White Mold Manage white mold for better yields

The problem

White mold disease – also known as sclerotinia stem rot – can cause significant yield losses in soybean, particularly during cold and damp growing seasons. The disease often develops in areas where moisture collects (due to fog and dew), as well as in pockets of poor air movement, such as along tree lines.

The disease

White mold, caused by the fungus *Sclerotinia sclerotiorum*, can substantially reduce soybean yield. It may look clean and pristine with its fluffy, snow-like appearance, but white mold disease is a miserable condition often associated with a high-yielding environment.

The fungus can spread to new fields with improperly cleaned seed and by the movement of infested soil. This disease and its movement to new fields needs to be controlled to help farmers realize maximum yield. Building a management plan based on knowledge of field history and best disease management practices can help reduce losses due to white mold. Integrating several management tactics that include cultural practices and varietal resistance, as well as chemical and biological control, should be part of a white mold management plan. Understanding how different environmental variables and management practices influence infection by *S. sclerotiorum* is important to optimize disease management.

White growth is a red flag

Fog, rain and closed canopies open the door for white mold disease. Initial symptoms include leaf tissues between major veins turning a gray-green cast, while veins remain green. This can be mistaken for other diseases such as brown stem rot, sudden death syndrome or stem canker. Eventually, leaves die and turn completely brown while remaining attached to the stem.

Early indications of white mold disease are gray to white lesions during the R3 (beginning pod) to R6 (full seed) stages of development. Lesions rapidly progress above and below stem nodes, sometimes girdling the entire stem. White, fluffy structures called mycelium eventually cover the infected area, especially during periods of high relative humidity.

Black sclerotia become visible by contrast, embedded within white mycelium on stem lesions, and later inside the stem as the plant dies.

White mold sclerotia in the stem

White mold sclerotia on the stem

Pod and seed infected with white mold

Impact on yield

White mold causes yield loss by reducing seed number and seed weight. Research has shown yield is reduced by two to five bushels per acre for every 10 percent increase in incidence of white mold observed at the R7 developmental stage (beginning maturity).

Management

Variety selection: No soybean variety is completely resistant. Varieties range from moderately resistant to very susceptible (based on the degree of premature plant death). Premature plant death is predictive of yield loss, but the rate of plant death is slower for some varieties. In fact, acceptable yields even in the presence of the disease are possible.

Crop rotation: Two or three years of a non-host crop such as corn, small grains and forage legumes can reduce the number of sclerotia in soil. Crops that should not be in rotation with soybeans in fields with white mold risk are peas and sunflowers.

Tillage: Sclerotia numbers begin to decline if left undisturbed at the soil surface. Sclerotia viability is maintained if they are buried 8 to 10 inches in the soil. Also, greater tillage promotes earlier canopy development, increasing the risk of white mold.

Canopy management: Early planting, narrow row width and high plant populations all accelerate canopy closure and favor disease development. However, modifying these practices might reduce yield potential. The history of white mold in fields should be considered before growers modify practices that promote canopy closure.

Weed control: Weed control is critical because many broadleaf weeds are hosts of the white mold pathogen. In addition, research has shown some herbicides (e.g., Cobra®) may suppress the activity of the fungus or disrupt germination of sclerotia.

Biocontrol: Some antagonistic fungi may be applied to the soil to colonize and reduce sclerotia numbers. For example, the product *Contans*® can reduce white mold sclerotia populations.

Fungicides: Foliar fungicides can effectively manage white mold; or at least reduce disease severity. However, application timing is critical. Fungicides are most effective when applied immediately before infection.

White mold-infected soybeans after leaves in the canopy begin to die

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