




# Corn Ear Rots in 2009

The prevalence of ear rots varies from year to year depending on weather conditions, with 2009 being very favorable for ear rots. It is important to correctly identify the type of ear infection in the field in order to manage the existing problem and help prevent future infections. This article provides images and descriptions to help growers make positive identification.





Hybrid resistance is the best defense against ear rots. Pioneer screens its hybrids in severe disease environments throughout the U.S. and Canada. Through this process, Pioneer is able to improve ear rot resistance in its products. Scores placed on hybrids and made available to growers allow hybrids to be placed where resistance levels are sufficient to counter disease severity. This helps protect yield and maintain grain quality and test weight.

**Table 1.** Primary ear rots in the Midwest U.S.

	<p><b>Diplodia – No Mycotoxin</b></p> <p>Initially appears as a white mold beginning at the base of the ear but eventually becomes grayish-brown and rots the entire ear. The mold may be apparent on the outside of the husk or on the shank. There may be raised black bumps on the moldy husk or kernels.</p>
	<p><b>Gibberella – Mycotoxin Possible</b></p> <p>Develops as a red or pink mold that almost always begins at the tip of the ear. The silks and husks may stick to the ear due to mold growth. In severe cases, the pink mold is visible on the outside of the husks at the ear tip. The fungus produces the mycotoxin vomitoxin.</p>
	<p><b>Fusarium – Mycotoxin Possible</b></p> <p>A white to pink, cottony mold that can begin anywhere on the ear but often initiates from insect-damaged or split kernels. Usually the entire ear is not rotted – affected kernels are scattered across the ear. Infected kernels are usually tan or brown or have white streaks. The fungus produces the mycotoxin fumonisin.</p>

Because insect feeding on ears provides entry sites for ear rot organisms, preventing insect damage to husks and kernels is another management practice to reduce ear molds. Pioneer offers Herculex® I and Herculex XTRA insect protection technologies to protect plants from corn borers, western bean cutworms and fall armyworms that damage stalks and ears. Talk to your local Pioneer sales professional regarding hybrids that have been locally tested and characterized to best meet the production requirements of each of your fields.

**Table 2.** Other ear rots in the U.S.

	<p><b>Aspergillus – Mycotoxin Possible</b></p> <p>Appears as a grayish-green powdery mold that may begin at the tip of the ear or follow insect injury tracks. Infected kernels are brownish, lightweight and shrunken. The fungus produces the mycotoxin aflatoxin.</p>
	<p><b>Penicillium – No Mycotoxin</b></p> <p>Green or blue-green powdery mold that occurs between the kernels, usually at the ear tip. Infected kernels can appear bleached or streaked.</p>
	<p><b>Cladosporium – No Mycotoxin</b></p> <p>Dark green or black powdery mold that also causes black streaks on kernels. It usually forms first where kernels are attached to the cob.</p>
	<p><b>Trichoderma – No Mycotoxin</b></p> <p>Dark green mold that grows on or between kernels and often covers the entire ear. Typically, this disease is not economically damaging because it only occurs on scattered ears.</p>

## Identifying Molds and Testing for Mycotoxins

It is important to remember that the presence of **visible** molds is only an indicator of ear disease. The disease needs to be identified and quantified to determine its potential impact.

If grain was very moldy at harvest (10% of ears had mold that covered more than 25% of the ear), send in a sample for identification. If mold is of the Aspergillus, Fusarium or Gibberella strains, a mycotoxin test should be completed.

## Storage Tips for Moldy Corn

- Screen grain prior to storage to remove fines and cracked kernels, which spoil much faster than whole, sound kernels.
- Begin the cool-down process as soon as grain goes into storage. “Core” the bin after filling, as cracked kernels and fines accumulate in the center. Removing this center core improves the storability of the rest of the bin. Use a grain distributor if possible when filling the bin.
- Low test weight corn should not be put in temporary storages or outdoor piles. Do not mix corn of different crop years in the same bin, as their storage properties will be different.
- Be selective about which corn and bins are going to be kept into the summer vs. moved at harvest or during the winter. For long-term storage, choose your best, highest test weight grain, ideally harvested at moisture levels in the low 20s. Grain should have minimal trash, and the storage structure should have good aeration rates and airflow distribution.

## Monitoring and Marketing Moldy Corn

**Monitoring** – Evaluate moldy grain in the bin on a weekly basis until sold. Monitor grain temperature, and aerate if temperature rises. If a hot spot persists, move the corn as soon as possible.

Check the air quality in the bin to make sure there is no condensation, that the air is fresh and cool and that the static pressure gauge has stayed at the same reading as the previous week. (To do this, access the bin by the manhole at the top and have another person at the lower level run the fan for 3-5 minutes.)

**Marketing** – Contact prospective buyers to determine how they would like to evaluate the marketability of the grain. Expect end users, such as ethanol plants, to increase their level of grading because mold and weather damage reduce processing yields and byproduct quality. Since mycotoxins will be three-fold more concentrated in distiller’s grains, most plants will screen for and reject mycotoxin-infected corn grain.

The variety of damage types this year will be very challenging to evaluate. An Official USDA grade is the standard against which buyer analysis should be compared. It is important that company graders (grain buyers) have been trained to match USDA graders. Alternatively, samples can be submitted to USDA grading agencies, but this process is slower and more costly. In the event of a dispute, use an official grader. You can locate the official agency in your area from the USDA list of official inspection and/or weighing services, online at: <http://www.gipsa.usda.gov/GIPSA/webapp?area=home&subject=fc&topic=fsp>

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