



Agronomic Spotlight

Causes of Top Dieback in Corn

Top dieback can result from different stresses in corn, including drought, insect, and disease. The yield effect of top dieback is dependent on how early in the grain filling period senescence occurs. Once symptoms are present there are no treatment options for top dieback. Management practices can be used to reduce the occurrence of top dieback in the future.

WHAT TO CONSIDER

Corn leaves naturally senesce, or die, as plants approach physiological maturity. Top dieback refers to when leaves die earlier than normal, from the top down. Top dieback can result from drought, insect damage, or anthracnose. One way to help determine the cause of early senescence is to look at the distribution of corn plants exhibiting symptoms across a field. Environmental conditions typically affect all plants in a field or section of a field, whereas disease and insect damage tends to occur in a more random pattern.

- **Drought Stress**- Excessive heat and moisture stress can result in early senescence of the leaves. Under severe conditions the plants have a hard time maintaining leaf health, and stressed corn leaves may take on a gray-green color and wilt prior to death. Symptoms of drought can be observed in nearly all plants in drought-stressed areas of a field.
- **Insect Damage**- Tunneling insects, like European corn borer or Southwestern corn borer, can also cause top dieback. These insects can damage the upper stalk or

girdle leaf sheath attachments at the stalk nodes. Unlike symptoms of drought, top dieback that results from insect damage will be random throughout the field. The widespread adoption has greatly reduced the occurrence of top dieback due to these insects.

- **Anthracnose**- Symptoms of anthracnose top dieback include black lesions that are visible on the outer stalk tissue behind the leaf sheaths. The stalk should be closely examined, look for a rotted or discolored pith in the upper internodes. As the stalk rot progresses, water translocation to the top leaves is reduced, resulting in early senescence of the top leaves. Anthracnose can be especially damaging if it causes a shorter grain filling period due to premature black layer development. Top dieback due to anthracnose may appear as early as 1 to 3 weeks after tasseling. Anthracnose dieback usually occurs in a more random pattern across a field rather than affecting all plants within an area of a field.

YIELD IMPACT

Regardless of the cause, the overall effect on grain yield will be determined by how early in the grain-filling process the dieback occurs. Yield loss from

top dieback may result due to reduced photosynthesis in the top leaves. Yield losses are greater the earlier symptoms appear.



Figure 1. Top dieback in corn

MANAGEMENT OPTIONS

Once symptoms appear there are no treatment options; however, farmers can take preventative measures to reduce the likelihood of top dieback in future years. This

includes good agronomic practices such as a sound fertility program, as well as selecting a corn product with less susceptibility to anthracnose.

Sources

Nielsen, R. 2011. Top leaf death or “dieback” in corn. Purdue University Department of Agronomy. www.agry.purdue.edu Robertson, A. 2015. Why is all the corn dying? Is anthracnose to blame? Iowa State University Crop Knowledgebase. <http://crops.extension.iastate.edu/cropnews/> Stack, J. Anthracnose. University of Nebraska-Lincoln. <http://pdc.unl.edu> Sources verified 9/6/17 150915082626

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