



# **WHITE MOLD MANAGEMENT IN ORGANIC DRY BEANS**

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The background of the slide is a grayscale photograph of various types of beans. Some beans are in glass bowls, while others are scattered across a light-colored surface. The beans include large kidney beans, smaller pinto beans, and very small lentils.

# OUTLINE

The Facts!

Symptoms

Crop Loss

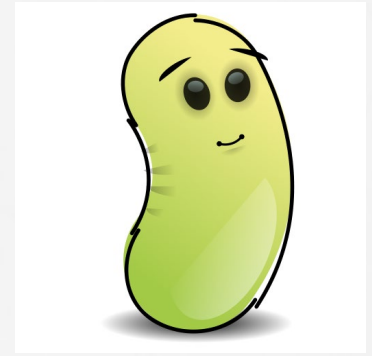
What, when and how?

Inoculum?

Integrated management & rolled-crimped cereal rye mulch

# WHITE MOLD: *FACTS!*

*Sclerotinia sclerotiorum*



Broad host range

Endemic within most mixed cropping rotations



# SYMPTOMS

Bleached, brown lesions

White cottony mycelia

*Stems and pods*

*'Flag' leaves*



## + *Indirect Crop Losses:*



Soilborne inoculum

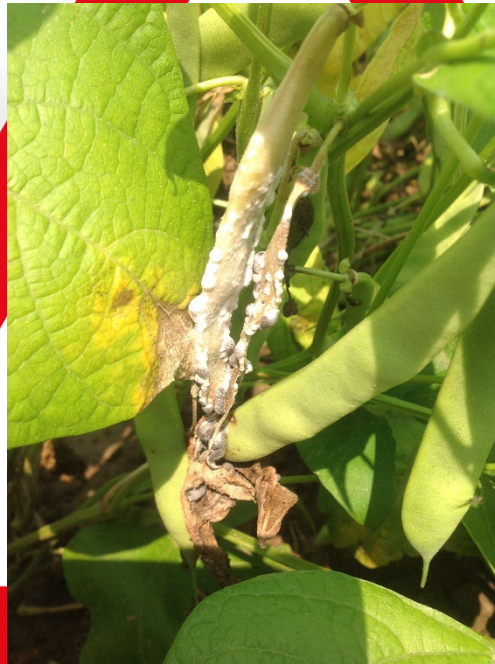
# ***Sclerotia:***



Soilborne inoculum

# WHITE MOLD:

*Pathogen*  
Usually sufficient to  
cause disease



*Environment*  
Dominant influence in  
spring and summer

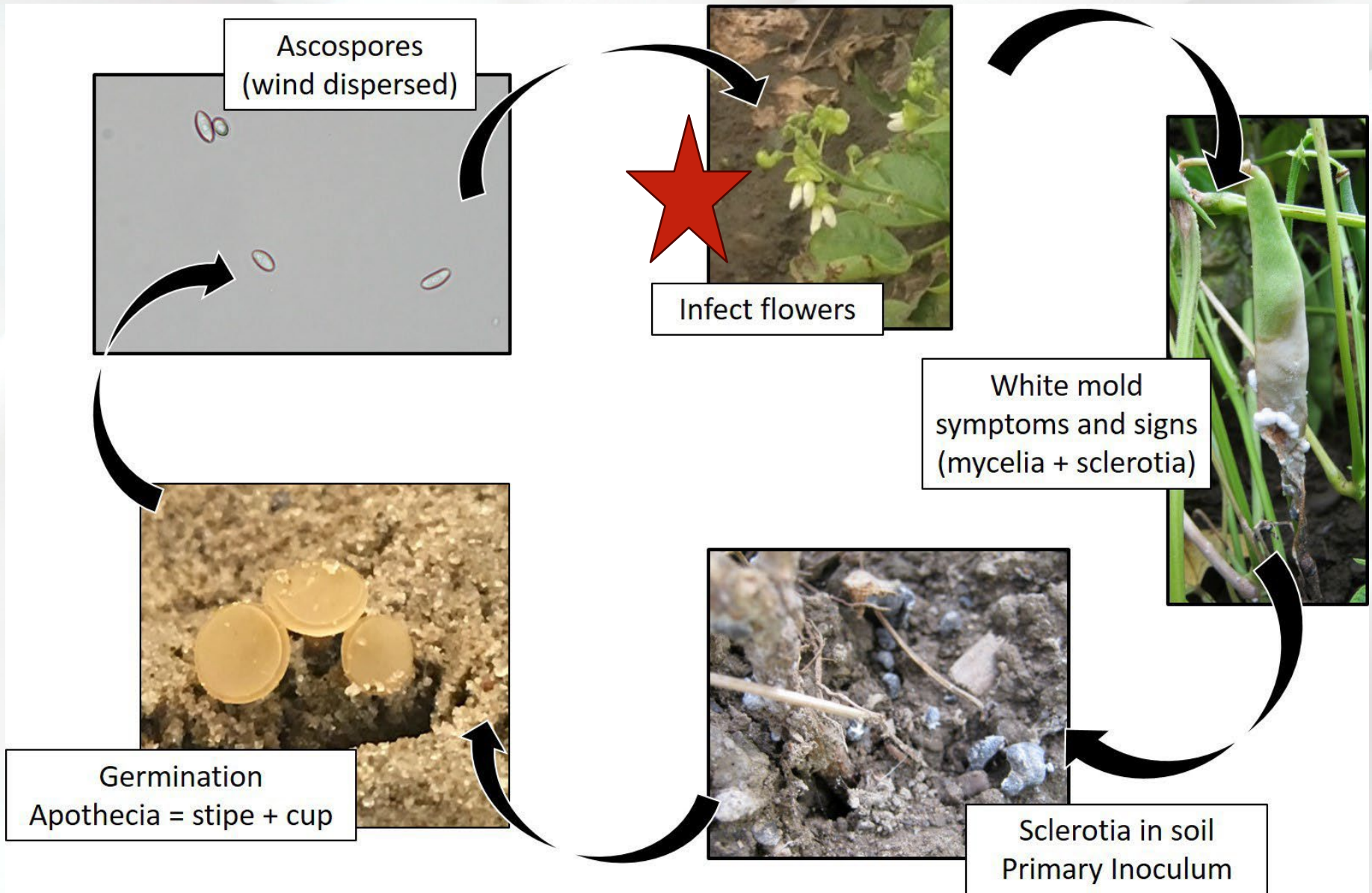
*Plant*  
No significant resistance/immunity

# WHITE MOLD:



# WHEN....?

# FLOWERING



# INOCULUM:

Predominantly *within* the field



One sclerotia



Many ascospores



Crop Loss

# WHERE...LONG-TERM RISK?

History of white mold?

Higher likelihood of sclerotia in soil

Topography

Undulating landscape

Poor air drainage



# RISK FACTORS....WEATHER:



< 85°F

Normal or above normal rainfall

Soil moisture at or above field capacity

Morning fog

High canopy humidity (leaves wet to touch)

# RISK FACTORS...CROP:



Cropping history

Early/dense canopy

High plant populations

Excessive plant nutrition

Weed management

Broadleaf weeds – alternative hosts

**Cool weather – favorable for pathogen and often extends flowering window**

# MANAGEMENT

The diagram features two interlocking gears. The left gear is orange and contains the text 'Tactics In-Season'. The right gear is white with a black outline and contains the text 'Strategies'. A thick black curved arrow on the left points from the orange gear towards the left edge of the frame. A thick black curved arrow on the right points from the white gear towards the right edge of the frame. The background is a collage of various beans and lentils in different colors and textures, including red, white, black, green, and orange.

Tactics  
In-Season

Strategies

# STRATEGIES:

Crop rotation to non-hosts  
Corn/grain



+ Weed control

# STRATEGIES.....TRADE-OFFS?

A close-up photograph of a green pea pod hanging from a stem covered in fine white hairs. The background is a soft-focus green, suggesting a field of pea plants.

Wider row spacing (?)

