Sclero-cast: A Soybean White Mold Prediction Model

**This tool is for guidance only and should be used with other sources of information and professional advice when determining risk of white mold development**

This white mold prediction model calculates the probability of apothecia being present in the field. Apothecia are cup-shaped mushrooms that produce inoculum of the white mold fungus. Predictions based on this model must be combined with soybean canopy and growth stage characteristics to aid in timing fungicide sprays. If the model predicts the presence of apothecia in the field while the crop is at a susceptible growth stage, then the risk of white mold developing later in the season is elevated. Begin using the model at the V5 growth stage, i.e. when the 5th trifoliate leaflets are fully open and before flowering.

Follow this step-by-step guide to assist in using this prediction model as part of your white mold management program.

1. **Which model fits your soybeans?** Are your soybeans:
   - Non-irrigated, planted on 15- or 30-inch row spacing
   - Irrigated, planted on 15-inch row spacing
   - Irrigated, planted on 30-inch row spacing

   Select the appropriate map for your soybean environment. **Proceed to step 2.**

2. **What does the model say?** Check the model prediction map. The map is colored to show the likelihood of apothecial presence within a region. White areas indicate the model is inactive and risk of apothecia in the field is likely low. Gray areas indicate that apothecia might be present, but likelihood of apothecial presence is less than 5%. Blue indicates a low risk (5 to <15% chance), yellow a moderate risk (15 to <30% chance), and red areas indicate a high risk (30% or higher chance).

   ![Map of Wisconsin with color-coded risk areas for white mold prediction](image)

   We recommend in-season management of white mold (such as a fungicide spray) only if probabilities are 30% or greater (red color) while soybeans are at a susceptible growth stage. **If the model probability is 30% or greater, then proceed to step 2.**
3. **Are your soybeans flowering?** Check the soybean growth stage. If soybeans in the field are between the R1 and R3 growth stage, flowers will be present. The R1 growth stage is beginning flowering and starts when 50% of the plants in the field have at least one flower at any node on the plant. The R3 growth stage is beginning pod and starts when 50% of the plants in the field have 3/16 inch pods at one the top 4 nodes. See the table below for examples. **If the field is between R1-R3, then proceed to step 3.**

<table>
<thead>
<tr>
<th></th>
<th>R1</th>
<th>R2</th>
<th>R3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage</td>
<td>Beginning Flowering</td>
<td>Full Flowering</td>
<td>Beginning Pod</td>
</tr>
<tr>
<td></td>
<td>At least one flower at any node.</td>
<td>Open flower at one of the top 2 nodes.</td>
<td>3/16 inch (5 mm) pods at one of the top 4 nodes.</td>
</tr>
</tbody>
</table>

Credit: Iowa State University Extension and Outreach

4. **How open are your rows?** Check the distance between the leaves of each row (row closure). We recommend measuring the distance between rows in 5 areas of the field and then using the average of those 5 measurements in this step.

Soybean fields that have mostly closed canopies and are flowering when apothecia are present will be at a high risk of developing white mold later in the season. Note that in fields planted on a 15-inch spacing the row closure distance conducive for presence of apothecia is **12 inches**. Soybeans planted on the 15-inch row spacing almost always meet this threshold when flowers are present. **If row closure thresholds are met, soybeans are flowering, and the map shows a 30% or greater chance of apothecia in a field, then soybeans are at high risk for developing white mold later in the season. Consult with your local extension personnel for the best white mold in-season management options for your area.**
If the canopy closure is less than the indicated threshold or the soybean flowers are not present, then there is a low risk of white mold developing later in the season. However, you should revisit the field to monitor for flowering. If flowering is already complete in your field, then risk for white mold will be low for the remainder of the season.

In addition, if the canopy closure is more than the indicated threshold, the soybean flowers are present, but the model probabilities are less than 30% (color coded blue, yellow) then there is a lower risk of white mold developing later in the season.