CROP FOCUS

DUPONT PIONEER

White Mold of Soybeans

White Mold Facts

- Also known as Sclerotinia stem rot
- Caused by a fungus, *Sclerotinia sclerotiorum*, that can attack hundreds of plant species
- Is an annual threat to soybeans in northern and near-northern states from Minnesota and Iowa to the Atlantic coast, as well as Ontario and Quebec
- Many yield-enhancing production practices that result in early, dense canopy formation increase disease incidence
  - Often, the better the establishment and growth of the crop, the more likely it will be damaged by white mold
- Wet, cool conditions during flowering favor development
  - Wet weather and temperatures from 68 to 78 degrees F are ideal for disease spread

Disease Cycle

- Persists in soybean fields by production of survival structures called sclerotia
  - Function much like seeds, surviving for years in the soil and eventually germinating
  - Sclerotia produce apothecia, which in turn produce millions of spores
- Spores must colonize dead plant tissue before moving into the plant
  - Senescing flowers provide a ready source of dead tissue for colonization
- Infection results in a water-soaked stem lesion that develops white mold in humid conditions
  - Disease can spread directly to other plants by contact with this moldy tissue
- Sclerotia are formed within the moldy growth and inside the stem to complete the disease cycle

Impact on Crop

- Yield loss is the primary effect on the crop
  - Yield losses depend on disease severity, varietal susceptibility and degree of lodging
  - With high severity, yield losses may approach 40 to 50 percent
- Soybean standability may be reduced
- Seed quality may be diminished

Disease Symptoms

- Infection begins with a water-soaked lesion originating at a node
  - If lesion stays wet, it can become overgrown with white mold
- Sclerotia are formed inside and outside the stem within the cottony white mold mass
  - Sclerotia are dark, irregularly shaped bodies ¼ to ¾ inches long containing hardened mycelia

Management of White Mold

Variety Selection

- There is no absolute resistance available (all varieties can get white mold under severe pressure), but differences in tolerance exist between varieties
- Pioneer plant breeders select resistant varieties in multiple locations where white mold commonly occurs
- Pioneer rates its varieties and makes ratings available to customers
- Ratings reflect varietal differences in the rate at which infection develops and the extent of damage it causes
- Ratings are based on multiple locations and years
- Ratings range from 2 to 7 (9 = resistant)
- Your Pioneer representative can help you select suitable varieties for your farm

Disease Avoidance

- Sclerotia move from field to field in harvest equipment or contaminated seed
  - Harvest equipment should be thoroughly cleaned when moving from infected to non-infected fields
  - Harvesting infected fields last provides additional safety

Weed Control

- Lambsquarters, ragweed, pigweed, velvetleaf and other weeds are alternate hosts for white mold. Weeds can also increase canopy density, which favors disease spread.

Chemical Application

- DuPont™ Aproach™ is a new fungicide labeled for white mold control. In research trials in OH, MI and IL, Aproach fungicide reduced white mold severity and increased yield by 7.2 bu/acre vs. no treatment[1,2].
  - Apply Aproach in a minimum volume of 10 gal/acre. Penetration of spray droplets into the lower canopy is critical to achieve optimum efficacy[3].
- Topsin® fungicide and Cobra® herbicide have demonstrated efficacy against white mold, but some studies have shown inconsistent results.

Production Practices

- Early planting, narrow row width and high plant populations encourage early canopy formation and white mold risk. These practices also increase yield.
  - Abandoning practices that increase yield most years to reduce white mold (which does not occur every year) may not be a favorable economic trade-off.

Crop Rotation

- Rotation is only a partial solution, as sclerotia survive in the soil for up to 10 years
  - More than one year away from soybeans may be required to see a benefit

[1] See Pioneer Crop Insights Vol. 23, no.13, *Integrated Management of White Mold in Soybean Production* for more information and study details.

™ Aproach is a trademark of DuPont.

[2] Product responses are variable and subject to a variety of environmental, disease and pest pressures. Individual results may vary.

[3] Always read and follow all label directions and precautions for use when applying fungicides. Labels contain important precautions, directions for use and product warranty and liability limitations that must be read before using the product.