Agronomic Alert

Diplodia Stalk and Ear Rot in Corn

- Diplodia stalk and ear rot is caused by the fungus *Stenocarpella maydis*, which infects the stalk and ears after silking.
- Proper disease identification can help to evaluate management options for next year in an effort to reduce potential yield loss.
- Certain strategies can help manage both Diplodia stalk rot and ear rot: tillage, crop rotation, stress reduction, planting proper populations, rotation of corn genetics in continuous corn, and maintaining balanced soil fertility.

Diplodia Stalk Rot

Favorable Conditions. In general, stalk rot development is favored by late season stresses such as an excess of or lack of moisture, nutrient deficiency or imbalance, excessively cloudy weather, insects, foliar diseases, wind, hail, or other invasive injury to the leaves, stalks, or roots. Dry weather before silking followed by wet weather at and after silking tends to favor Diplodia infection of ears. Diplodia overwinters on corn debris, therefore corn-on-corn fields managed with reduced tillage have an increased potential for Diplodia stalk and ear rot.

Symptoms. Symptoms of Diplodia stalk rot are a straw-brown discoloration of the lower nodes and internal disintegration of the pith, leaving only vascular tissues intact (Figure 1). After plants turn brown, embedded small black dots, called pycnidia, appear around the lower nodes of the infected stalks (Figure 2).

Losses. Diplodia stalk rot may reduce yield potential by more than just loss of harvestable ears due to stalk lodging. As plants die from infection, the normal grain filling process stops. This can result in a reduction in kernel size and grain weight. Grain quality can also be affected by ear rots as the ears on lodged plants come in contact with the soil and crop residue.

Figure 1. Upper: Diplodia ear rot infection. Lower: Diplodia rot infects the pith

Scouting and Stalk Quality. Scouting for stalk rots is recommended as corn reaches the dough through dent stage. Evaluation of stalk quality helps to identify where stalk rots are occurring on your farm and can assist in making decisions on which fields to harvest first. Scouting also aids in planning for product selection and crop rotation for the next year. Fields with heavy infestations of leaf diseases should be watched closely for stalk rots.

Figure 2. Embedded black dots (pycnidia) around the lower nodes of corn stalk.

The pinch and push tests are two methods used to evaluate stalk quality. Conduct either test on 10 plants in a row at several locations throughout the field. The pinch test is conducted by bending down and pinching the lower internodes between your thumb and finger to see if the stalk collapses. The push test is conducted by pushing each stalk to see if it breaks. If stalk quality has been compromised in more than 10% of stalks, then the field should be slated for early harvest.[1]

Diplodia Ear Rot

Favorable Conditions. Wet weather within the first 21 days after silking favors the development of Diplodia ear rot.[3] Greatest losses may occur when rainfall is above average from silking to harvest, or when insects or birds damage the ear during development.

Corn products vary in their level of susceptibility to Diplodia ear rot; however, any product can be infected under favorable conditions.

Symptoms. Ears infected with Diplodia ear rot may first be noticed by the bleached appearance of the husk. Infected ears develop a white to gray mold that grows between the kernels beginning at the base of the ear and developing toward the tip (Figure 3). Diplodia continues to develop on infected ears until corn is harvested and dried. If left in the field – particularly when weather is rainy and humid, ears with light mycelia growth of Diplodia at the base of the ear may progress into ears that are mummified by the fungus.

Diplodia Stalk and Ear Rot in Corn

Pycnidia, similar to those seen with the stalk rot, can also be found on the husks, cobs, and kernels.

Ears infected with Diplodia are lightweight and subject to breakage and losses during harvest. Infected kernels will be lightweight and have reduced nutritional value. Unlike some ear rots, Diplodia is not known to produce a toxin harmful to livestock, but will result in lower quality feed.

Figure 3. Progression of Diplodia ear rot.

Management

The fungus that causes Diplodia ear and stalk rot only infects corn and survives only on debris. Therefore, scouting fields with a history of Diplodia stalk and/or ear rot can alert you to problems in future crops, even if management practices have been employed in the past. Certain strategies can help manage both Diplodia stalk rot and ear rot, such as:

- Perform tillage to bury infected residue.
- Rotate crops to help reduce the inoculum load.
- Reduce moisture, nutrient, and disease stresses during the growing season.
- Plant proper populations to decrease plant stress.
- Rotate corn genetics in continuous corn.
- Maintain balanced soil fertility.

Other strategies target the ear rot or stalk rot stages specifically. Consider the following management options to help maintain good stalk health and help reduce the incidence and severity of Diplodia stalk rot:

- Select products that are more tolerant to stalk rots and have good standability.
- Plant corn products with insect protection traits such as Genuity® SmartStax®, Genuity® VT Double PRO®, or Genuity® VT Triple PRO®.
- Apply fungicides when foliar diseases are present at high levels to help minimize stalk cannibalization during grain fill.

The following management strategies may help reduce the amount of Diplodia ear rot infection:

- Select products with better tolerance to Diplodia ear rot.
- Plant products with different relative maturities and/or different GDU requirements to flowering so that corn does not all flower during peak environmental conditions for Diplodia ear rot infection.
- Limit damage from ear feeding insects and birds that may compromise husk coverage after pollination.

Grain Drying

Proper drying and storage of grain are important when Diplodia ear rot is present. Consider the following management practices for harvesting and storing grain from fields with established ear rot:

- Harvest early to prevent ear rot if weather conditions have been favorable or if stalk lodging is a concern.
- Allow corn to dry in the field to 23 to 25% moisture and dry corn to 13 to 14% moisture prior to storage.[2]
- Store grain at cool temperatures between 36° and 44° F after drying.
- Limit storage to cold weather and do not store through the next summer.
- Check grain periodically for temperature, wet spots, and insects.
- Clean the bins thoroughly before storing.

Sources: [1] Bissonnette, S. 2000. Diplodia ear and stalk rot. The Bulletin. University of Illinois. http://bulletin.ipm.illinois.edu (verified 8/6/2014); [2] Lipps, P. et al. 2004. Corn disease management in Ohio. The Ohio State University Extension. Bulletin 802. http://ohioline.osu.edu (verified 8/6/2014); [3] Woloshuk, C. and K. Wise. 2009. Diseases of corn: Diplodia ear rot. Purdue University Botany and Plant Pathology. BP-75-W. http://www.extension.purdue.edu (verified 8/6/14). Additional sources: Malvick, D. 2001. Diplodia ear rot of corn. The Bulletin. University of Illinois. http://bulletin.ipm.illinois.edu (verified 8/6/2014); Robertson, A. 2004. Corn ear rots. Integrated Crop Management. Iowa State University. http://www.ipm.iastate.edu,

---

For additional agronomic information, please contact your local seed representative.
Developed in partnership with Technology, Development & Agronomy by Monsanto.