Sclero-cast: A Soybean White Mold Prediction Model

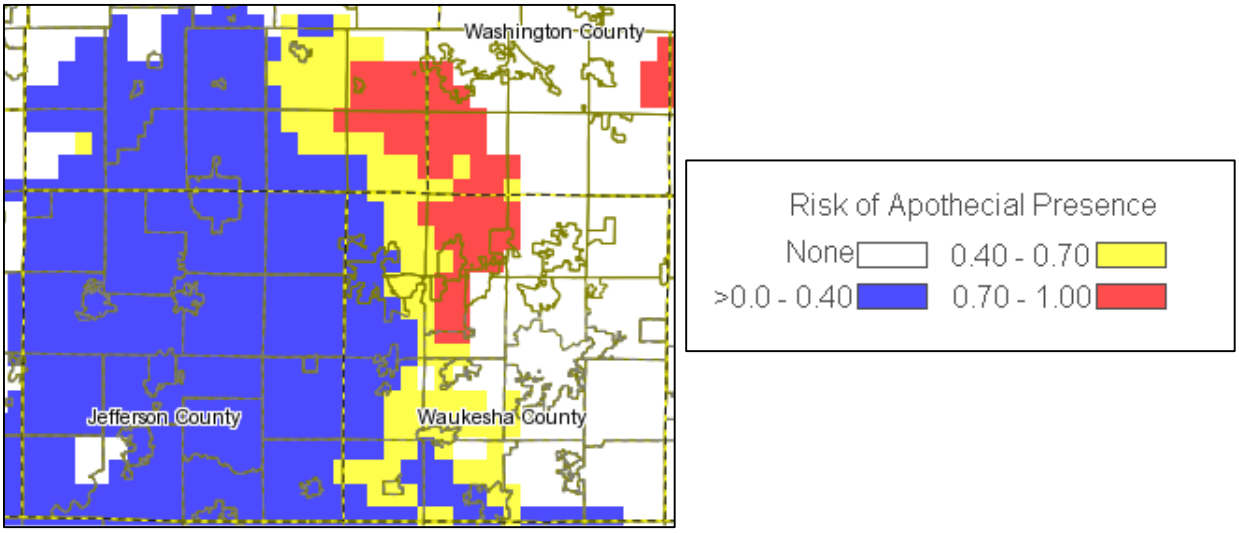
****This tool is for guidance only and should be used with other sources of information and professional advice when determining risk of white mold development****

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.

For soybeans planted on <u>30-inch</u> row spacing, answer the following 3 questions:

1. **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 a 0% chance of apothecia in the field and red areas indicate a 70-100% chance of finding apothecia in the field. The legend (see below) defines colors for no (white), low (blue), medium (yellow), and high (red) risk levels. Also shown, is an example image of 3 counties with model output.



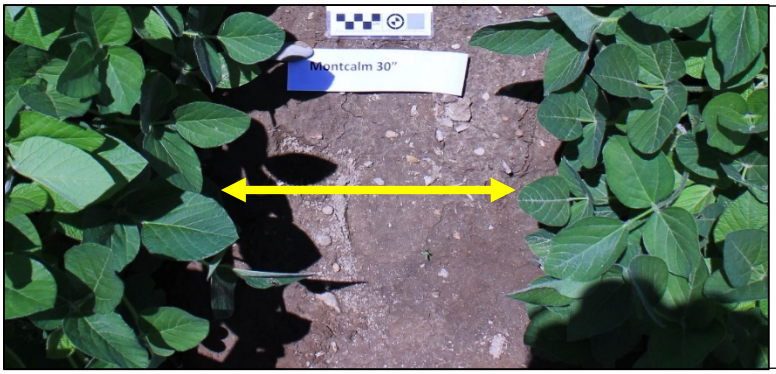
The yellow to red areas of the map indicate a 40-100% chance of finding apothecia in the field. We recommend in-season management of white mold (such as a fungicide spray) only if probabilities are greater than 40% while soybeans are at a susceptible growth stage. **If the model probability is greater than 40%, then proceed to step 2.**

2. **Are your soybeans flowering?** Check the soybean growth stage. If the field is 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.**

R1	R2	R3
Beginning Flowering	Full Flowering	Beginning Pod
		
At least one flower at any node.	Open flower at one of the top 2 nodes.	3/16 inch (5 mm) pods at one of the top 4 nodes.

