Fungicide timing and rate to control blackleg disease in winter canola

WSU Oilseed Cropping System Meeting
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Recognition

- Washington Canola Commission
- Alan Wersing, Jennifer Gourley OSU
- Christina Hagerty, OSU Plant Pathologist

Summary

Biology of Blackleg

History of Blackleg in Eastern Oregon

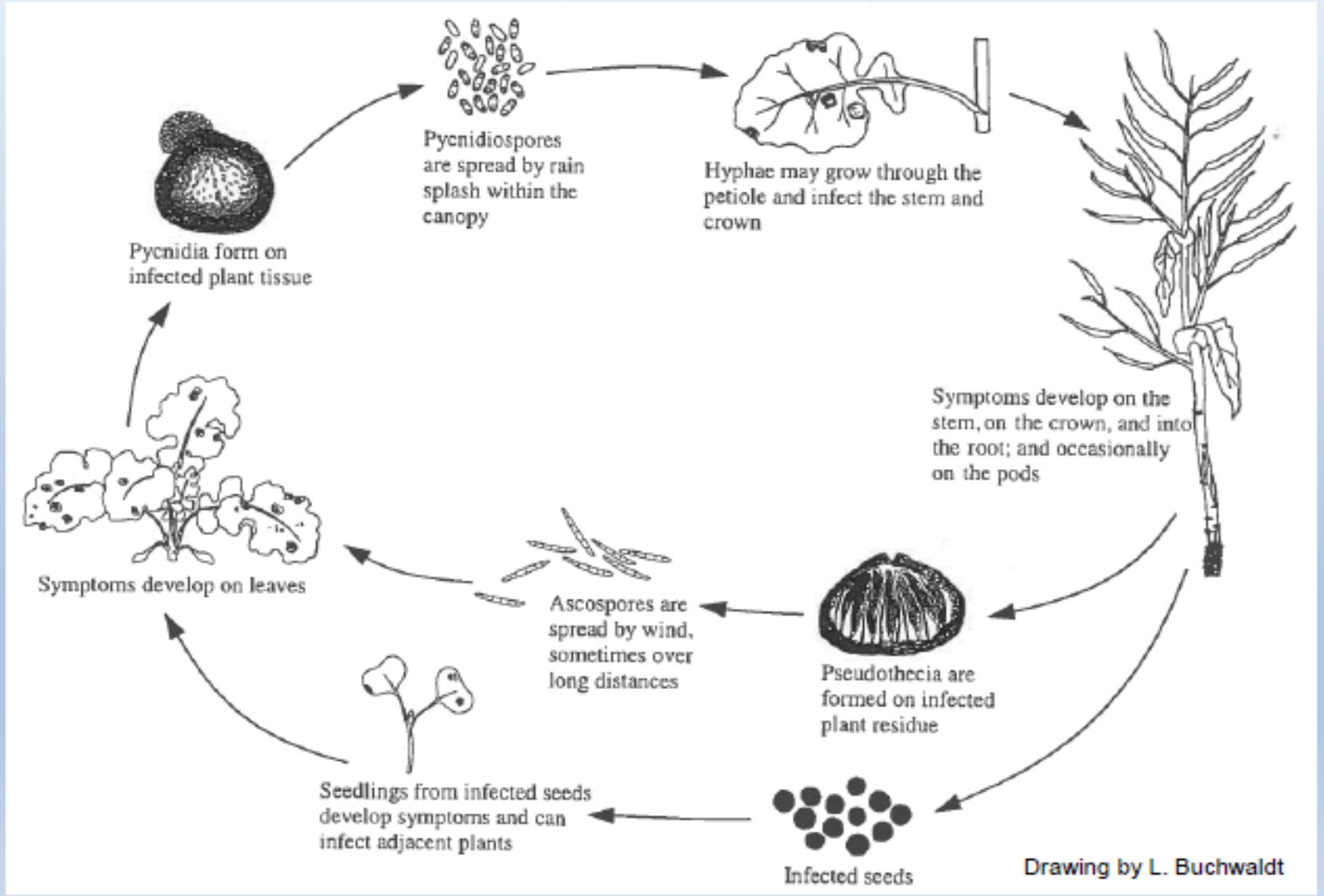
2017 Fungicide Trial

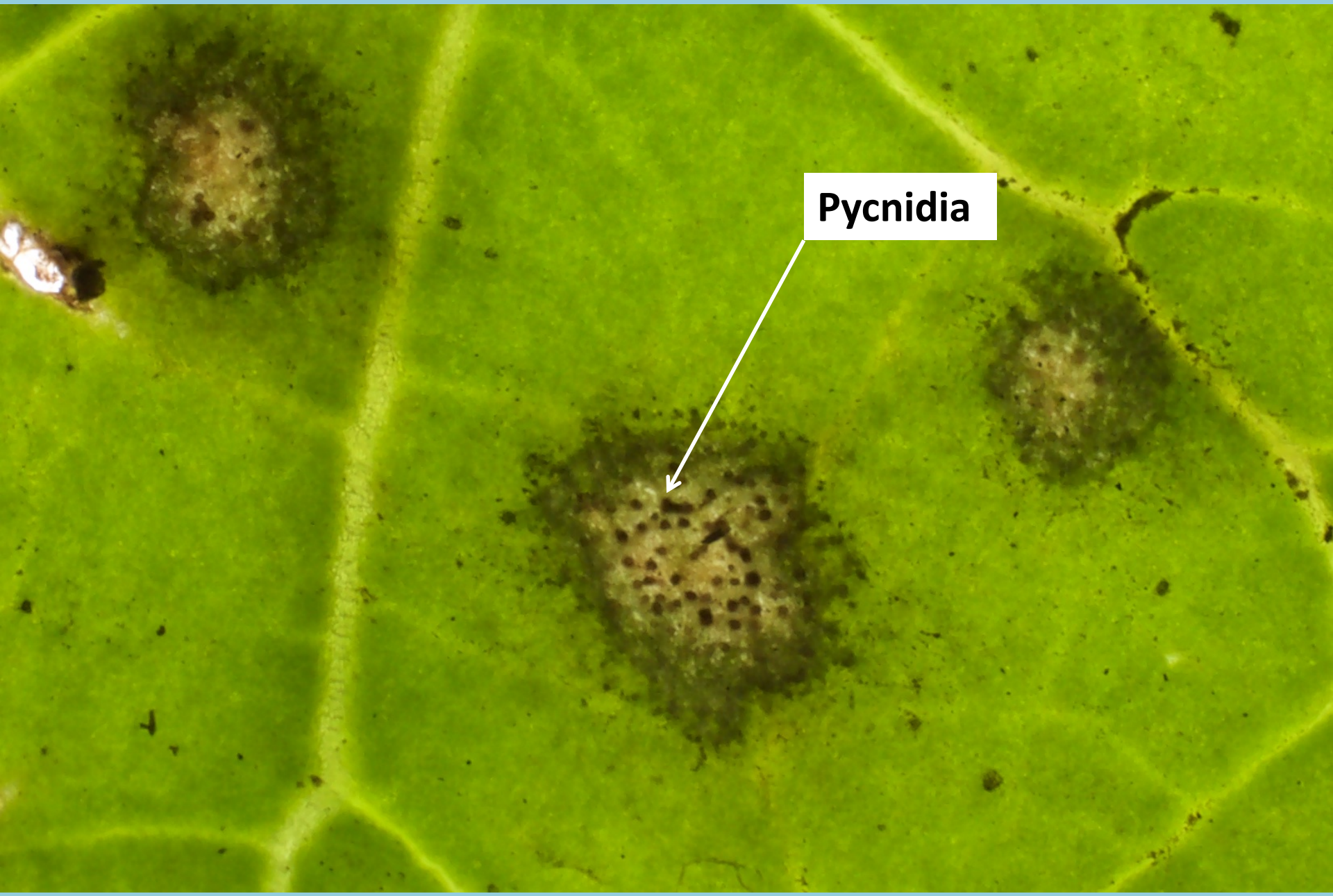
Blackleg

