

Soybean White Mold and In-Season Management

- Soybean fields with a history of white mold could be prone to infection.
- Understanding the conditions favorable for development of the disease, in conjunction with local weather, can help determine the potential for disease.
- In-season management with fungicides is possible when properly timed.

Conditions that Favor White Mold

To understand if white mold could be a threat this year, it is important to understand how it develops and which conditions favor development. Disease development is dependent upon the three components of the disease triangle (susceptible host, pathogen, and favorable environment) being present at the same time. White mold development and conditions that favor development are as follows:

- 1) White mold overwinters as sclerotia, which are hard black structures that resemble rat droppings.
- 2) Sclerotia on or within the top 2 inches of the soil surface produce apothecia (mushroom-like structures) (Figure 1). Extended periods of cool soil temperatures (40 to 60° F), moderate air temperatures (less than 85° F), moist soil conditions, and partial canopy closure are ideal for apothecia development¹.
- 3) Apothecia produce millions of ascospores, which can infect soybean plants through dying or dead soybean flowers¹.
- 4) After infection, lesions girdle and damage stems. As a result, moisture and nutrient uptake and movement can be inhibited. The pathogen produces a white, cottony mycelium (white mold) that develops on lesions, and sclerotia that can serve as a future source of inoculum. If sclerotia are abundant in harvested grain, it may cause a discount at the grain elevator.
- 5) Each 10% increase in diseased plants at the R7 growth stage has been estimated to result in a 2 to 5 bu/acre yield loss¹.

Conditions that Limit White Mold

A period of warmer air temperatures (90° F or higher) can stop the development of the lesions². In addition to air temperature, white mold development may slow or cease when canopy temperatures of 82° F or greater are reached during dry conditions³.

Canopy closure reduces air flow, allowing the leaves and stems to stay damp for an extended period of time. Soybean fields that have not developed canopies may be less prone to white mold infection.

In-Season Management

Several fungicides are listed as 'good' for management of white mold

including picoxystrobin, flutriafol, prothioconazole, tetraconazole, thiophanate-methyl, and boscalid.⁴ In-season applications of fungicides are recommended at growth stage R1 (flowering).⁵ This is the stage when the disease inoculum can infect plants through dying blossoms; therefore, fungicides can be applied to help reduce the number of infections. There may be a benefit of reducing the severity of the disease when applications are made up to growth stage R3 (early pod).⁵ Fungicide effectiveness depends on spray penetration into the canopy. Once symptoms of white mold are evident, fungicide applications may no longer manage the disease. Soybean fields with high levels of white mold should be harvested last to reduce the spread of sclerotia.

Summary

Cool soil and air temperatures and an inoculum load from previous years are conditions favorable for white mold infection. However, open canopies and warmer temperatures as soybeans enter the reproductive phases can reduce the risk of white mold infection for soybean fields.

For more information visit your brand's website or contact your local brand representative. Always read and follow pesticide label directions.



Figure 1. Apothecia from a soybean field.

Sources: ¹ Esker, P. et. al. 2011. Management of white mold in soybean. North Central Soybean Research Program. Plant Health Initiative. ² Dorrance, A.E. and D. Mills. 2008. Sclerotinia stem rot (white mold) of soybean. The Ohio State University. AC-45-08. ³ Bradley, C. 2014. Assessing the risk of white mold. (Sclerotinia stem rot) of soybean in 2014. The Bulletin. University of Illinois. ⁴ Wise, K. 2014. Fungicide efficacy for control of soybean foliar diseases. Purdue University Extension. BP-161-W. ⁵ Mueller, D. et. al. 2014. Managing white mold in soybean. Integrated Crop Management News. Iowa State University. <http://www.extension.iastate.edu> (verified 7/11/2014).

For additional agronomic information, please contact your local seed representative.

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