Ear Rots of Corn

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Ear rot reduces yield, quality, and feeding value of corn. Several kinds of ear rot occur each year, but just how prevalent and severe they become depends on weather conditions favorable for the disease organisms. Losses are greatest in years of above-normal rainfall during August, September, and October. Ear rot losses increase through damage by corn earworms and when lodging of stalks cause ears to touch the ground.

"DIPLODIA" EAR ROT

In South Dakota, Diplodia ear rot 1 or dry rot, occurs frequently. The same fungus is commonly associated with stalk rot and may cause a seedling blight.

Symptoms may appear as early as mid-August, especially during a wet growing season. Wet weather from silking to maturity is ideal for infection. Husks of early-infected ears look bleached instead of green. Infection that occurs within 2 weeks after silking may cause the entire ear to become grayish-brown, shriveled, very lightweight, and completely rotted (figure 1). Such ears remain upright with inner husks stuck tightly together and to the ear. Later-infected ears usually show no external signs of disease. However, when husks are opened, a white mold can be seen growing between kernels. Part or all of the ear may be rotted. In still later infections the white mold between rows of kernels may or may not be visible. Ears sometimes appear healthy until after shelling; then brown germs and dead kernels become evident. Infection usually begins at the base of the ear and progresses toward the tip.

On badly infected ears numerous round spore-containing bodies appear as black, raised dots on the husks and sides of the kernels (figure 1). The microscopic-sized spores may be carried considerable distances by wind to initiate new infections. These spore-producing bodies on unharvested ears and other corn debris serve to carry the fungus over from season to season.

Rotted ears have both reduced nutritional value and reduced palatability to hogs.

All corn is somewhat susceptible to this disease; no inbred lines are completely resistant. But most commercial hybrid companies avoid using highly susceptible inbreds. Otherwise, no specific control has been developed.

"GIBBERELLA" EAR ROT

Gibberella 2 ear rot, or red ear rot, is common in South Dakota some years. This fungus is more important as a cause of stalk rot. It also causes scab in barley, wheat, oats, and other grains.

The disease is identified by a brick-red mold, which usually enters the tip (figure 2) and progresses toward the shank of the ear. All infected kernels have a reddish cast. Husks are reddish-pink and are held together by mold growing between them. Early-infected ears may rot completely.

Corn infected with Gibberella ear rot is particularly toxic to hogs—causing vomiting, dizziness, loss in weight, or even death in severe cases. Hogs refuse corn on the ear when about 5% of the kernels are

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1 Caused by the fungus Diplodia zeae
2 Caused by the fungus Gibberella zeae.
infected. Hogs will seldom eat diseased ears unless underfed. When such corn is ground, hogs have no choice except to eat the contaminated corn and consequently may fail to gain properly or go off-feed and become ill.

"FUSARIUM" EAR ROT

Fusarium ear rot, sometimes called pink kernel rot, is found every year but generally is not as destructive as Diplodia or Gibberella ear rots. The difference is due to more scattered kernel infection rather than a complete rotting of the ear.

First symptom is a pink discoloration on caps of individual kernels or groups of kernels. Infection usually follows some form of injury. Damage by bird feeding at the tip may allow infection to get started in the ear. Rot often develops in kernels damaged by growth cracks, other seed coat injuries, or following damage by corn borers or ear worms. As the disease progresses, infected kernels show a powdery pink mold growth composed of large numbers of microscopic-sized spores (figure 3). The fungus is commonly found in stalks and seed that appear normal.

To control this ear rot, avoid hybrids with poor husk coverage at tips and those showing tendencies toward popped or cracked kernels or silk cut.

"NIGROSPORA" EAR ROT

Nigrospora ear rot, or cob rot, may develop in corn when normal plant growth is checked by frost, stalk or root rot, leaf blights, root injury, or poor soil. Affected ears are lightweight. Kernels are somewhat bleached, chaffy and can be easily pressed into the cob. Shanks of infected ears appear shredded, often the full length of the cob. When the ear is broken, the cob is found to have a dry rot with small black specks (spores) scattered throughout the shredded pith. Tips of kernels also show these black spore masses. In mildly infected ears the tip or butt of cob and chaff will be brown instead of the normal red.

As with other ear and stalk rot diseases, this fungus overwinters in seed or on plant refuse in the field. Infected kernels planted in cold, wet soil (which is unfavorable to rapid germination) may give poor stands.

Present control for Nigrospora ear rot is use of leaf blight and stalk-rot resistant hybrids.

OTHER EAR ROTS

Several other ear and kernel rots of corn occur in South Dakota but are of minor importance.

"PENICILLIUM" EAR ROT (Penicillium species) appears as bluish-green mold on kernels.

"ASPERGILLUS" EAR ROT (Aspergillus species) appears as sooty-black or greenish-yellow mold on and between kernels (figure 4). This rot is usually important after harvest. It may cause serious losses to stored or shelled corn.

"HORMODENDRUM" KERNEL ROT (Hormodendrum cladosporioides) appears as a greenish-black, felt-like mold on caps of kernels.

These rots generally appear when fall weather conditions delay drying of ears in the field.

SUMMARY OF CONTROL MEASURES

Grow adapted hybrids and varieties resistant to ear rots. No inbred line, hybrid, or variety is completely resistant to all ear-rotting fungi; but corn breeders usually discard the most susceptible inbreds and do not use them in hybrid combinations.

Grow adapted hybrids resistant to stalk rot and northern corn leaf blight.

Practice balanced soil fertility based on results of a soil test.

Control corn earworms and corn borers by timely
insecticide sprays as recommended by South Dakota State College entomologists.

Ears that mature in a reclining position and are well covered by husks have less rot than ears that mature upright with open husks.

Discard Gibberella-infected ears. Feeding them to certain farm animals, especially hogs, may have toxic effects or cause death.

For information on other diseases of corn, see separate South Dakota State College Cooperative Extension Service Fact Sheets on stalk rot, northern corn leaf blight, smut, and seed treatment.

For complete information on corn production, obtain separate Fact Sheets on planting corn, fertilizing corn, weed control, control of rootworm and corn borer.

Figure 4. Aspergillus ear rot. Fluffy, sooty-black mold on and between kernels. Common as a storage mold. (Photo courtesy Iowa Extension Service.)