Managing White Mold in Soybean

KEY POINTS

- White mold, also called sclerotinia stem rot, is a soybean disease that thrives under moist conditions and moderate temperatures.
- Additional factors favoring white mold development include high yield potential, dense soybean canopy, susceptible soybean product, and a field history of white mold.

Symptoms and Disease Cycle

Symptoms of white mold include white, fluffy, cottony mycelial growth on the outside of the stem and on the pods, wilted leaves, and stems that appear" bleached" and shredded (Figure 1). Also, sclerotia, which are small black structures that resemble mouse or rat droppings, can be found on and inside plants that have been infected by white mold (Figure 2).

Sclerotia are the overwintering survival structure for the pathogen that causes white mold and may survive in the soil for multiple years. When soils are shaded, moist, and cool, sclerotia within two inches of the soil surface germinate and produce small (1/8 to 1/4-inch diameter) mushroom-like structures called apothecia (Figure 3). The apothecia releases spores that typically infect soybean plants through senescing flowers. Infection is favored by moderate temperatures (less than 85 °F), moisture from rain, fog, dew or high relative humidity and a dense soybean canopy during R1 (beginning flowering) through R3 (beginning pod) growth stages.

Management

Seed Product Selection. No soybean products are completely resistant to white mold, but tolerant products may be effective in reducing the impact of white mold.

Crop Rotation. Short crop rotations, such as a soybean-corn rotation, can eventually lead to a buildup of sclerotia. A minimum of two to three years of a non-host crop, such as corn or small grains can reduce the number of sclerotia in the soil.

Tillage. Deep tillage to bury infected residue can help prevent germination of sclerotia. However, sclerotia can remain viable for more than three years if buried 8 to 10 inches and subsequent tillage brings viable sclerotia to the surface where they can later germinate. In no-till fields, sclerotia remain on the surface after being produced and a large number germinate during rotational crop years. This reduces the amount of viable sclerotia left to germinate when soybeans are planted again. Tillage may spread...
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Sclerotia within the field, therefore, in no-till fields sclerotia may remain confined to hot spots. Although more sclerotia are found near the soil surface in no-till systems, sclerotia may degrade faster in no-till soils compared to tilled soils.¹

**Row Spacing.** In low to moderate disease pressure environments, white mold incidence increases as row spacing narrows (less than 20 inches). Under high disease pressure, white mold severity is similar between various row widths.

**Plant Population.** Higher populations (175,000 plants per acre or greater) have been associated with increased white mold incidence due to faster canopy closure and denser canopies. In fields with a history of white mold, consider reducing plant populations, however, maintain populations that are needed to maintain yield potential.

**Weed Control.** Many common broadleaf weed species such as Common lambsquarters, Redroot pigweed, Velvetleaf, Common ragweed, Common cocklebur, Canada thistle, Wild mustard, and other species are hosts for the white mold pathogen. It is important to control these weeds, especially in crops grown in rotation with soybean.

**Chemical Control.** Several chemical controls are available for white mold management and include fungicides, biocontrol, and lactofen herbicide (Table 1).

Fungicide application is most effective at reducing the impact of white mold when applied at or close to R1 (beginning flowering) growth stage.² University of Wisconsin research indicates that fungicides applied up to R3 (beginning pod) growth stage may be effective, but later applications will likely not be effective at reducing white mold.²

Fungicides are most effective if applied as a preventative measure; results are typically inconsistent when applications are made after symptoms have already developed. Canopy penetration and good coverage is essential for effective fungicide application.

There is some evidence that applying lactofen herbicide, may reduce white mold incidence, especially when used in an environment that favors white mold development. Lactofen herbicide application shorten plant height and thin the plant canopy.

**Other Management Tools.** Sporecaster, the white mold forecaster developed by the University of Wisconsin, has been developed to help predict the probability of white mold apothecial present in a soybean field. Growers can download the Sporecaster app and input site-specific information into the app, which combines field information with research-based models to predict the best timing for white mold treatment in that field.³ Go to [http://ipcm.wisc.edu/apps/sporecaster](http://ipcm.wisc.edu/apps/sporecaster) for more information.

### Table 1. Products currently registered for suppression or control of white mold on soybean.

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Active Ingredient</th>
<th>Product Name</th>
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<tbody>
<tr>
<td>Fungicide</td>
<td>Picoxystrobin</td>
<td>Aproach®</td>
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<tr>
<td>Fungicide</td>
<td>Fluazinam</td>
<td>Omega® 500F</td>
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<td>Fungicide</td>
<td>Boscalid</td>
<td>Endura®</td>
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<tr>
<td>Herbicide</td>
<td>Lactofen</td>
<td>Cobra®, Phoenix™</td>
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<tr>
<td>Biocontrol</td>
<td>Coniothyrium mimitans</td>
<td>Contans® WG</td>
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* Fungicide products rated as Good to Very Good on the Foliar Fungicide Efficacy for Control of Foliar Soybean Diseases by the North Central Regional Committee on Soybean Diseases—January 2017.

Sources:

Web sources verified 08/19/18.