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Towards a Successful Harvest: Stalk Rots and Standability Issues

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Towards a Successful Harvest: Stalk Rots and Standability Issues

Abstract

It's hard to believe the 2010 growing season is almost over. Most of the corn across the state is nearing or at black-layer, which means it is time to scout fields for stalk rots in an effort to evaluate standability and plan a successful harvest. Stalk rots are likely to be an issue this growing season. We have seen significant blighting of the leaves in the upper canopy predominantly from Goss's wilt, northern corn leaf blight, gray leaf spot and anthracnose top dieback. When significant leaf blight occurs in the upper canopy, the risk of stalk rots increases. Furthermore, overcast conditions, such as we had throughout most of the grain filling period, favor stalk rot development. Since stalk rots reduce standability, fields in which greater than ten percent of plants are affected by stalk rots, should be scheduled for an early harvest.

Keywords

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Towards a Successful Harvest: Stalk Rots and Standability Issues

By Alison Robertson, Department of Plant Pathology

It's hard to believe the 2010 growing season is almost over. Most of the corn across the state is nearing or at black-layer, which means it is time to scout fields for stalk rots in an effort to evaluate standability and plan a successful harvest.

Stalk rots are likely to be an issue this growing season. We have seen significant blighting of the leaves in the upper canopy predominantly from Goss's wilt, northern corn leaf blight, gray leaf spot and anthracnose top dieback. When significant leaf blight occurs in the upper canopy, the risk of stalk rots increases. Furthermore, overcast conditions, such as we had throughout most of the grain filling period, favor stalk rot development. Since stalk rots reduce standability, fields in which greater than ten percent of plants are affected by stalk rots, should be scheduled for an early harvest.

In Iowa this year, we have had reports of bacterial, anthracnose, Fusarium and Diplodia stalk rots. Incidence (percent infected plants) ranges from field to field and is likely a function of genetics. It's a good idea to identify what stalk rot is predominant in the field to help with hybrid selection in subsequent years.

While all stalk rots result in rotting and shredding of the pith tissue, they each have their own identifying characteristics.

Bacterial stalk rot

This stalk rot rarely occurs in Iowa, however this year we have had several reports of the disease from across the state. Bacterial stalk rot is favored by high temperatures, high relative humidity and heavy rainfall or irrigation. The most characteristic symptom of this stalk rot is the foul odor when you split the stalk.

Anthracnose stalk rot

Dark streaks on the outside of the stem are characteristic of this stalk rot (Fig. 1, below).

Fusarium stalk rot

No discoloration occurs on the outside of the stalk, but the nodes may appear white due to growth of the fungus on the outside of the stalk. A pink discoloration (Fig. 2, below) may be seen in the pith of infected plants when the stalks are split open. Sometimes Fusarium stalk rot may be confused with Gibberella stalk rot (because of the pink pith tissue) or with Diplodia stalk rot, however no black specks can be found on the outside of the stalk tissue.

Diplodia stalk rot

The identifying characteristic of Diplodia stalk rot are tiny black specks (pycnidia) buried in the outer rind of the stalk at the lower nodes (Fig. 3, below). Diplodia may be mistaken for Gibberella stalk rot because of the black specks; however, the black specks associated with Gibberella stalk rot can be easily scraped off with a thumb nail. Furthermore, the pith tissues of

Gibberella stalk rot are often discolored pink to red.

Scouting Tips

- Target fields that have had significant foliar disease.
- Target hybrids with low stalk rot and/or standability scores.
- Evaluate at least 100 plants per field (20 plants in 5 locations).
- Use the “push test” or the “pinch test” to determine standability. If 10 to 15 percent of plants lodge or are rotted, schedule an early harvest.



Figure 1. Black blotches and streaks on the outside of the corn stalk are diagnostic for anthracnose stalk rot.



Figure 2. Light pink discoloration of the pith tissues may be evident with Fusarium stalk rot.



Figure 3. Pycnidia (tiny black fruiting bodies) buried in the rind at the lower internodes are diagnostic for Diplodia stalk rot.

Alison Robertson is an assistant professor of plant pathology with research and extension responsibilities in field crop diseases. Robertson may be reached at (515) 294-6708 or by email at alisonr@iastate.edu.

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