



## Late-Season Sorghum Disease Identification and Management

- Planting grain sorghum in unfavorable growing conditions can subject the crop to a number of diseases, which may reduce both seed quality and yield potential.
- Losses from diseases can be minimized by optimizing manageable growing conditions, rotating with other crops, and removing disease-infested debris.
- Effective control measures can be implemented after accurate disease identification.

Severity of disease infection depends on environmental conditions, presence of causal organisms, and levels of the host plant resistance. Generally, potential yield losses from diseases can be minimized by adopting integrated pest management approaches such as:

- Using seeds treated with fungicide to prevent seed rots and seedling blights.
- Using tolerant/resistant grain sorghum products.
- Rotating to a different crop.
- Removing infested crop residue.
- Managing growing conditions throughout the growing season.

Although grain sorghum (milo) can be infected by several diseases, the following diseases can have negative impacts on yield potential.

### Crazy Top Downy Mildew

**Crazy Top Downy Mildew** is a disease caused by the fungus *Sclerophthora macrospora*. The disease can often be most noticeable in low spots of fields where water stands, as high soil moisture levels and flooding are favorable conditions for the disease to develop.

Infected plants have thick, stiff, twisted, pale green leaves with bumpy surfaces. The leaves often turn downward and the plants produce many shoots or suckers, giving the plant a bunched appearance. Infected plants produce a proliferation of leafy tissue instead of producing heads.

#### Management

- Fields should be adequately drained.
- Tolerant sorghum products should be used; although there are differences in susceptibility among grain sorghum products, these differences are not substantial.
- Rotation is not useful as the fungus infects many wild and cultivated grasses.

### Anthracnose

**Anthracnose**, a disease caused by the fungus *Colletotrichum graminicola*, can damage leaves, panicles, and stems. Infected stems cut lengthwise may show brick-red sections surrounding areas of the infected pith tissues, which may appear healthy and white in color (Figure 1). Anthracnose development is weather dependent and has been mostly restricted to the more humid regions. Severe infection can greatly reduce the yield potential.

#### Management

- Sorghum products that are rated as “susceptible” should be avoided in fields with a history of anthracnose.
- Rotating to a crop that is unrelated to grain sorghum is highly recommended. Good residue management should be adopted.

### Foliage Diseases

**Foliage diseases including sorghum ergot, Northern corn leaf blight, sooty stripe, and rust.** Several fungal organisms can infect the foliage of grain sorghum. Infection may become severe under periods of extended humid conditions. In most years, disease development occurs from the whorl through maturity stage. Foliage diseases are rarely a problem if sorghum is to be harvested for silage, as they generally appear at later stages of plant growth.

Yield reduction is seldom significant enough to warrant specific control practices; however, yield loss can be expected if damage occurs to the upper leaves at the grain filling stage. Sorghum products vary in their susceptibility to these diseases.



Figure 1. *Anthracnose* infected stem with white pith and red sections. Clemson University, USDA Cooperative Extension Slide series, Bugwood.org.

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## Head Smut

**Head Smut** is a disease caused by the fungus *Sphacelotheca reiliana*. Soil-borne smut spores from previous crops can infect young sorghum seedlings, which may remain relatively healthy in appearance. At heading, a large mass of dark-brown smut spores appear in place of the panicle (Figure 2).

Planting head smut susceptible products in the same field for several years can rapidly increase the percentage of infected plants. Planting products with compact heads should be avoided in those situations and fungicide seed treatments should be used. Promptly removing and burning head smut has been recommended in some cases as a method to prevent the spread of smut spores.



Figure 2. Sorghum head with mass of dark to brown smut spores. University of Georgia, Plant Pathology Archive, University of Georgia, Bugwood.org.

## Maize Dwarf Mosaic Virus

**Maize Dwarf Mosaic Virus (MDMV)** causes a distinctive leaf mottling (light-green blotchiness), plant stunting, and reduction in yield potential. Another distinct symptom is “red leaf”; a reddish discoloration and tissue death on leaves, sheaths, and peduncles (Figure 3). Johnsongrass serves as the overwintering host and source of the virus, which is maintained in the underground rhizomes until it moves into the young Johnsongrass shoots in the spring. Aphids, feeding on the infected Johnsongrass, acquire the virus and move it to other non-infected Johnsongrass plants and/or to young grain sorghum plants. Most grain sorghum products are susceptible to MDMV; however, some products may show less severe symptoms and little or no yield loss.



Figure 3. Maize Dwarf Mosaic Virus with leaf mottling. Mary Ann Hansen, Virginia Polytechnic Institute and State University, Bugwood.org.

“Susceptible” or “very susceptible” grain sorghum products should be planted in fields where Johnsongrass is prevalent. In addition, inocula is reduced by controlling Johnsongrass in the fields and areas adjacent to sorghum fields.

## Sorghum Downy Mildew

**Sorghum Downy Mildew (SDM)** is a disease caused by the fungus *Peronosclerospora sorghi*. Outbreaks of SDM have been associated with metalaxyl-resistant strains of the fungus

and the use of susceptible sorghum products. Systemically infected seedlings are pale yellow or have light-colored striping or mottling on the leaves. Infected plants can be stunted and may die prematurely. The fungus may produce a fuzzy, white growth on the underside of leaves (Figure 4).

A three-pronged management approach of crop rotation, sorghum product selection, and using fungicide treated seed should be adopted. Fields in which SDM is prevalent should be out of sorghum production for at least two years to reduce levels of soil-born inocula. Cotton, wheat, soybean, or a forage crop should be rotated with grain sorghum.



Figure 4. Downy mildew infected plant with striped leaves and downy growth on the underside of leaves.

## Summary

Grain sorghum diseases are difficult to control after they develop, thus an integrated management approach should be adopted to help minimize potential yield losses. Planting high quality seed that has been treated with fungicide, using resistant/tolerant products, rotating with other crops, eliminating susceptible weed hosts such as Johnsongrass, providing optimum growing conditions, and avoiding planting into poorly drained fields are some of the practices recommended to potentially minimize yield losses.

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Web sources verified 06/17/2015.

For additional agronomic information, please contact your local seed representative. Developed in partnership with Technology Development & Agronomy by Monsanto.

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