



Canola Disease Scouting

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AGRONOMIC & REGULATORY SERVICES MANAGER

BRETTYOUNG SEEDS

DATE: JANUARY 2024

Disease & Casual Pathogen

Alternaria black spot (*Alternaria brassicae*, *A. alternata* & *A. raphani*)

Blackleg (*Leptosphaeria maculans* & *L. biglobosa*)

Clubroot (*Plasmodiophora brassicae*)

Fusarium wilt (*Fusarium oxysporum*)

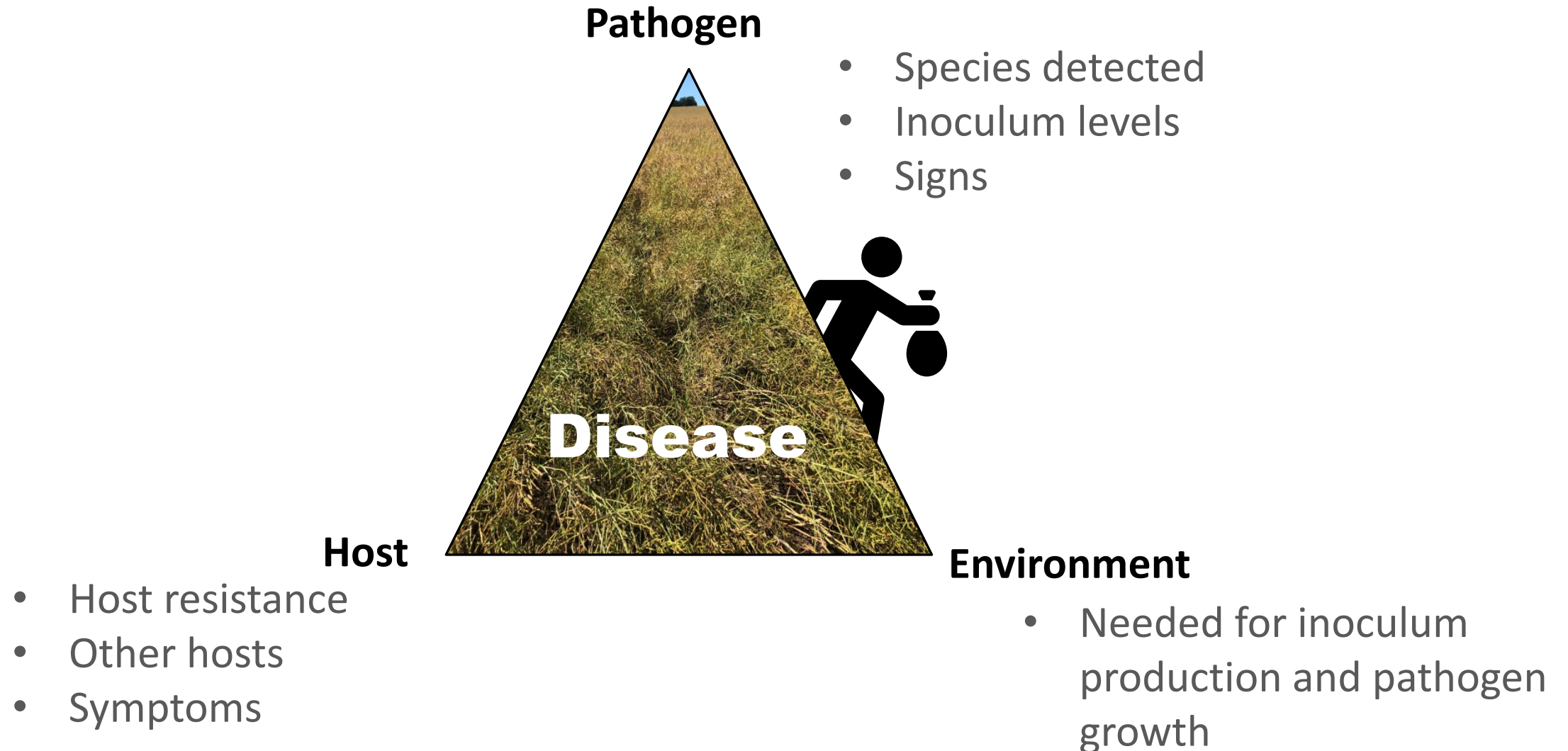
Grey stem (*Pseudocercospora capsellae*)

Root rots (*Pythium* spp., *Fusarium* spp., and *Rhizoctonia solani*)

Sclerotinia stem rot (*Sclerotinia sclerotiorum*)

