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Check for ear rot diseases

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Check for ear rot diseases

Abstract

This year does not appear to be a particularly bad year for ear rots, but there are a few unusual occurrences. First, there seems to be more corn earworm damage than usual this year. This can lead to increased Fusarium ear rot. Second, I have noticed that Diplodia ear rot is more prevalent than usual. Neither of these observations constitutes a major outbreak, but it might be worthwhile to look for these problems. Also, if cold, wet weather persists, be on the lookout for Gibberella ear rot. Corn that has been frosted can be very susceptible to Gibberella ear rot if it remains in the field for a long time.

Keywords

Plant Pathology

Disciplines

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INTEGRATED CROP MANAGEMENT

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This year does not appear to be a particularly bad year for ear rots, but there are a few unusual occurrences. First, there seems to be more corn earworm damage than usual this year. This can lead to increased Fusarium ear rot. Second, I have noticed that Diplodia ear rot is more prevalent than usual. Neither of these observations constitutes a major outbreak, but it might be worthwhile to look for these problems. Also, if cold, wet weather persists, be on the lookout for Gibberella ear rot. Corn that has been frosted can be very susceptible to Gibberella ear rot if it remains in the field for a long time. This is particularly true if a frost comes before maturity. Fortunately, most of our corn this year reached maturity before the frost.

Ear rot diseases can reduce yield and quality of the corn harvest and some of these fungi can produce mycotoxins that are harmful to livestock, so it can pay to be aware of their occurrence in your fields or grain. To check for ear rots, strip back the husks on at least 100 plants scattered throughout the field. Scout fields separately according to hybrid, tillage and rotation history, and planting date. It is important to be able to recognize the ear rot diseases because their potential impact is very dependent on the particular fungus involved. Once the corn is harvested, it can be more difficult to recognize the symptoms, but if there is a major problem, it will be evident in the grain.

When evaluating an ear rot problem, remember that certain ear rots are a warning sign to suspect toxins, but ear rots do not always lead to toxin problems. Even those fungi that can produce toxins do not always do so. Proper handling reduces the risk of toxin development in infected kernels. However, significant toxin concentrations can sometimes occur in grain that was not visibly moldy.

When potentially toxigenic ear rots are noticed in the field, grain can be managed so as to minimize toxin development. There is no real threshold for these diseases because toxin levels cannot be estimated from mold levels. If more than about 10 percent of ears have a significant amount of mold (25 percent of the ear or more), these fields should be harvested and the corn dried as soon as possible. The combine will remove some of the moldiest kernels.

The best option for moldy grain is to feed it or sell it instead of storing it. However, it should be tested for toxins before feeding. If toxins are present, it is possible that it can be fed to a less sensitive livestock species, such as cattle. This will depend on the specific toxin and its concentration. A veterinarian or extension specialist can help with these decisions. If the grain is sold, there may be a reduced price due to mold damage.

Testing for mycotoxins can be done before putting the grain in storage. The best sampling

method is to take a composite sample of at least 10 lb from a moving grain stream, or to take multiple probes in a grain cart or truck for a composite 10-lb sample. If toxins are already present, storage is not a good option. Corn that is moldy going into storage will definitely not store well. Toxins can only stay the same or increase. Cleaning the grain will remove fine particles that are usually the moldiest and most susceptible to further mold development. Good storage conditions (proper temperature and moisture content, aeration, insect control, clean bins, etc.) and regular inspection are essential in preventing mold and toxin development in any stored corn.

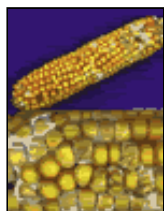
Aspergillus



[1] **Aspergillus ear rot and storage mold.**

Aspergillus flavus and *A. parasiticus* can produce aflatoxins. They are generally known as storage fungi, but they also can cause ear rots in the field. *Aspergillus* is a gray-green, powdery mold. In Iowa, *Aspergillus* is much more common in hot, dry years. It can grow at temperatures higher than 90°F, and at grain moisture content as low as 15 percent. The fungus can be detected in corn because it produces compounds that are fluorescent under black light, but this does not directly detect the presence of aflatoxins.

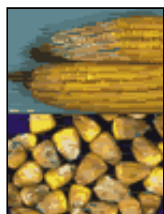
Fusarium



[2] **Fusarium ear rot.**

Fusarium ear rot is the most common fungal disease on corn ears. It is caused by several species of *Fusarium*. Symptoms of Fusarium ear rots are a white to pink or salmon-colored mold, beginning anywhere on the ear or scattered throughout. Often the decay begins with insect-damaged kernels. Usually, it does not involve the whole ear. Infected kernels are often tan or brown, or have white streaks. These fungi can produce mycotoxins known as fumonisins.

Gibberella



[3] **Giberrela ear rot.**

The fungus *Gibberella zeae*, also known as *Fusarium graminearum*, cause this ear rot. It can be identified most readily by the red or pink color of the mold. In some cases, the color

appears white. It usually begins at the tip of the ear. Gibberella will sometimes rot the entire ear. Gibberella ear rot infections occur more commonly when the weather is cool and wet after silking and through late summer. Gibberella can produce vomitoxin and zearalenone.

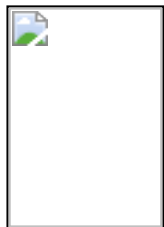
Diplodia



[4] **Diplodia ear rot.**

This fungus initially appears as a white mold beginning at the base of the ear. The mold and the kernels then turn a grayish brown and rot the entire ear. A very distinguishing characteristic of Diplodia ear rot is the appearance of raised black bumps (pycnidia) on the moldy husk or kernels. Diplodia ear rot occurs most often in fields under reduced tillage where corn follows corn.

Cladosporium



[5] **Cladosporium ear rot.**

Cladosporium herbarum and other species often infect kernels damaged by insects, hail, or frost. This fungus appears gray to black or very dark green, and can have a powdery appearance. It also causes black streaks in the kernels. This disease can be fairly common but usually does not cause extensive damage to the ears.

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[2] <http://www.ipm.iastate.edu/ipm/icm//ifusarium.html>

[3] <http://www.ipm.iastate.edu/ipm/icm//igibearrot.html>

[4] <http://www.ipm.iastate.edu/ipm/icm//idiplodia.html>

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