Decreased plant  
populations

Weed management

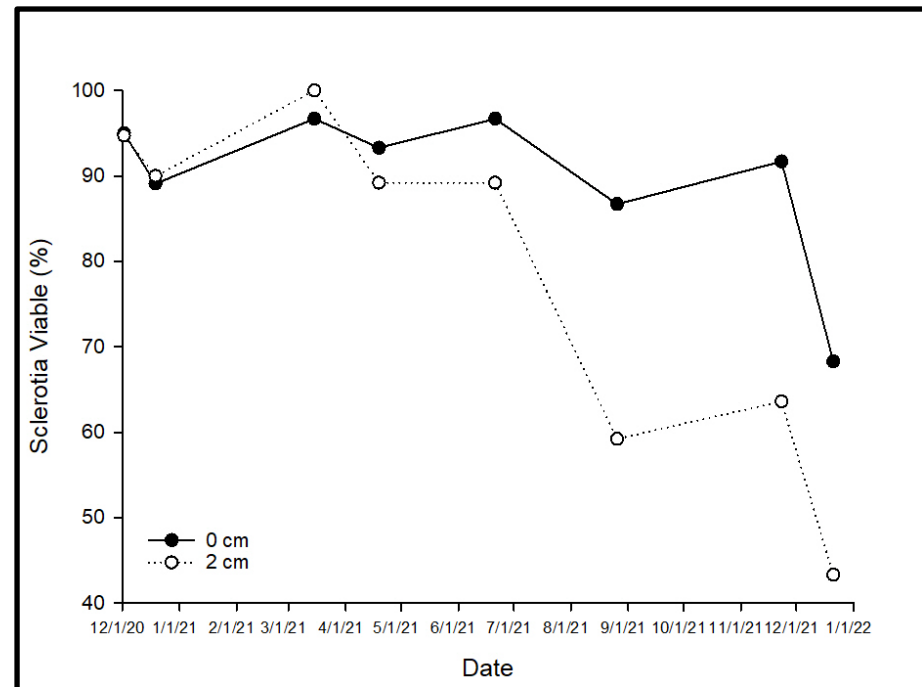
Upright varieties

# MANAGEMENT OF SCLEROTIA

Do not leave on soil surface

**Number and viability decreases at a faster rate when covered with soil**

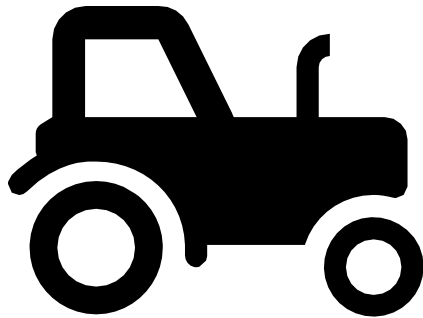
Cover them with soil to promote degradation



# CROP RESIDUE MANAGEMENT

Many pathogens  
survive in crop residue

*Incorporate promptly  
to encourage  
decomposition*



# SCREENINGS MANAGEMENT

**Farm Hygiene:**

***Consider the best place for disposal of harvesting screenings if contaminated with sclerotia***



# PLANNING

- Site-selection
- Airflow
- Field selection – little history of white mold



# PLANNING

## Crop rotation



*Away from susceptible crops for at least 3 years*

# TACTICS (IN-SEASON CONTROL):

*Infected blossoms serve as an inoculum source*

Timing of first application with early flowering





— OMRI-listed products  
are **protective**

If investing in crop  
protection, be  
proactive!

# OMRI-LISTED

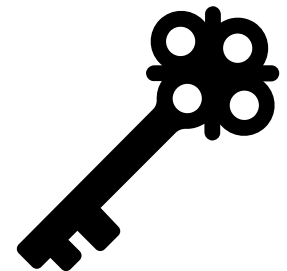
White mold in dry bean (NY)

Trade Name	Active Ingredient
Double Nickel LC	<i>Bacillus amyloliquefaciens</i> D747 strain
Stargus	<i>Bacillus amyloliquefaciens</i> F727 strain

