

# Increasing Canola Yields Through Effective Disease Management

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# Talk Content

- Introduction
- Principles of effective disease management
- Diseases of Canola
- Disease Management
- Future Directions



# Personal Introduction

- Assistant Professor and Extension Specialist in Plant Pathology



- Based at the Northwest Research and Outreach Center, Crookston, MN



# Key to Effective Disease Management

1. Correctly identify and monitor pests
2. Select best management strategy
3. Keep records and evaluate program



# 1. Scouting

- Know your crop to be able to identify abnormalities
- Identify the cause
- Determine pest growth stage and crop growth stage
- Is the pest increasing or decreasing?
- Is the pest limited to a particular area or field?
- Use the right scouting method for each pest



## 2. At what point does it pay to use control?

- Economic damage (ED) = cost of preventable damage exceeds the cost of control.
- Economic injury level (EIL) = the lowest pest population capable of causing economic damage.
- Economic Threshold (ET) = pest population level at which a control tactic should be employed to prevent pest population reaching EIL.



# 3. Monitoring, Recording and Evaluating

- **Monitor** -when you visit a field make a note of crop condition and pest levels.
- **Record** -control measures, application dates, weather conditions rates, timing and costs.
- **Compare** -how effective where different types of control depending on timing, pest level etc.



# Principle Diseases of Canola

- White mold- *Sclerotinia sclerotiorum*
- Black-leg -*Leptosphaeria* spp.
- *Alternaria* spp.





# White Mold

- White mold infects many crops including beans, sunflowers and canola.
- In Minnesota the disease has become more prevalent when canola production increased and weather became wetter.
- Under these conditions losses can be severe and have been reported to be as much as 50% in badly affected fields.



# White Mold -Life Cycle

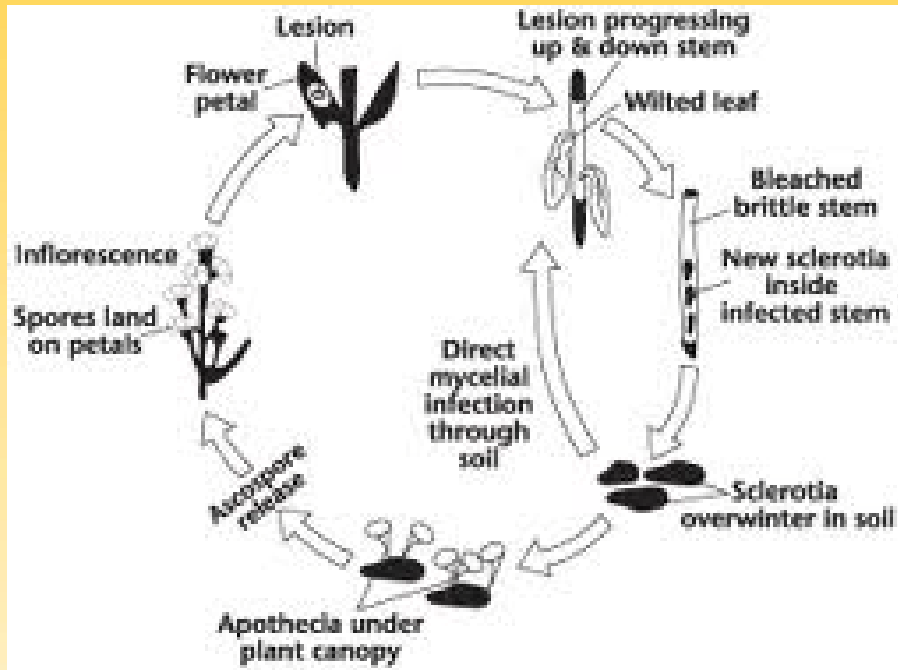


Photo: USDA



Photo: Beth Hoar

Image: Canadian Canola Council



# White Mold Control

- Rotation -4 years non-host crop.
- Fungicides applied at mid to late petal fall.
- Debris management –crop residue
- Broad leaf weed management- remove alternate hosts



# Blackleg- Symptoms

- Black leg is caused by *Leptosphaeria* spp.
- Leaf lesions can appear as early as the first true leaf
- Stem lesions occur after flowering

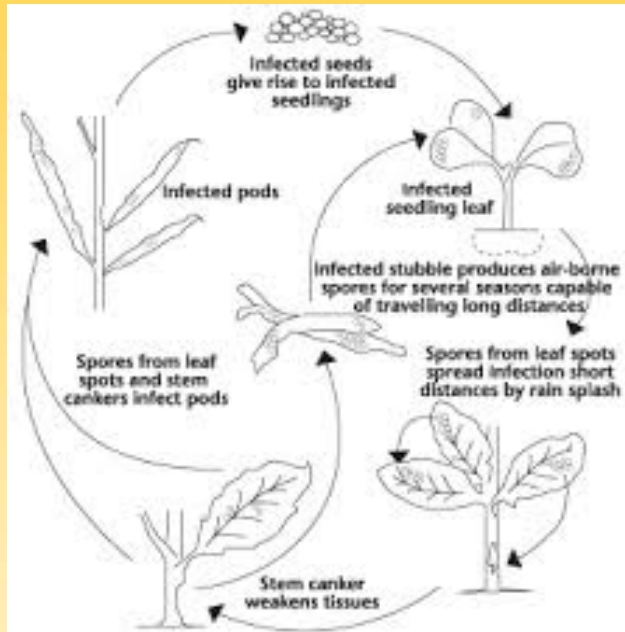


Photos: Canola Council of Canada



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# Blackleg life cycle



- Primary infection from crop residue
- Fungus can survive for up to four years on debris



