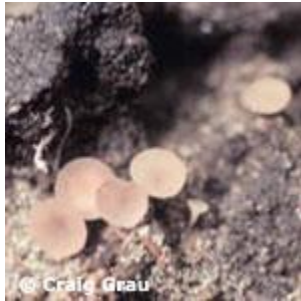


## Insects and Diseases



**Figure 1. White mycelium on stem and pods is a sign of white mold infection.**



**Figure 2. Apothecia form on the soil surface in early summer. Spores from these structures land on senescing soybean flowers and begin the white mold infection cycle.**

### Sclerotinia Stem Rot (White Mold)

*Sclerotinia stem rot is a damaging fungal disease caused by *Sclerotinia sclerotiorum*. The disease is also called white mold, because of the visible white mold on the stem and pods of infected plants (Figure 1).*

#### **White mold development is dependent on weather conditions during flowering**

At soybean flowering stages, the fungus forms tiny mushroom-like structures on the soil surface called apothecia (Figure 2). Infection takes place when spores from the apothecia are projected into the air from apothecia and land on flowers where the fungus enters the plant. The growth and pathogenic activity of the white mold fungus is favored by a dense crop canopy and cool wet weather during flowering.

Although symptoms of white mold may be present 3 or 4 weeks after flowering, signs of infection are usually not noticed until August. At that time, examine the stems of symptomatic plants for signs of the disease. Stem symptoms begin as gray to white lesions at nodes that rapidly progress above and below nodes. Sometimes they are covered with fluffy, white mycelium.

Foliar symptoms of white mold are not very diagnostic. Leaves wilt, eventually die and turn completely brown, but often remain attached to the stem past maturity. Foliar symptoms can easily be mistaken for brown stem rot, *Phytophthora* root rot, sudden death syndrome or stem canker.

#### **Management of White Mold**

White mold is a disease of high yield potential soybeans. This is because management practices that promote high yield, such as planting in narrow row widths, high seeding densities, early planting, and high soil fertility also promote a dense crop canopy and a favorable environment for *Sclerotinia sclerotiorum*. Although there is currently no soybean variety completely resistant to white mold, the use of tolerant varieties is effective in managing white mold. Avoid planting highly susceptible varieties in fields with a history of white mold. Avoid excessive irrigation during flowering.

Short crop rotations will eventually lead to a build up of sclerotia (overwintering structure) in the field. Sufficiently long crop rotations with nonhosts such as corn and wheat is effective in minimizing the pathogen buildup and risk of white mold outbreak. Most sclerotia die over a three- to four-year period between soybean crops.

Tillage can affect white mold in several ways. Although sclerotia can survive in deep soil up to 7 years, only sclerotia within 2 inches from soil surface germinate and produce spores to infect soybean. Therefore, burying infested residues by deep plowing can prevent the germination of the sclerotia. However, subsequent cultivation and tillage would bring sclerotia up to the surface.

Under no-till, or shallow till, a large portion of the sclerotia germinate under corn or other nonhost crops, which reduces the amount of pathogen in the soil. Recent research from Iowa State University shows that in long run, no-till results in a smaller white mold risk compared with conventional tillage. The white mold fungus infects common weeds like lambs-quarters and



**Figure 3. Sclerotia in a soybean stem. This structure, which looks like mouse droppings, is formed on and in soybean stems.**

**Sclerotia fall to the soil surface during harvesting, and germinate in the spring to form apothecia. Sclerotia can also be present in harvested beans.**

pigweed. Use good weed control practices, especially in rotation years. Do not save beans from fields infested with white mold if you plan to use your own seed. Combines cannot separate white mold sclerotia from beans (Figure 3). Use of contaminated seeds will spread the pathogen from one field to another. When you combine soybeans, you may want to first harvest fields free of white mold. If not, you must clean soybean debris from the combine after you harvest a field infested with white mold.

A summary of management guidelines based on field history can be found at the North Central Soybean Research Program web site...see link below.

### ***Risk of Yield Loss***

Field data from several states indicate that the risk of yield reduction is minimal when incidence is less than 20%. Yield loss has been estimated a 4 bu/ha for each 10% increment of diseased plants. When the kill is light (less than 10 percent of all plants), expect a minimum loss.

### ***More web resources on white mold***

University of Wisconsin Soybean Plant Health

- **All you need to know about white mold**
- **Printable PDF file on white mold**

The **National Sclerotinia Initiative**

North Central Soybean Research Program

- **Management guidelines** based on the field history of white mold
- **Risk Assessment for white mold**

Website Link: <http://extension.agron.iastate.edu/soybean/whitemold.html>