



Purple Leaf Sheath of Corn

Luke Warner
Plant Pathology
Research Assistant

Kiersten Wise
Plant Pathology
Extension Specialist

Will Barlow
Plant Pathology
Scientist I

INTRODUCTION

Purple leaf sheath, also known as pollen rot or purple sheath blight, is a commonly occurring non-infectious (abiotic) disorder in Kentucky that affects the leaf sheath in corn. The symptoms of purple leaf sheath can be confused with other diseases, leading to concerns about stalk damage. This publication discusses symptoms, causes, favorable environmental conditions, and diseases with similar symptoms.

SYMPTOMS

Symptoms of purple leaf sheath include dark blotches (FIGURE 1A) or speckling (FIGURE 1B) that discolor corn leaf sheaths. This discoloration can affect all leaf sheaths on the plant but is most often observed on the ear leaf sheath and on 1 to 2 sheaths below the ear leaf. This disorder does not affect the stalk underneath the sheath or the leaf blade itself.

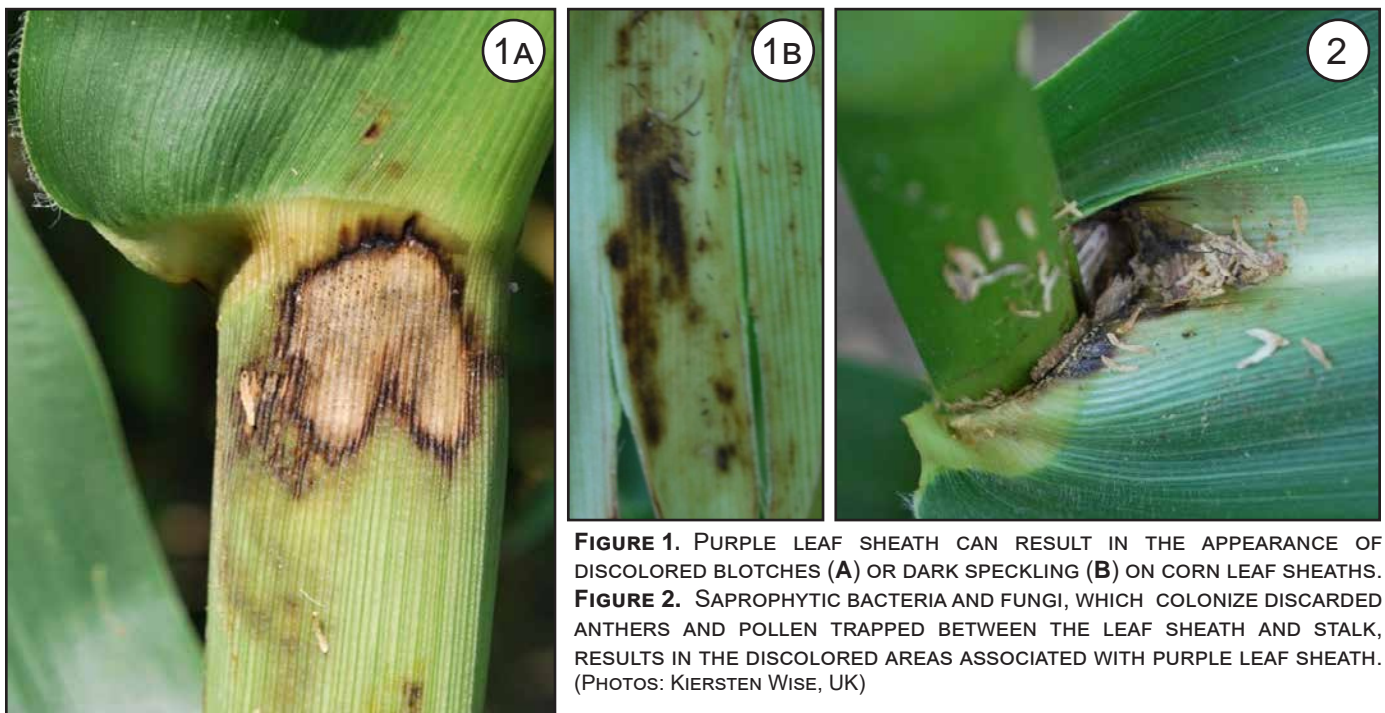


FIGURE 1. PURPLE LEAF SHEATH CAN RESULT IN THE APPEARANCE OF DISCOLORED BLOTCHES (A) OR DARK SPECKLING (B) ON CORN LEAF SHEATHS. **FIGURE 2.** SAPROPHYTIC BACTERIA AND FUNGI, WHICH COLONIZE DISCARDED ANTERS AND POLLEN TRAPPED BETWEEN THE LEAF SHEATH AND STALK, RESULTS IN THE DISCOLORED AREAS ASSOCIATED WITH PURPLE LEAF SHEATH. (PHOTOS: KIERSTEN WISE, UK)

CAUSES & DEVELOPMENT

Purple leaf sheath occurs after pollination, around blister (R2), and in fields with high humidity. This non-infectious condition is not caused by a pathogen, but rather a variety of saprophytic fungi and bacteria. These organisms colonize pollen and other matter that falls between the leaf sheath and the stalk (FIGURE 2), but do not infect the plant. As a result of this saprophytic growth, harmless blotches develop on corn sheaths. Heavy rainfall or dew, which results in higher humidity, is especially conducive to the growth of these organisms.

Purple leaf sheath can be diagnosed by removing the leaf sheath and checking the stalk underneath; the stalk will be clear of any lesions if purple leaf sheath is the cause.



