

Diplodia Ear Rot

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Diplodia ear rot has become a common disease in Indiana corn. The increase in no-till or reduced-till fields and the repeated planting of corn without rotation increase the likelihood that the disease, caused by the fungus, *Stenocarpella maydis*, will be present in the field. Hybrid genetics and weather are also major factors that contribute to disease development. The purpose of this bulletin is to describe 1) how to recognize the disease, 2) the conditions that favor disease development, 3) steps that can be taken to prevent the disease, and 4) how to handle diseased grain after harvest.



Figure 1. Ear infected with Diplodia ear rot. The white to gray mold on the kernels is characteristic of the disease.



Figure 2. Ear showing Diplodia ear rot progressing from the base of the ear.

Symptoms: If you walk through the cornfield prior to harvest and pull back the husks on ears, Diplodia ear rot is easily recognized. The most severely affected ears will be completely rotted, with visible mold that is grayish or grayish brown on and between the kernels (Figure 1). The ear will also be noticeably lightweight. In less severe infection the mold will appear white to grayish, visible on and between the kernels, but only affecting part of the ear. The disease typically starts at the base of the ear progressing toward the tip (Figure 2). Infected kernel tips are discolored. On occasion, we have observed disease symptoms at only the tip-end or middle part of the ear. Another diagnostic feature of Diplodia ear rot is the presence of spore producing structures called pycnidia. Pycnidia appear as black specks that may be scattered on the husks, cobs, and sides of kernels (Figure 3).



Figure 3. Spore-producing pycnidia present on infected ears.

Disease Cycle: The pycnidia-covered corn debris that remains on the soil surface will overwinter and provide a source of infection for the following year. Infection by *Diplodia* is enhanced by dry weather prior to silking, followed by wet conditions at and just after silking. Ears are most susceptible to this disease during the first 21 days after silking. Earworm damage at the ear shank is often associated with the disease (Figure 4).

Economic Losses: *Diplodia* infected corn will result in potentially significant discounts when graded at the first point of sale. The light kernels will lower the test weight of a sample. Corn kernels in a sample that show damage caused by cob rot, mold infection, and surface mold are hand picked out of the sampling screen and graded as part of Total Damaged Kernels



Figure 4. Earworm entry at base of ear.

(Figure 5). *Diplodia* infected corn also results in more cobs and kernels being ground up during the combine shelling operation, which results in higher levels of broken corn and foreign material (BCFM).

Diplodia kernels will easily break during post-harvest 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 to minimize discounts and improve storability of the corn.

Storage: Proper storage of *Diplodia* infected corn is crucial. Drying the grain to 15% moisture will stop further growth of the fungus. However, other fungi, which can grow at 14 to 15% moisture will find it easy to invade the kernels damaged by *Diplodia* and cause further spoilage, damage, and self-heating. If *Diplodia* ear rot is significant, the grain should be dried to below 14% and cooled to below 50°F as quickly after harvest as possible. Infected grain should be stored at 30°F. Storage time should be limited to the cold weather season

and no Diplodia infected corn should be held into the following summer.



Figure 5. Diplodia infected grain (top) compared with healthy grain (bottom).

Management: To prevent a reoccurrence of Diplodia ear rot, avoiding reduced-tilled corn following corn is advised. Rotation out of corn will allow corn residue to degrade, reducing the presence of the pathogen. Corn hybrids vary in susceptibility to Diplodia ear rot. In areas where the disease is problematic, a resistant variety should be considered.