



## Wheat Strawbreaker

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<http://www.plantpath.ksu.edu/pages/factsheets>



Fig. 1. Lesions at base of stems. Note charcoal gray patches of fungus. (photo by Bill Willis)



Fig. 2. Stem breakage one inch above soil line Leaf sheaths removed to reveal the charcoal gray fungus near the break point.



Fig. 3. Lodging in low part of field caused by strawbreaker.



Fig. 4. Multi-directional lodging showing

Strawbreaker (also known as foot rot or eyespot) is caused by a fungus called *Pseudocercospora herpotrichoides*. Strawbreaker is common in cool, humid climates and is especially serious in the Pacific Northwest and Europe. Strawbreaker is an uncommon disease in Kansas. However, there was a severe outbreak in central and south-central Kansas in the spring of 2000. There were a few fields affected in 1999. The last big outbreaks of the disease were in 1984 and 1985. Strawbreaker causes direct yield losses due to shriveled seed on affected tillers. Losses in affected areas can exceed 50 % % % %%. In addition, it causes lodging which makes harvest much more difficult.

## SYMPTOMS

Early spring symptoms of strawbreaker are elliptical or eye-shaped lesions on the leaf sheaths near the soil line. Lesions have light brown centers and dark margins. Lesions soon penetrate the leaf sheaths and expand until they girdle the stem ( Fig Fig Fig Fig Fig. 1). Patches of dull, charcoal gray fungus may be visible on the outside of the stems. Stem bases become bleached and brittle and break over between the bottom node and the soil line ( Fig Fig Fig Fig Fig. 2). This is similar to Hessian fly damage, except Hessian fly usually causes breakage just above a node. Strawbreaker and Hessian fly can also be separated by looking at the stem bases. Hessian fly produces "flax seeds" just above the nodes. Strawbreaker produces dull, charcoal-gray patches of fungus on the lower stem. These patches may resemble the black signs of take-all root rot but they are not as black or shiny. Although both diseases cause white heads, strawbreaker does not cause root rot and severe stunting like take-all.

Lodging is most common in the low, lush portions of fields where moisture and fertility are high ( Fig Fig Fig Fig Fig. 3). Lodging is usually multi-directional. Affected tillers often have white heads and shriveled grain ( Fig Fig Fig Fig Fig. 4).

## LIFE CYCLE

Although the strawbreaker fungus is seldom seen in Kansas, it obviously survives at low levels on wheat or alternative grassy hosts. Inoculum takes several years to build up to damaging levels so strawbreaker is not a problem in first year wheat. Second year continuous wheat is sometimes affected and third year wheat is often severely attacked.

Spores are produced on old wheat residues during the late fall, winter, and early spring. Spores initiate new infections on the lower leaf sheaths. Tillering seedlings are more susceptible than younger seedlings. The fungus is most active at 50 ° ° ° ° ° F F F FF. Infections are prevented above 60 ° ° ° ° ° F F F FF. Infections are favored by dense stands, high soil moisture, and high humidity. In 2000, the epidemic was associated with abnormally high rainfall in January, February, and March and mild temperatures during fall and winter.

## CONTROL

Because strawbreaker is rare in Kansas, we usually don't try to control it. However if a field was attacked this year, inoculum of the fungus will be present for next year, so special management might be justified.

Crop rotation is the best way to reduce the inoculum and thus reduce the risk of occurrence. One full year out of wheat may be enough, but two years would be even better.

Theoretically, residue borne diseases like strawbreaker should be reduced by tillage or plowing. Surprisingly, tillage does not seem to be very effective for controlling strawbreaker. In some reports, disease was actually lower in no-till compared to plowing or chisel tillage. This could be due to thinner stands under no-till.

There are anecdotal reports that burning can reduce strawbreaker incidence, but other reports show no effect. One reason burning may be ineffective is that colonized

stem bases may remain intact below the soil line even after a burn. This may provide ample inoculum for the next epidemic. If you do try burning, you need to burn as much of the stems as possible. A head fire (as opposed to a back fire) will do the best job of getting a complete burn on wheat straw, but it's best to burn when there is some soil moisture for best fire safety. Be sure to follow all precautions and regulations concerning prescribed burning safety. Since burning or heavy tillage can lead to soil erosion problems, crop rotation is the recommended method of reducing inoculum.

Late planting usually reduces strawbreaker severity, probably by reducing canopy density. High seeding rates and excess nitrogen may favor dense stands and thus higher infection rates. Therefore, avoid over-seeding and over-fertilizing. Split nitrogen applications might be better than applying everything in the fall. Although there is no experimental data, it is possible that fall grazing might thin the canopy and make the humidity less conducive to disease.

Several resistant varieties of soft white winter wheat exist in the Pacific Northwest, but there are no resistant varieties of hard red or hard white wheat for Kansas. Stiffer-strawed varieties are less likely to lodge due to strawbreaker, but grain will still shrivel.

In high disease-risk areas like the Pacific Northwest, fungicides such as Benlate®, Topsin M®, Mertect®, or Tilt® are commonly sprayed for strawbreaker control during January to April. According to the Novartis Tilt label, 4 flfl flfl. oz oz oz ozoz. per acre of Tilt should be tank mixed with half rates of Benlate, Mertect, or Topsin M. Some of these may not be labeled in Kansas. Scouting must be done during spring tillering to determine disease incidence. Oregon State University recommends a decision threshold of 10% incidence on at least 50 randomly selected tillers. Application must be made at tillering but before stem elongation. Fungicides for strawbreaker control are unlikely to be economical in Kansas because the disease occurs erratically and yield potentials are much lower than in the Pacific Northwest. Application of fungicides at tillering might reduce powdery mildew, but will have little or no effect on other foliar diseases.

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For more information about wheat, visit the [Kansas State University Wheat Page](#)

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