

## Basal Glume Rot

### Summary

Basal glume rot is a bacterial disease frequent in areas where high humidity conditions prevail at heading.

The pathogen is seed born and is also naturally occurring on the plant surface (epiphyte).

Controlling moisture at heading is the key to controlling the disease.

### Symptoms

The disease, also known as spikelet rot and basal glume blotch, affects glumes on spikes of wheat, triticale, barley, rye and some non-economic grasses. The first signs of an infection are small water-soaked lesions, dark green in color, starting at the base of the glume (Fig. 1). If held toward light, diseased glumes appear translucent. Glume lesions eventually turn dark brown to black in color, usually covering the lower third of the glume, but may atypically extend to the rest of the glume, the kernels and to the rachis under favorable conditions. On affected grains symptoms vary from light brown to charcoal black at the germ end.

Other symptoms that have been associated with the disease, such as dark discolorations on culms, streaks on glumes, and irregular water-soaked lesions on leaves may be just coincident and not directly associated with the pathogen. Some of those symptoms are similar to black chaff (also bacterial in origin), false black chaff (genetic melanism), glume blotch (*Septoria nodorum* blotch), and frost damage.

Even though the basal glume rot may affect yield by reducing grain fill, it is not a disease of economical importance.



Fig 1. Discoloration starting at the base of the glume that turns dark brown to black is typical of basal glume rot. Photo: CIMMYT

### Causal Agent

*Pseudomonas syringae* pv. *atrofaciens* (Syn. *Pseudomonas atrofaciens*) is the causal bacterial agent of Basal Glume Rot. Under favorable conditions the pathogen may become visible on the base of the glumes as a whitish gray exudate

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(ooze). The bacteria are epiphytes, and are always present on the plant surface.

### Inoculum Source and conditions

The pathogen is seedborne, but also survives epiphytically, on crop residues, in soil and in several grass hosts. It is disseminated by wind blown dust or residues, by rain splash, and by insects. Wet, mild weather during heading and grain fill favors the infection and disease development and spreading. The pathogen has the capability of living on the plant surface until favorable conditions are present.

### Control

- Avoiding overhead irrigation at heading helps in reducing incidence. The main factor contributing to the disease is moisture.
- Planting clean seed reduces the inoculum source.
- Plowing-under crop residues together with rotation with non hosts contributes to the reduction of the inoculum source.

### References

1. Compendium of Wheat Diseases. 2nd Ed. 1987. M. V. Wiese. APS Press. The American Phytopathological Society.
2. The Bacterial Diseases of Wheat: Concepts and Methods of Disease Management. 1997. Duveiller, E., L. Fucikovsky, and K. Rudolph, eds. Mexico, D.F.: CIMMYT.
3. Wheat Diseases and Pests: a guide for field identification. J. M. Prescott, P. A. Burnett, E. E. Saari, J. Ranson, J. Bowman, W. de Milliano, R. P. Singh, G. Bekele. International Maize and Wheat Improvement Center (CIMMYT).

### Links

- <http://wheat.pw.usda.gov/gpages/wheatpests.html>
- <http://wheatdoctor.cimmyt.org>

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