



Introduction

The old proverb “misery loves company” rings true when you think about the effects of a drought on a corn crop. In addition to poor yields, low silage quality, and low test weight, the drought will likely contribute to another menace: aflatoxin.

AFLATOXIN DEVELOPMENT

There are different types of aflatoxins. The most common is a by-product of the fungus *Aspergillus flavus*, a common ear mold (see photo). This fungus favors weather that is hot and sunny, warm at night, and dry during the silk and grain-fill stage. Insect, bird, and mechanically damaged kernels, as well as exposed ear tips, are particularly prone to elevated aflatoxin levels. Aflatoxin can develop within 24 hours in fungi-infected corn. Therefore, **corn that does not test positive at harvest can become contaminated in storage.**

HARMFUL EFFECTS

Aflatoxins are very potent and can cause harm to humans and livestock. One type of aflatoxin is even labeled as a carcinogen. Livestock exposed to aflatoxin contaminated grain can exhibit symptoms such as loss of feed gain, reproductive dysfunctions, short-term illnesses or, in severe cases, death. Given these dangers, the FDA has established standards for using grain contaminated with aflatoxin.

Aflatoxins are very difficult, if not impossible, to control once established. Prevention is the key to management.



Photo: Aspergillus ear rot, a gray-green powdery ear mold that is the source of aflatoxin. Source: Iowa State University, used by permission.

FDA guidelines for acceptable aflatoxin level in corn based on intended use.

INTENDED USE	AFLATOXIN LEVEL (ppb)
Milk	None detected
Unknown destination	<20
Young animals	<20
Dairy cattle	<20
Breeding cattle, swine, and mature poultry	<100
Finishing swine	<200
Finishing cattle	<300

Source: Munkvold et al. 2002

PREVENTION IS THE KEY TO MANAGEMENT

Aflatoxins are very difficult, if not impossible, to control once established. Therefore, prevention is the key to management. Consider the points on the next page to reduce aflatoxin levels. ►

*Aflatoxins in Corn, Continued***PREVENTION POINTS TO CONSIDER**

- If irrigation is available, irrigate fields prior to and during pollination to reduce the interval between pollen shed and silking.
- Since insect feeding on the ear can increase the occurrence of aflatoxin, use hybrids containing YieldGard® Corn Borer or Herculex® I to help minimize damage to the ear.
- Scout fields prior to harvest. If ears show mold symptoms, isolate the grain and determine its quality by submitting samples to reputable grain laboratories. Elevators commonly check grain using a black light method, but this method is not as reliable as laboratory tests. If aflatoxin levels are suspected or detected, it is the owner's responsibility to isolate the corn from general commerce.
- Set combines and grain handling equipment to minimize kernel damage and to remove cracks, fines, and lightweight diseased kernels.
- Consider harvesting soon after kernel black layer. The longer corn stands in the field, the more time ear molds have to produce toxic by-products such as aflatoxins. If high moisture corn is harvested, immediate mechanical drying to 15% moisture or less is required. Do not store high moisture grain longer than 6 hours.
- Keep grain handling systems clean. Control insect and rodent populations.
- Be diligent and check stored grain at least every 2 weeks. Moisture levels of long-term stored grain should be maintained below 14%. If problems are detected, aerate the bin, reduce temperatures, break up hot spots, or remove the grain. ■

References

Munkvold, G. et. al. 2002. Aflatoxins in Corn. Iowa State University, University Extension. PM 1800. <http://www.extension.iastate.edu/Publications/PM1800.pdf>

Sumner, P and Lee, D. 2003. Reducing Aflatoxin in Corn During Harvest and Storage. University of Georgia, Cooperative Extension Service. Bulletin 1231.

<http://pubs.caes.uga.edu/caespubs/pubcd/B1231.htm>