Wyffels
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TECHNICAL BULLETIN – EAR ROT 2006

EAR ROT IN THE 2006 CORN CROP

Introduction

Several incidences of ear rot have been noticed across Illinois and Iowa this year. In most cases, these fields were grown to corn the previous year. It is not surprising that ear rots are developing this year, given the late summer rains and high amount of stalk rots. Growers should be alerted to the possibility of ear rots and how they can identify and better manage the problem if it exists.

How do I determine the incidence of ear rot in my fields?
Scouting is necessary to determine if your corn crop has an ear rot problem. This can be achieved by stripping back the husks on at least 100 plants scattered throughout each field. If more than 10 percent of the ears have mold that covers over 25 percent of the ear, the corn should be harvested in a timely manner and dried to below 15% moisture as quickly as possible to prevent further mold growth and, in some cases, prevent mycotoxin accumulation. *(See Corn Ear Rots, Alison Robertson.)*

Always send a sample of corn infested with ear rot to a laboratory to test for the presence of mycotoxins before feeding to livestock. It is better to be safe than sorry.

Many of the fungi that cause ear rots are also capable of causing stalk rots. Therefore, fields with the ear rots should be checked for the incidence of stalk rots. Conversely, fields that have significant stalk rot or stalk lodging also tend to have more ear rot, so should be scouted for ear rots.

What can I do at harvest if I have ear rot?
Farmers should consider harvesting early and artificially drying the grain when ear rot is present. Making adjustments to combines to minimize the amount of infected corn carried into the hopper is also recommended, as well as adjusting concave clearances and speeds to minimize the break up of cobs and kernels. While harvesting a heavily infected field, farmers may also want to take a sample to the elevator for grading before delivering an entire truckload. Corn from heavily infected fields should be kept separate from good quality corn during transporting, receiving, wet holding, drying and storage. *(See Corn Ear Rots in Indiana, Charles Woloshuk.)*

What should I do with moldy grain?
Infected kernels will easily break during handling, causing an increase in the amount of fine material in a storage bin. These fines will decrease airflow during aeration, which will increase the potential for spoilage. Pre-cleaning, especially after drying and before delivery and/or storage, is highly recommended to remove the lighter weight damaged kernels, cob pieces, fines and foreign material. This will help minimize discounts and improve storability of the corn.

If grain tests positive for the presence of mycotoxins, the grain should not be stored. If grain is moldy but not positive for mycotoxins, it is still best not to store. However, if storage is necessary, use the following recommendations to avoid further losses.

Proper storage of infected corn is crucial.
Start with a clean bin. Drying the grain to 15% moisture will stop further growth of the fungus. However, the disease has broken the integrity of the infected kernels. Thus, storage fungi such as Aspergillus which can grow at 14% to 15 % moisture will easily invade the kernels and cause further spoilage damage and potential mycotoxin development.

Ear rot, continued

If ear rot is significant, the grain should be dried to below 14% and cooled to below 50°F as quickly after harvest as possible, and then to 30°F for winter storage. Inspect the grain regularly. Storage time should be limited to the cold weather season—carrying infected corn into next summer should be avoided. *(See Corn Ear Rots in Indiana, Charles Woloshuk.)*

If you are handling moldy corn, it is very important to take precautionary measures to prevent mold spores from entering your respiratory system. Proper personal protective equipment should be used. For instance, certain types of aflatoxin are not only toxic to livestock, but are also labeled as a potential carcinogen to humans.

What can I do to prevent a recurrence of ear rots next year?

- ➔ Take steps to reduce the amount of corn residue from fields that were a problem this year.
- ➔ A healthy hybrid can fend off ear and stalk rots better than weaker or stressed hybrids. Hybrids with good staygreen scores and leaf disease resistance ratings keep their health later in the season.
- ➔ Insect damaged plants are more prone to ear rot development. Plant Herculex I or YieldGard Corn Borer hybrids to minimize insect damage.
- ➔ Practice balanced soil fertility based on the results of a soil test.
- ➔ If possible, irrigate during extended droughts.

Gibberella

Fusarium

Diplodia

COMMON EAR ROTS

Gibberella ear rot is caused by the fungus *Gibberella zeae,* also known as *Fusarium graminearum*. It usually begins at the tip of the ear and appears red or pink, or occasionally white. Gibberella sometimes rots the entire ear. Infections occur more commonly through late summer. Gibberella can produce vomitoxin and zearalenone.

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 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. *(See Ear Rots and Mold Problems, Gary Munkvold.)*

Diplodia ear rot is caused by the fungus *Diplodia maydis*, and is enhanced by dry weather prior to silking followed by wet conditions at, and just after, silking. This type of weather pattern was very evident across the Midwest this year. Ears are most susceptible to this disease during the first 21 days after silking.

When infection occurs within two weeks after silking, husks prematurely become bleached or straw colored, and entire ears are white to grayish or grayish brown, shrunken, and lightweight. Lightweight ears generally stand upright with the inner husks adhering tightly to each other. Black specks (pycnidia) may be scattered on the husks, cobs, and sides of kernels.

Ear rot, continued

Ears infected later in the growing season generally have a somewhat uniform whitish to grayish mold growth over and between the kernels starting at the base of the ear and progressing towards the tip. Infected kernel tips are discolored. Some isolates of the causal fungus may cause premature germination.

Hybrids differ greatly in their susceptibility to Diplodia ear rot. Diplodia ear rot is more severe where no-till corn follows corn. The disease has also been observed with reduced-till corn following corn, but generally is not as severe as with no-till corn.

The only good news is that there are no known mycotoxins produced by the *Diplodia* fungus in the United States. *(See Corn: Diplodia Ear Rot, Don Scott.)*

Aspergillus flavus can produce aflatoxins. It is an olive-green, powdery mold. In Illinois and Iowa, it is much more common in hot dry years. The fungus can be detected in corn because it produces compounds that are fluorescent under black light, but this method does not directly detect the presence of aflatoxins.

Penicillium rot is a blue-green to gray-green powdery mold that grows over and between kernels. Penicillium can also infect the embryo, turning it blue. Penicillium favors moist conditions and produces penicillic acid, which rarely reaches toxic levels.

Cladosporium fungi often infect kernels damaged by insects, hail, or frost. Cladosporium appears gray to black or very dark green and can have a powdery appearance.

Aspergillus flavus


Penicillium rot


Cladosporium

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