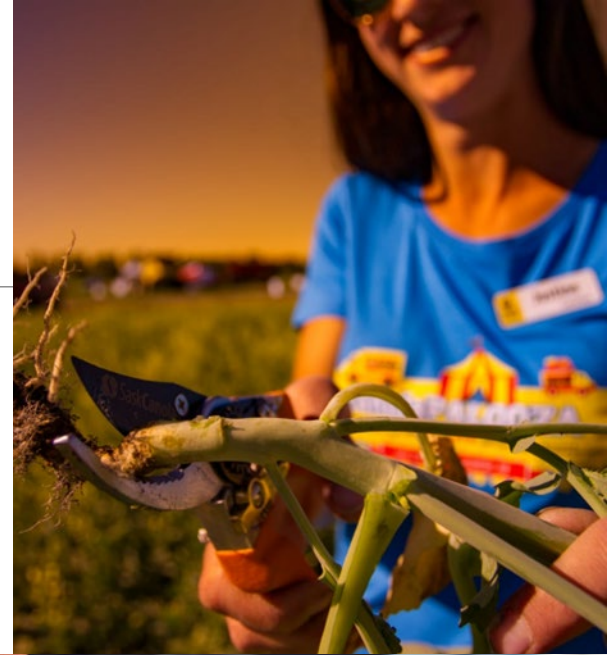
Verticillium stripe (*Verticillium longisporum*)

