Concerns about Aflatoxin in Ohio Corn

Pierce Paul, Plant Pathologist, OSU Extension

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There have been a few reports of Aspergillus ear rot in corn in some parts of Ohio, causing producers to be concerned about possible grain contamination with aflatoxins. As I mentioned in my newsletter a few weeks ago (http://corn.osu.edu/newsletters/2012/2012-26/#6), ear rot development does not automatically mean that grain is contaminated with aflatoxins, but provides a good indication that the risk of contamination is high. So far this year I have had only one confirmed report of aflatoxin contamination in the state. The best way to determine whether you indeed have an aflatoxin problem is to scout fields for Aspergillus ear rot and then send samples to a lab for testing. Below is a list of steps one should take when sampling for ear rot, testing for aflatoxin, and handling suspect grain samples during shipment and storage.

1- Scouting for Aspergillus ear rot: Walk fields and examine ears from multiple plants at multiple locations. The fact that weather conditions this year have been favorable for Aspergillus ear rot does not automatically mean that you have an ear rot problem. The risk is indeed high, but the level of infection and grain contamination usually varies from field to field, depending of soil type, hybrid susceptibility, and cropping practice. Check for Aspergillus ear rot by stripping back the husks and examining the ears of 80-100 plants from across the entire field for a yellow-green or gray-green mold.

2- Sampling for aflatoxin: Samples for aflatoxin testing could be collected directly from the field, truck, grain stream, or grain bin. However, regardless of where the sample is being collected, it is important to make sure that it is representative of the entire grain lot. By representative I mean it must be a sample that provides a reasonable estimate of the level of contamination of the entire grain lot and not just one section of the lot. Toxin contamination is never uniform throughout a grain lot, it is often found in hot spots. Therefore it is extremely important to pull multiple samples from every part of the lot. When sampling from the grain stream, collect samples at regular intervals. Pool and mix the individual samples into one composite sample from which about 5-10 lb. of grain is sent for testing.

3- Sending samples for aflatoxin testing: Adequate handling of samples is an important part of the aflatoxin testing process. Samples should be dried to 12-14% moisture and shipped in cloth or paper package to minimize aflatoxin buildup during shipment and storage.

4- Testing for aflatoxin: A) Blacklight or UV light test consists of visually inspecting the grain for the presence of greenish florescent particles under UV light. This test should only be used as an initial screen, since other particles in the sample may also glow, giving a false positive result. On the other hand, the absence of a fluorescent glow does not mean that the grain is not contaminated. B) Several commercial quick-test kits are available for aflatoxin testing. Unlike the blacklight test, these are specific for aflatoxin. However, several of these tests are only qualitative or semi quantitative, meaning that they tell you whether or not the grain is contaminated or whether the level of contamination is within a certain range, but do not provide precise estimates of the levels of contamination. C) Analytical laboratory tests, if done correctly by a certified lab, are by far the best for determining aflatoxin contamination. These tests are

usually accurate and quantitative, and provide estimates of the exact level of contamination. Grain marketing decisions such as dockage and price discounts should be made based on results from analytical lab tests rather than blacklight or commercial quick tests.

5- Storage: To minimize further mold development and toxin accumulation in storage, grain should be dried to 15% moisture shortly after harvest. Remember, the level of toxin will not decrease in storage, but could increase substantially if storage conditions are favorable for continued fungal growth and mold development. Aspergillus flavus, the aflatoxin fungus, grows best at 80-90oF and 18% moisture. Cleaning grain after harvest to remove fines may also contribute to reducing toxin buildup in storage, since broken and cracked kernels often favor the growth of A. flavus.

More information on aflatoxin testing and FDA thresholds are available at:

http://www.rma.usda.gov/fields/il_rso/2012/aflatoxin.pdf

http://www.fda.gov/Food/GuidanceComplianceRegulatoryInformation/GuidanceDocuments/ChemicalContaminantsandPesticides/ucm077969.htm#afla