Credit: Iowa State University Extension and Outreach

3. **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.



Shown at left:

Threshold of **24 inches** between leaves of each row (yellow arrow).

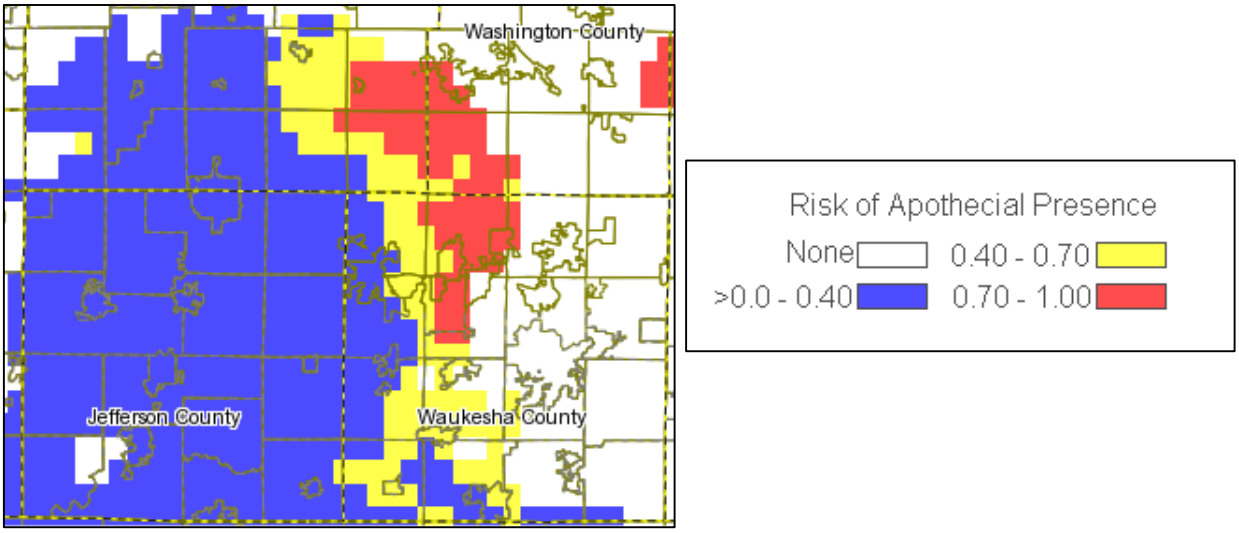
Soybean fields that have mostly closed canopies and are flowering when apothecia are present will be at a high risk of developing white mold later in the season. **If soybeans are flowering, <u>and</u> the map shows more than 40% chance of apothecia in a field, then soybeans are at high risk for developing 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 <u>or</u> 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, <u>but</u> the model probabilities are less than 40% (color coded blue or white) then there is a very low risk of white mold developing later in the season.

For soybeans planted on <u>15-inch</u> row spacing, answer the following 2 questions:

1. **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 a 0% chance of apothecia in the field and red areas indicate a 70-100% chance of finding apothecia in the field. The legend (see below) defines colors for no (white), low (blue), medium (yellow), and high (red) risk levels. Also shown, is an example image of 3 counties with model output.



The yellow to red areas of the map indicate a 40-100% chance of finding apothecia in the field. We recommend in-season management of white mold (such as a fungicide spray) only if probabilities are greater than 40% while soybeans are at a susceptible growth stage. **Proceed to step 2 if the risk probabilities for your area are higher than 40%**.

2. **Are your soybeans flowering?** Check the soybean growth stage. If the field is 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.

R1	**R2**	**R3**
Beginning Flowering	Full Flowering	Beginning Pod
		
At least one flower at any node.	Open flower at one of the top 2 nodes.	3/16 inch (5 mm) pods at one of the top 4 nodes.

Credit: Iowa State University Extension and Outreach

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. **If soybeans are flowering, <u>and</u> the map shows more than 40% 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 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 soybean flowers are present, <u>but</u> the model probabilities are less than 40% (color coded blue or white) then there is a very low risk of white mold developing later in the season.