- Most important disease of Brassica worldwide.
- Endemic in Canadian provinces and US Midwest, Australia, Europe
- WA, OR and ID were considered blackleg-free until the last few years ??????

Black Leg of Crucifers

- *Phoma lingam*: asexual, pycnidia with conidia, splash dispersed
- *Leptosphaeria maculans*: sexual, pseudothecia with ascospores, aerially dispersed




Pycnidia

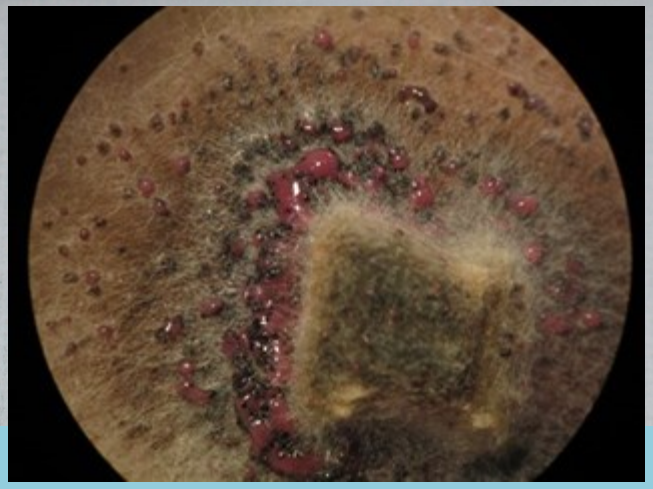
Biology

- **Blackleg on Canola**

  Leptosphaeria maculans (Sexual stage)

