus Ear Rot**

Ear rot diseases and aflatoxin are not evenly distributed across fields or in the grain, so scouting and/or sampling should include a substantial portion, at least several acres. The presence of the fungus in kernels does not always correlate well with the presence of aflatoxin, nor does the absence of visible fungal growth necessarily indicate the absence of aflatoxin.

- Open husks to view a large number of ears.
- Look for the presence of dusty yellow-green to olive-green spores, especially on the surface of damaged kernels or ear tips (Figure 1).
- Pay special attention to higher risk areas.

### **Harvest and Storage**

If fields have documented Aspergillus ear rot and/or risk of aflatoxin contamination, it is recommended that you harvest and keep grain separate from other grain at less risk, such as irrigated fields. Storage of affected grain is not recommended because ear rot diseases and mycotoxins can continue to accumulate during storage. If storage is necessary, cooling and drying grain to less than 15% moisture within 48 hours of harvest will help to slow fungal growth and aflatoxin production. Grain intended to be stored for longer periods of time should be dried to less than 13% moisture.

Presently, it is too early in the harvest to know the extent of aflatoxin contamination in this year's corn crop, but at this time only a small percentage appears to be affected.

Source: Tamra Jackson-Ziems, UNL Extension Plant Pathologist