



# Fungicide-Based Control of White Mold in Dry Beans in New York State

## White Mold:

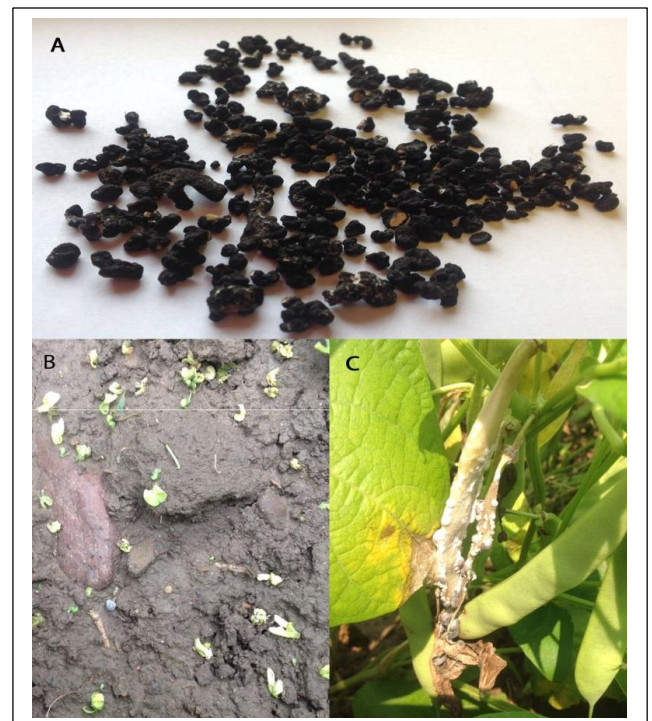
White mold is a fungal disease caused by *Sclerotinia sclerotiorum*. The disease causes reductions in the number of harvestable pods and seeds, and can cause crop lodging. The **sclerotia** that are produced on diseased plants can contribute to losses in future susceptible crops grown in the field.

### **Symptoms and Signs:**

Pods and stems on diseased plants have **white-cottony mycelia** and black **sclerotia** (Figs. A & C). These sclerotia provide inoculum for the **subsequent crop** and survive in the soil.

### **Lifecycle:**

Sclerotia germinate and produce tiny, tan, cup-shaped **apothecia** on the soil surface (Fig. B). **Ascospores** are transported by wind from the **apothecia**, and infect dying flowers.



---

*Fungicides will not provide complete control of white mold...an integrated approach is required*

---

### **To Spray or Not to Spray?**

The decision to use fungicides is strongly influenced by environmental conditions and other factors. For example, white mold incidence and severity was high in 2014 but was low to moderate in many fields this year. Here are some factors to consider when deciding on fungicide usage in your dry bean field:

1. **Temperature and rainfall over flowering.** Daily temperatures less than 85°F and extended periods where the flowers or foliage are wet for at least 40 hours are conducive for infection and disease development.
2. **Soil moisture.** Sclerotia within the top 2 inches of the soil are able to germinate and produce apothecia. For germination to occur, this depth of soil must be cool (40 to 60°F) for 7 to 10 days prior to flowering.
3. **Canopy density.** High plant populations and factors generally associated with high yields (e.g. excessive application of nitrogen) enhance canopy density and contribute to environmental conditions within the canopy which promote infection and disease development.
4. **Field history.** If susceptible crops (e.g. vegetables and soybeans) in the field have had white mold previously this is an indication that inoculum for the disease is present in the field and may pose a risk to the crop.

White mold is one of the most difficult soilborne diseases to control. Complete control with fungicides is unrealistic.

Other options for disease management should also be explored including:

- Crop rotation to non-hosts (e.g. cereals and corn)

# Optimizing results with fungicides for white mold control



For maximum efficacy, fungicides need to reach the **target (flowers)** and provide good coverage. Below is a list of factors to consider when applying fungicides.

Factor	Recommendation
Water volume	40 – 50 gall/A
Ground speed	Less than 10 mph
Pressure	~ 40 psi
Nozzle selection	Single flat fans have been shown to be most efficacious for flower coverage in dense soybean crops
Boom height	Target the mid-point between the top of the canopy and the lowest leaves
Droplet size	Fine to medium droplet size Medium: 200 – 300 micron diameter
Conditions	Consider wind speed and if rain is imminent Check rain fast period for each fungicide

In dry beans, the optimal time to apply the first fungicide for white mold suppression is:

**1 open flower/plant in 10% of plants**

A second application may be considered 10 to 14 days later.

**Further information:** Dr. Sarah J. Pethybridge ([sjp277@cornell.edu](mailto:sjp277@cornell.edu))

The New York State Agricultural Experiment Station, Geneva

(315) 744-5359 (cell)

## Fungicides registered for white mold suppression in dry beans in New York State (2015)

Below is a summary of the fungicides registered for white mold **suppression** on dry bean in New York State at this time. Please check the most recent versions of the labels for updated information and safety guidelines.

<u>Product</u>	<u>Active Ingredient</u>	<u>Rate (/A)*</u>	<u>Fungicide Resistance Grouping**</u>	<u>Pre-Harvest Interval (days)</u>	<u>Re-Entry Interval (hours)</u>
<b>Endura® 70 WDG</b>	boscalid	8 - 11 oz	7	21	12
<b>Switch® 62.5 WG</b>	cyprodinil + fludioxonil	11 - 14 oz	9 + 12	7	12
<b>Omega® 500F</b>	fluazinam	0.5 - 0.85 pt	29	30	12
<b>Rovral® 4F</b>	iprodione	1.5 – 2 pt	2	0	24
<b>Proline® 480 SC</b>	prothioconazole	5.7 fl oz	3	7	12
<b>Topsin® 4.5 FL</b>	thiophanate-methyl	20 - 30 oz	1	28	72
<b>Aproach®</b>	picoxystrobin	8 - 12 fl oz	11	14	12
<b>Priaxor® Xemium®</b>	fluxapyroxad + pyraclostrobin	6 - 8 fl oz	7 + 11	21	12

\*Please check the maximum rate/A/season.

\*\*According to the Fungicide Resistance Action Committee guidelines.



*Ensuring fungicides reach the flowers is equally important as the fungicide selection*

