



CORN EAR ROT MANAGEMENT

Grain and Silage Sampling and Mycotoxin Testing

If corn ear rots were a problem in the field, it is important to test harvested grain for mycotoxins. Obtaining a representative sample for mycotoxin testing is critical for accurate results. It's also important to know that testing methods vary in accuracy.

Sampling Requirements

The accuracy of a mycotoxin test result largely depends on the quality of the grain or silage sample. The United States Department of Agriculture (USDA) *Grain Inspection Handbook* (www.gipsa.usda.gov/fgis/public_handbooks.aspx) and the Canadian Grain Commission (www.grainscanada.gc.ca) recommend specific sampling methods to ensure that samples accurately represent the grain population and silage mass. Sample collection methods vary depending on whether the sample is collected from the field (combine), a grain truck, a shipping container, feed bunks or storage bins, or at the elevator or point of sale.

What does a representative sample consist of?

Although sampling methods vary, the size of the representative sample is consistent. According to the USDA *Grain Inspection Handbook*, a representative sample is at least 4.4 pounds, and preferably 5 pounds (2-2.5 kg). In many cases, several subsamples will be taken and then combined into a single composite sample (Figure 1).



Figure 1. Several subsamples of corn are pooled to form a larger representative sample.

It is recommended that each subsample for the composite sample be at least 4.4 pounds (2 kg). Combine these subsamples to make a single composite sample. Mix the composite sample thoroughly, and then take a final 5-pound (2.5 kg) sample from the composite for further testing.

When sampling grain, gather the subsamples several different times from a moving stream of grain while the grain is being loaded or unloaded. However, sample probes are commonly used for stationary loads of grain. Silage subsamples should be removed from both vertical and horizontal facing areas of the silage mass.

Don't Rely on Appearance Alone

There are several technologies for testing mycotoxin concentrations in corn grain and silage. Never rely solely on visual methods such as the black light test (Figure 2). Visual test results can be inconsistent, so always test samples using recommended methods, or send them to professional laboratories.

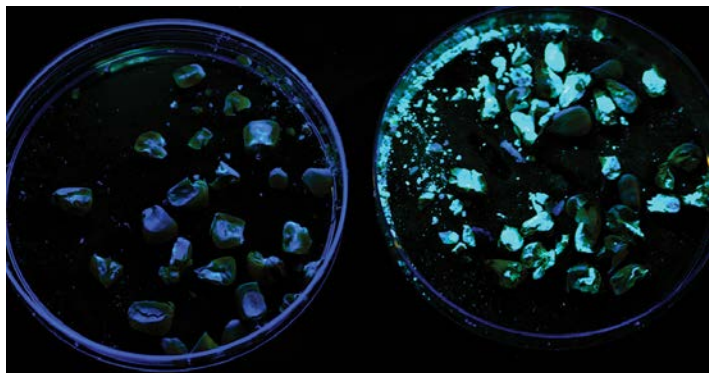


Figure 2. Fluorescence under a black light is not a useful way to determine if grain is contaminated with a mycotoxin.

Testing Kits

Several companies sell kits that detect and measure specific mycotoxins. Using such kits will require an initial investment of several thousand dollars to purchase the proper testing equipment. However, once you have the equipment, the cost of testing a single grain sample (a subsample of a larger sample) for one particular mycotoxin is usually less than \$10 (Figure 3).



Figure 3. A corn sample being tested for mycotoxins using supplies from a test kit.

Companies that sell mycotoxin detection equipment and test kits include:

Charm Sciences, Inc.

www.charm.com/products/test-and-kits/mycotoxin-tests/

EnviroLogix

www.envirologix.com

Neogen Corporation

foodsafety.neogen.com/en/mycotoxins

R-Biopharm AG

<https://food.r-biopharm.com/analytes/mycotoxins/>

Romer Labs

www.romerlabs.com/us/products/mycotoxins

VICAM

vicam.com/products

Professional Laboratories

Local laboratories and grain inspection services may test individual corn samples for mycotoxins. Below is an incomplete list of select grain testing providers. Check with your local Extension office for a more complete list of grain testing facilities in your area. For a list of labs in Ontario, visit www.omafra.gov.on.ca. Costs and sample submission procedures vary by provider.

Barrow-Agee Laboratories (Memphis, Tennessee)

www.balabs.com

Breathitt Veterinary Center (Hopkinsville, Kentucky)

<https://breathitt.murraystate.edu/>

Cumberland Valley Analytical Services (Hagerstown, Maryland; Batavia, New York; Zumbrota, Minnesota)

www.foragelab.com

Dairy One (Ithaca, New York)

www.dairyone.com

Dairyland Laboratories (Arcadia, Wisconsin)

www.dairylandlabs.net

EMSL Analytical, Inc. (Baton Rouge, Louisiana, plus locations in Florida, Georgia, North Carolina, and Texas)

<https://EMSL.com>

Eurofins Central Analytical Laboratory (Forsyth, Georgia; New Orleans, Louisiana)

www.eurofinsus.com/food

Fort Worth Grain Exchange (Fort Worth, Texas)

817-626-8213

Holmes Laboratory, Inc. (Millersburg, Ohio)

www.holmeslab.com

Indiana Animal Disease Diagnostic Laboratory (ADDL) at Purdue University (West Lafayette, Indiana)

www.addl.purdue.edu

Indiana Crop Improvement Association (Lafayette, Indiana)

www.indianacrop.org

Kansas Grain Inspection Service (Topeka, Kansas)

<https://kansasgrain.com/>

Midwest Laboratories (Omaha, Nebraska)

<https://midwestlabs.com/>

Midsouth Grain Inspection Services (Memphis, Tennessee; Stoneville, Mississippi; Little Rock, Arkansas)

<http://drec.msstate.edu/content/midsouth-grain-inspection-services>

Minnesota Valley Testing Laboratories, Inc. (New Ulm, Minnesota)

www.mvlt.com

Quanta Lab (Selma, Texas)

quantalab.com

Romer Labs (Union, Missouri)

www.romerlabs.com

Trilogy Analytical Laboratory, Inc. (Washington, Missouri)

www.trilogylab.com

University of Kentucky Veterinary Diagnostic Lab (Lexington, Kentucky)

www.vdl.uky.edu

Waters Agricultural Laboratories, Inc. (Owensboro, Kentucky)

<https://watersag.com/service/mycotoxinaflatoxin-detection/>

Waypoint Analytical (Leola, Pennsylvania)

www.waypointanalytical.com/Contact
(supportpa@waypointanalytical.com)

Find Out More

The Crop Protection Network (CPN) is a multi-state and international collaboration of university and provincial extension specialists, and public and private professionals that provide unbiased, research-based information to farmers and agricultural personnel. Our goal is to communicate relevant information that will help in the identification and management of field crop diseases.

Find crop disease resources at CropProtectionNetwork.org.

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