



Management of Diplodia Stalk and Ear Rots in Corn

Key Points

- Diplodia stalk and ear rot is caused by the fungus *Stenocarpella maydis* and are most severe when corn follows corn and wet weather occurs after silking.
- Proper identification of the disease can help to evaluate management options for future growing seasons in an effort to reduce potential yield losses.

Diplodia Ear Rot

Diplodia ear rot is most severe when corn follows corn and wet weather occurs within the first couple weeks after silking. Corn products vary in their level of susceptibility to Diplodia ear rot. However, because the severity of the disease pressure varies from year to year, any product can be infected under extremely favorable conditions.

Husk leaves of ears infected with Diplodia ear rot may first appear prematurely bleached or straw colored and stand out against the green foliage of the rest of the plant. When pulling the husks back, the ear will have a whitish mold forming between kernel rows, usually starting at the base of the ear and progressing toward the tip (Figure 1). Black specks (fungal fruiting body known as pycnidia) can also be found on the husks, cobs, and kernels. With severe infection, the entire ear turns gray to brown and completely rots; a symptom known as “mummification.”

Ears infected with Diplodia are lightweight and subject to breakage and losses during harvest. Unlike some ear rots,

Diplodia is not known to produce mycotoxins, but will result in feed with lower nutritional value.



Figure 1. Progression of Diplodia ear rot.

Diplodia Stalk Rot

Diplodia stalk rot is favored by warm, wet weather after pollination, stress from other diseases or insect injury, and corn-on-corn fields managed with reduced tillage.

Diplodia stalk rot symptoms are generally not noticed until several weeks after silking. Plants may begin to die prematurely when they take on a grayish green cast similar to frost injury. Lower stalk internodes become brown to straw colored, spongy, dry, and easily crushable (Figure 3). Pith tissues disintegrate, leaving vascular strands intact, giving the lower stalk a stringy appearance. Tiny, dark fungal structures (pycnidia) form just under the stalk surface that cannot be scraped off the rind surface (Figure 2).

Diplodia stalk rot may reduce yield potential. As unharvested, lodged 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.

When corn reaches the dough and denting stage, scouting for stalk rots is recommended. 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.

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



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

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Management

The fungus that causes Diplodia stalk and ear 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. Proactive strategies can help manage both Diplodia stalk rot and ear rot, including:

- 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 stalk and ear 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:

- Plant products with insect protection traits to help minimize damage from stalk boring insects and protect ears from ear feeding insects that may compromise husk coverage.
- Select products that are more tolerant to stalk rots and have good standability.
- 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.

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.



Figure 3. Upper: Diplodia ear rot infection. Lower: Diplodia rot infects the pith tissue of corn stalks.

Sources

¹ Bissonnette, S. 2000. Diplodia ear and stalk rot. The Bulletin. University of Illinois. <http://bulletin.ipm.illinois.edu/>. ² Lipps, P., Dorrance, A., and Mills, D. 2004. Corn disease management in Ohio. The Ohio State University Extension. Bulletin 802. <http://ohioline.osu.edu/>. Other sources: Diplodia stalk rot. Field crop diseases. University of Illinois. <http://cropdisease.cropsci.illinois.edu/corn/Diplodiastalkrot.html>. Grabow, B. Diplodia stalk and ear rot. Kansas State University Department of Plant Pathology. <http://www.plantpath.k-state.edu/>. Web sources verified 8/1/16. 130816014103

For additional agronomic information, please contact your local seed representative.

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible.

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