***Best products in our NY trials***

***Success through timing***

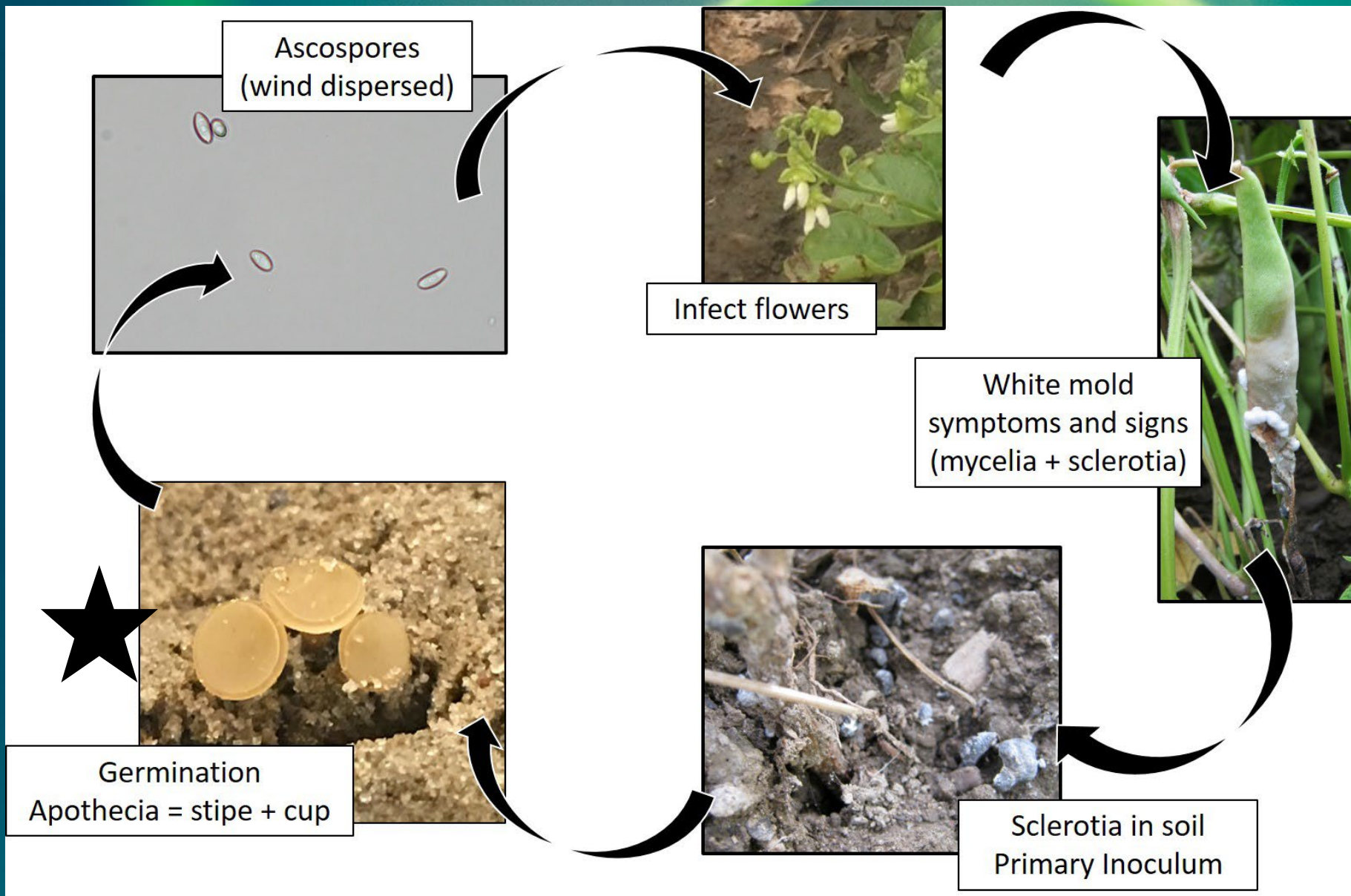
***1% flowering + 10% flowering (2 applications)***



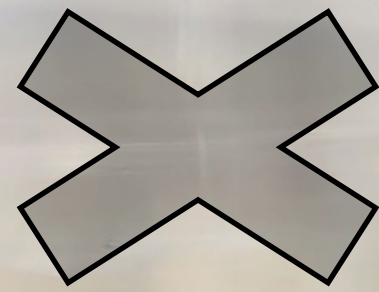


**POTENTIAL OF CEREAL RYE MULCH TO SUPPRESS  
WHITE MOLD IN NO-TILL DRY BEAN**

# LIFECYCLE...reminder!:



# INHIBITION OF SCLEROTIA



Sclerotia within the top inch of the soil profile = inoculum



# ROLLED-CRIMPED CEREAL RYE



One pass system  
Application to direct harvested dry beans  
System optimized for soybean

# ROLLED-CRIMPED CEREAL RYE

- Prevent germination of sclerotia

- Reduced light to soil surface
- Dilution of ascospores if formed?

- Other benefits?

- Weed suppression
- Soil health
- Reduced tillage (deliver new sclerotia to soil surface)



# GERMINATION OF SCLEROTIA

*Six sand-filled pots with sclerotia (6 per plot)*



# GERMINATION OF SCLEROTIA

*Reductions in germination of sclerotia under rolled-crimped rye mulch*



# GERMINATION OF SCLEROTIA

*Significant increase in nonfunctional germination*

*Energy exhaustion of sclerotia  
Reductions in soilborne inoculum*



# OTHER RESOURCES

Beans for Lunch Webinar Series

Other diseases of dry beans

<https://www.youtube.com/watch?v=q8R5CBkk-rY>



# ACKNOWLEDGEMENTS.....

<https://blogs.cornell.edu/ecobean/>



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