  Phoma lingam (asexual)

pseudothecia



ascospores

Chemical (Fungicide Group)	Application[1]	Dosage[2]	Disease Control[3]			Remarks
			Alternaria Black Spot	Black-leg	Sclerotinia Stem Rot (white mold)	
Azoxystrobin (11) Quadris, 22.9% Satori, 22.9% Equation, 22.9%	Spray or fungigation	6.0-15.5 fl oz/A	X	X	X	Resistance statement 5[4] *Alternaria* Black Spot alone: 8.0 fl oz/A at pod stage (95% petal fall) Blackleg: 6.2 fl oz/A at 2- to 4-leaf stage *Alternaria* Black Spot or *Sclerotinia* Stem rot: 9.2-15.4 fl oz/A at 10-25% flowering (3-7 days after first flower).
Fluxopyroxad (7) + Pyraclostrobin (11) Priaxor 14.33% + 28.58%	Spray or fungigation	4-8 fl oz/A	X	X	X	Resistant statement 5[5] & 6[5]. For blackspot, apply at early pod development, for blackleg apply at 2 to 4 leaf stage, for *sclerotinia* apply at 20% to 50% bloom, and a second application may be made 14 days later if weather conditions are favorable for disease development. Do not make more than two consecutive applications of priaxor or more than 16 oz per season.
Prothioconazole (3) Proline 480 SC, 41%	Spray	4.3-5.7 fl oz/A		X	X	A 2(ee) allows for application of Proline at 4.3-5.7 oz/A at 2-4 leaf stage for blackleg management. Use higher rate if field has history of severe disease or if susceptible variety grown.
Picoxystrobin (11) Aproach, 22.5%	Spray	6-12 fl oz/A	X	X	X	For white mold, apply at 20-50% bloom at 8-12 fl oz/A. Do not apply more than 24 fl oz/A per season. PHI = 28 days.
Pyraclostrobin (11) Headline EC, 23.6% Headline SC, 23.3%	Spray	6-12 fl oz/A	X	X	X	Resistance statement 5[4]. For blackleg control, apply at 2- to 4-leaf stage. For black spot control, apply at early pod development. A second application 7-10 days later may be made if disease persists or weather is favorable for disease.

Registered Foliar Fungicides

- **Cabrio EG**, EPA Reg. No. 7969-187

  (a.i. pyraclostrobin, FRAC Group 11)
  Registered on *Brassica* leafy and root vegetables, radish/ daikon; NOT registered for rapeseed/canola

- **Quadris Flowable**, EPA Reg. No. 100-1098

  (a.i. azoxystrobin, FRAC Group 11)
  Registered on *Brassica* leafy and root vegetables, radish/ daikon, rapeseed/canola

- **Proline 480 SC**, EPA Reg. No. 264-825

  (a.i. prothioconazole, FRAC Group 3)

  Registered only on canola.

- **Priaxor Xemium Brand**, EPA Reg. No. 7969-311

  (a.i. fluxapyroxad, FRAC Group 7 +
  a.i. pyraclostrobin, FRAC Group 11)

Umatilla County 2015, 2016 and 2017

- April 2015 on 3fields not winter killed + trials
- February 2016 4 fields w. canola fields + trials
- February 2017 5 field w. canola + trials
- Found on Residue in 2014, 2015, 2016 Fields

- Not found in Union or Morrow County

2017 Blackleg Control Study

Randomized complete block experiment with 4 treatments and 4 replications

4 Treatments (7 oz quadris, Azoxystrobin)

1) control (no fungicide),
2) April 5 (early bolt)
3) April 5, April 15 (mid bolt)
4) April 5, April 15, April 25 (initial bud)

2017 Blackleg Control Study

Amanda winter canola 6 lb seed/acre

Sown 15 Sept. 2016

6-inch spacing

Plot dimension 11 x 20 ft

100 N PP, 30 N spring, 20 P2O5 PP, 10S PP

UAN, dry urea, 10-34, 10-0-0-26

Assure II (11 oz/acre) 1 Nov 2016

Backpack sprayer, 10 ft boom, 30 psi, 15 gal H20

Swath 29 June, Combine 5 July


CAUTION
HEGE 140

Disease Incidence

All plants in 20 feet of row cut throw the base with hand shearers

Each plant Identified as healthy, blackleg or Sclerotinia infected.

Results

Azoxystrobin Application	Blackleg infection %	p 0.05	p 0.15	Yield lb/acre	p 0.05	p 0.15
None	41.7	A	A	3516	A	B
7 oz*	16.1	BC	BC	4069	A	A
7 oz* + 7 oz**	20.2	B	B	4075	A	A
7 oz*+ 7 oz**+ 7 oz***	6.6	C	C	4083	A	A
LSD		18	11		746	519

Quadris Economics

Amazon Price $215/gallon

$1.68/oz

7 oz = $11.75

2018 Blackleg Control Study

Randomized complete block experiment with 6 treatments and 4 replications

6 Treatments (7 oz quadris, Azoxystrobin)

1) control (no fungicide),
2) Autumn, 20 Oct
3) two applications Oct 20, Spring 1
4) Spring 1
5) Spring 1, Spring 2
6) Spring 1, Spring 2, Spring 3

Budget 2018

SALARIES	
0.05 FTE Academic Research Assistant (0.57 OPE)	**$2,150**
OPE (benefits)	**$1,226**
Total	**$3,376**
SERVICES/SUPPLIES	**$1,324**
TRAVEL	**$300**
TOTAL	**$5,000**