# Blackleg control

- Host resistance is important but some is race- specific.
- Management of host residue
- Crop rotation of 3-4 years
- Use of clean seed



# Alternaria- Symptoms

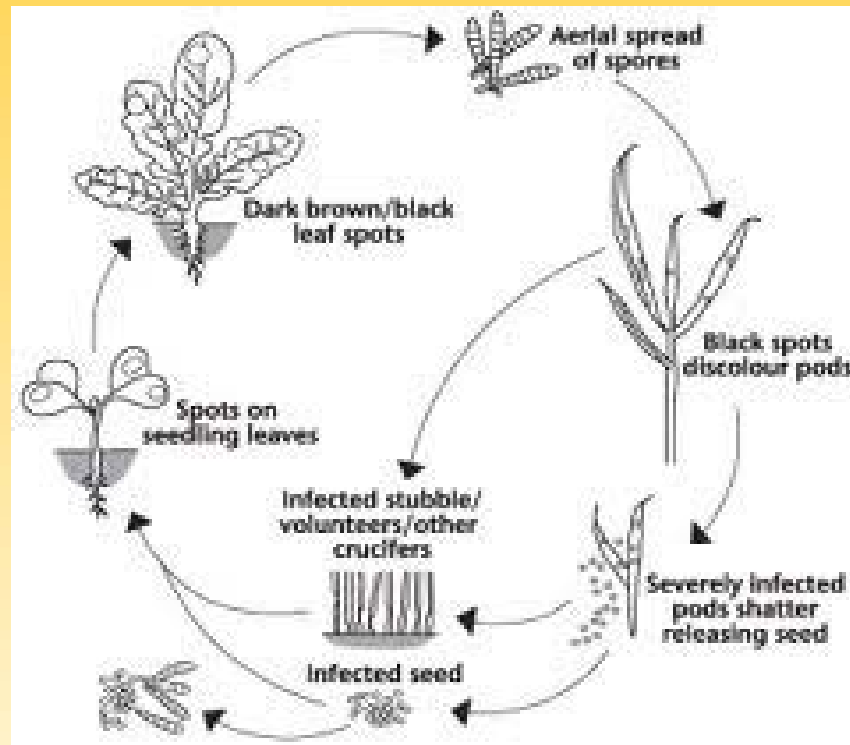
- 3 different *Alternaria* species cause disease on crops.
- All aerial parts of the plant are subject to infection.
- In infected pods it can cause pod shattering.



Photos: Canola Council of Canada



# Altarnaria Life-cycle





# Alternaria Control

- Some low level of resistance in some brassica species but all are susceptible to a degree.
- 3 year rotation with non- host crops.
- Debris management
- Early petal fall applications of Iprodione have shown efficacy in controlling *Alternaria spp.*



# Summary

- Effective disease management is one part of the sustainable yield tool box.
- The main diseases of Canola in MN can be controlled by similar management strategies which include both agricultural practices and use of fungicides.

Rotation and residue management are key



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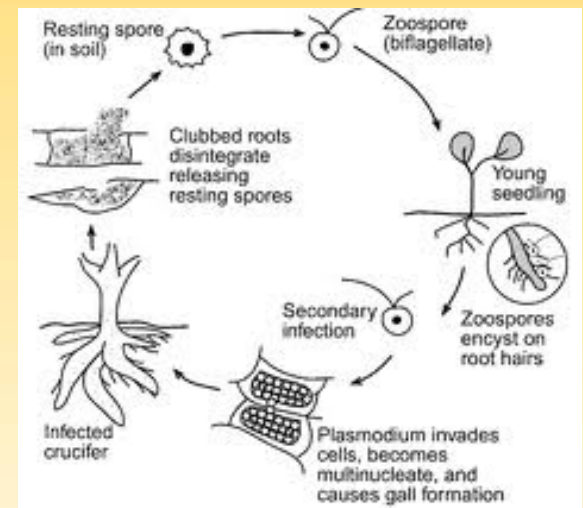
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# Other Diseases to look out for

- Club root caused by *Plasmodiophora brassicae*



Photo: Canola Council of Canada



Life cycle: Ohio State University



# Information Gathering

- Help us to help you.....
- If you are interest in receiving e-mails about pest alerts throughout the growing season, please leave your e-mail address on the sign up sheet.



# Acknowledgements

- Donn Vellekson
- Dave Grafstrom
- Nancy Elhke