FIGURE 3. UNLIKE PURPLE LEAF SHEATH, PHYSODERMA BROWN SPOT CAN AFFECT CORN LEAVES. NOTE THE DARK LESIONS ALONG THE LEAF MIDRIB AND THE CHLOROTIC (YELLOW) BANDS ON THE LEAF BLADE.

(PHOTO: KIERSTEN WISE, UK)

FIGURE 4. PHYSODERMA BROWN SPOT LESIONS APPEARING ON CORN LEAF SHEATHS CAN BE CONFUSED WITH PURPLE LEAF SHEATH.

(PHOTO: KIERSTEN WISE, UK)

FIGURE 5. DARKENED LESIONS ON CORN STALK RINDS (LEFT) DUE TO ANTHRACNOSE STALK ROT MAY BE MISTAKEN FOR PURPLE LEAF SHEATH; HOWEVER, ANTHRACNOSE ALSO RESULTS IN SHREDDED, DISCOLORED PITHS (RIGHT).

(PHOTO: ADAM SISSON, IOWA STATE UNIVERSITY, BUGWOOD.ORG)



DISEASES WITH SIMILAR SYMPTOMS

Purple leaf sheath can be confused with infectious corn diseases that share similar symptoms.

Physoderma brown spot symptoms include small, tan-to-brown circular lesions on the sheath in or near the midrib (FIGURE 3) and on the stalk (FIGURE 4). This fungal disease can also result in chlorotic banding across the leaf originating from midrib lesions (FIGURE 4). In contrast, purple leaf sheath will not affect leaf blades or the stalk underneath the sheath.

Anthracnose stalk rot is a very common stalk rot in the eastern United States. Typical symptoms include shredded, discolored piths and blackened lesions on the stalk rind (FIGURE 5). The lesions are narrow and water soaked; they turn shiny black and can form blotches or streaks on the stalk as the disease progresses. Unlike purple leaf sheath, anthracnose stalk rot lesions are present on the stalk when the sheath is removed.

MANAGEMENT

Purple leaf sheath does not pose a threat to plant health or affect yields, so no management is needed. Fungicide applications are not needed for this disorder.



ADDITIONAL RESOURCES

- Compendium of Corn Diseases. (American Phytopathological Society)
<https://apsjournals.apsnet.org/doi/book/10.1094/9780890544945>
- A Farmers Guide to Corn Diseases (American Phytopathological Society)
<https://apsjournals.apsnet.org/doi/book/10.1094/9780890545126>
- Physoderma Brown Spot of Corn (PPFS-AG-07)
<https://plantpathology.ca.uky.edu/files/ppfs-ag-c-07.pdf>

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