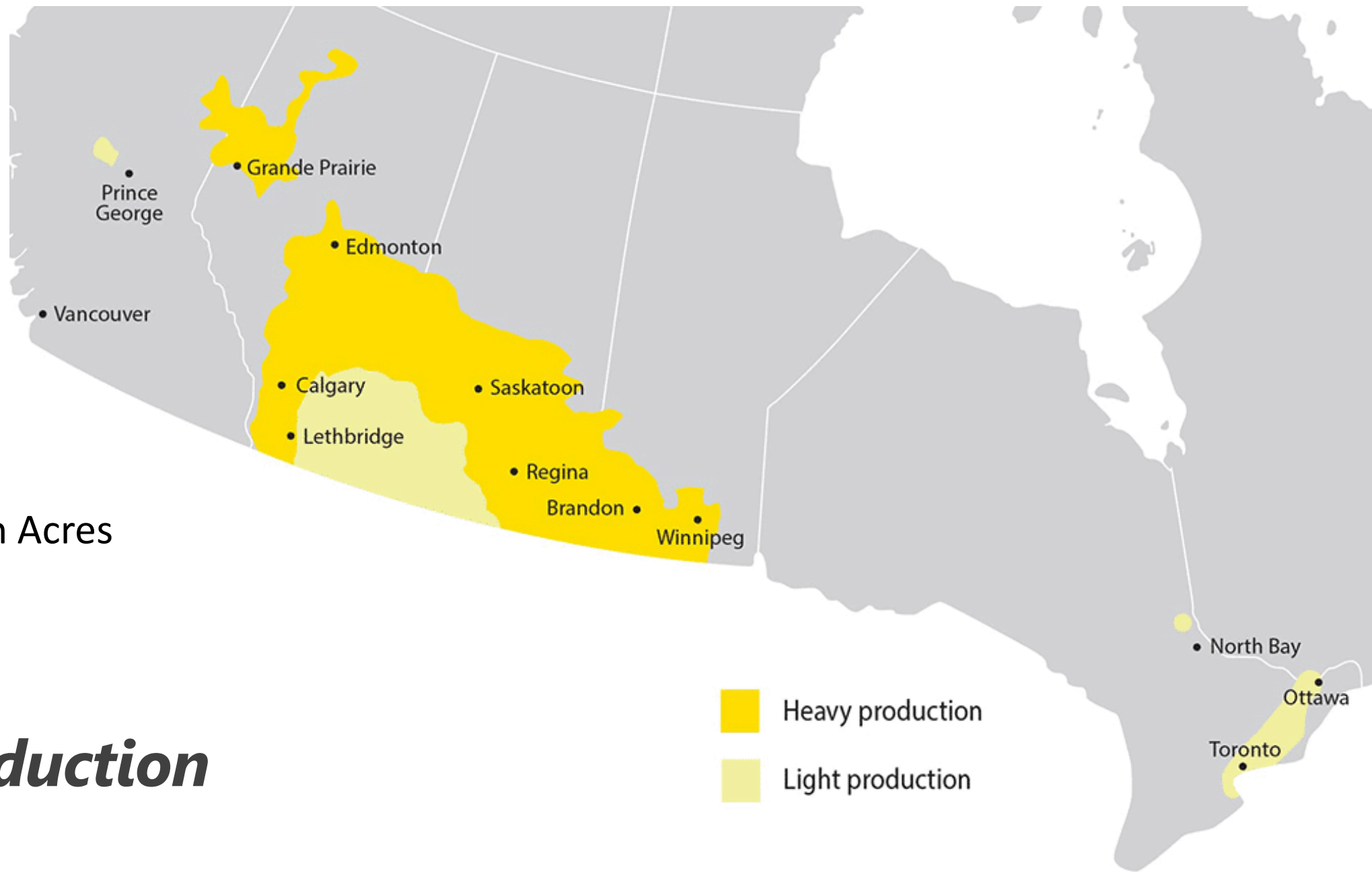
Robber Identification



Integrated Pest Management: BMPs

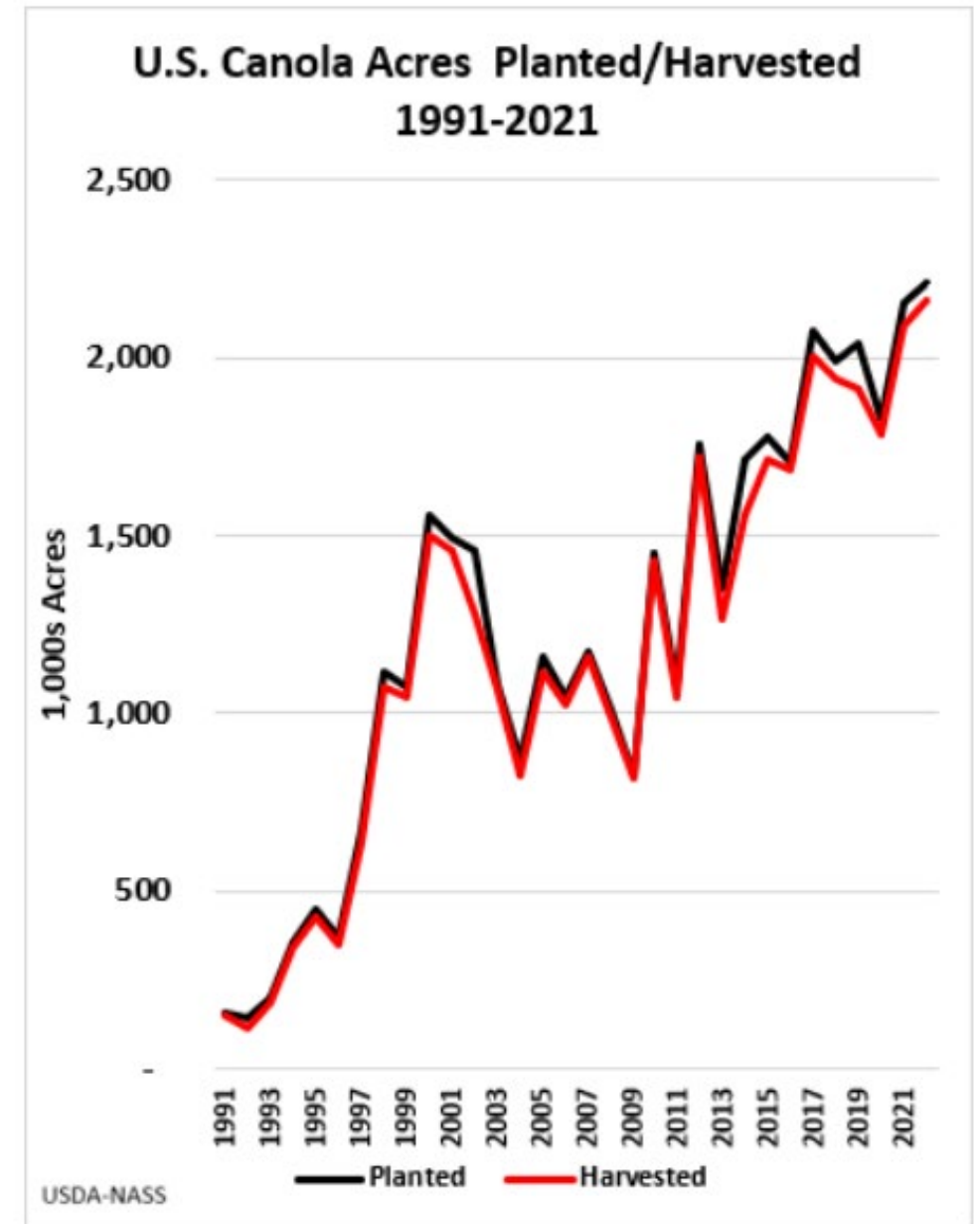
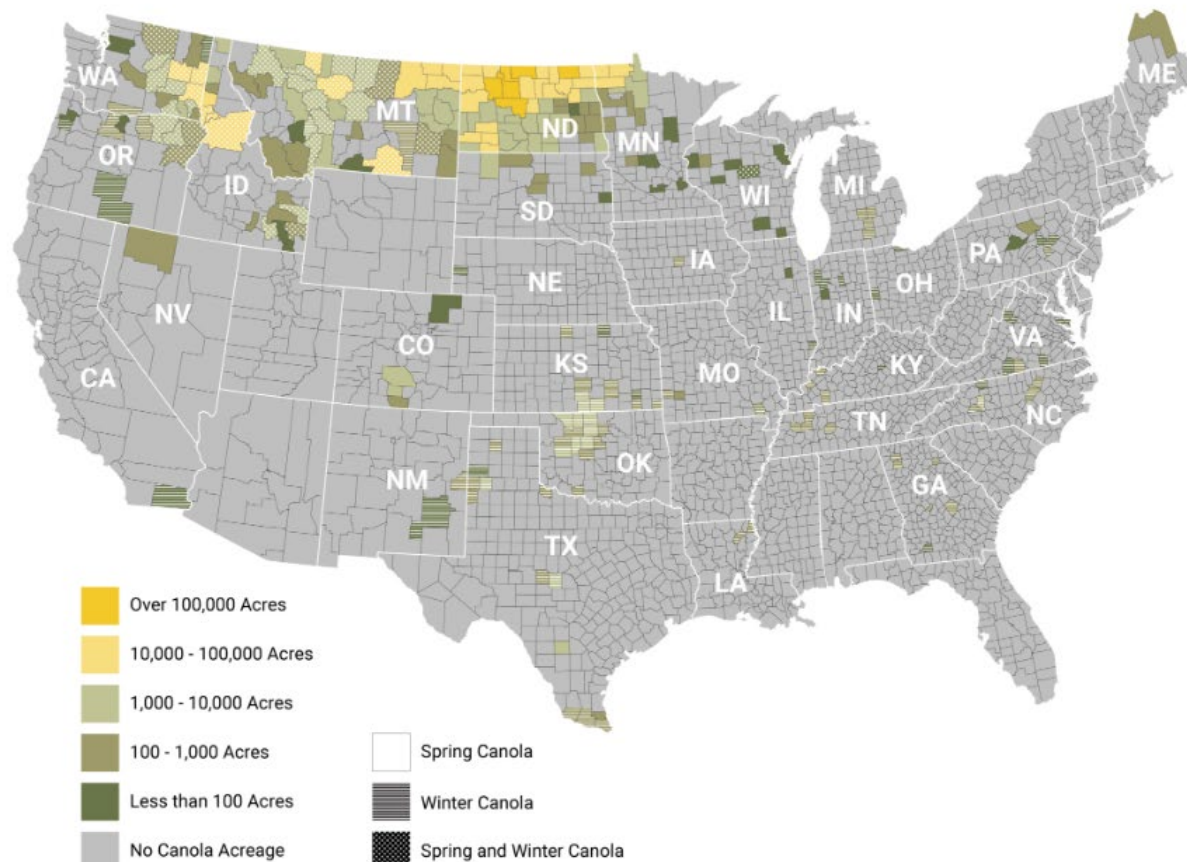
- Crop diversity: extend time between brassica crops
 - Management of weeds
- Disease identification by crop scouting
- Use of resistant hybrids
 - Stewardship of resistance sources
- Fungicide use
 - Seed treatments
 - Foliar applications





Increase in Acreage/Production

U.S. Canola-Growing Regions by County



BLACKLEG

Defining the Terms

Pathogen

- *Leptosphaeria maculans*
- *Leptosphaeria biglobosa*
- Signs: pycnidia or pseudothecia



Disease

- Blackleg in canola
- Brassica disease
- Symptoms: stem cankering leading to premature ripening, pod drop, plant lodging



Leptosphaeria maculans



Blackleg Disease Life Cycle

Leptosphaeria maculans

1 Spores Released

In the spring, ascospores are released from the infected stubble and infect plants through stomata and wounds.

Crop rotation allows residue to decompose, reducing the inoculum available to infect the next crop.

2+ years

6 Blackleg Survives on Residue

Fungus overwinters for 2+ years on infected canola stubble, primarily as mycelium pycnidia, and pseudothecia. See [D](#) below.

2 Primary Infection

Cotyledons and young leaves exhibit lesions with pycnidia. See [A](#) below.



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3 Secondary Infection

The pycnidia release pycnidiospores which spread disease to other leaves and plants via rain splash and wind. Secondary infection has less impact on blackleg severity.

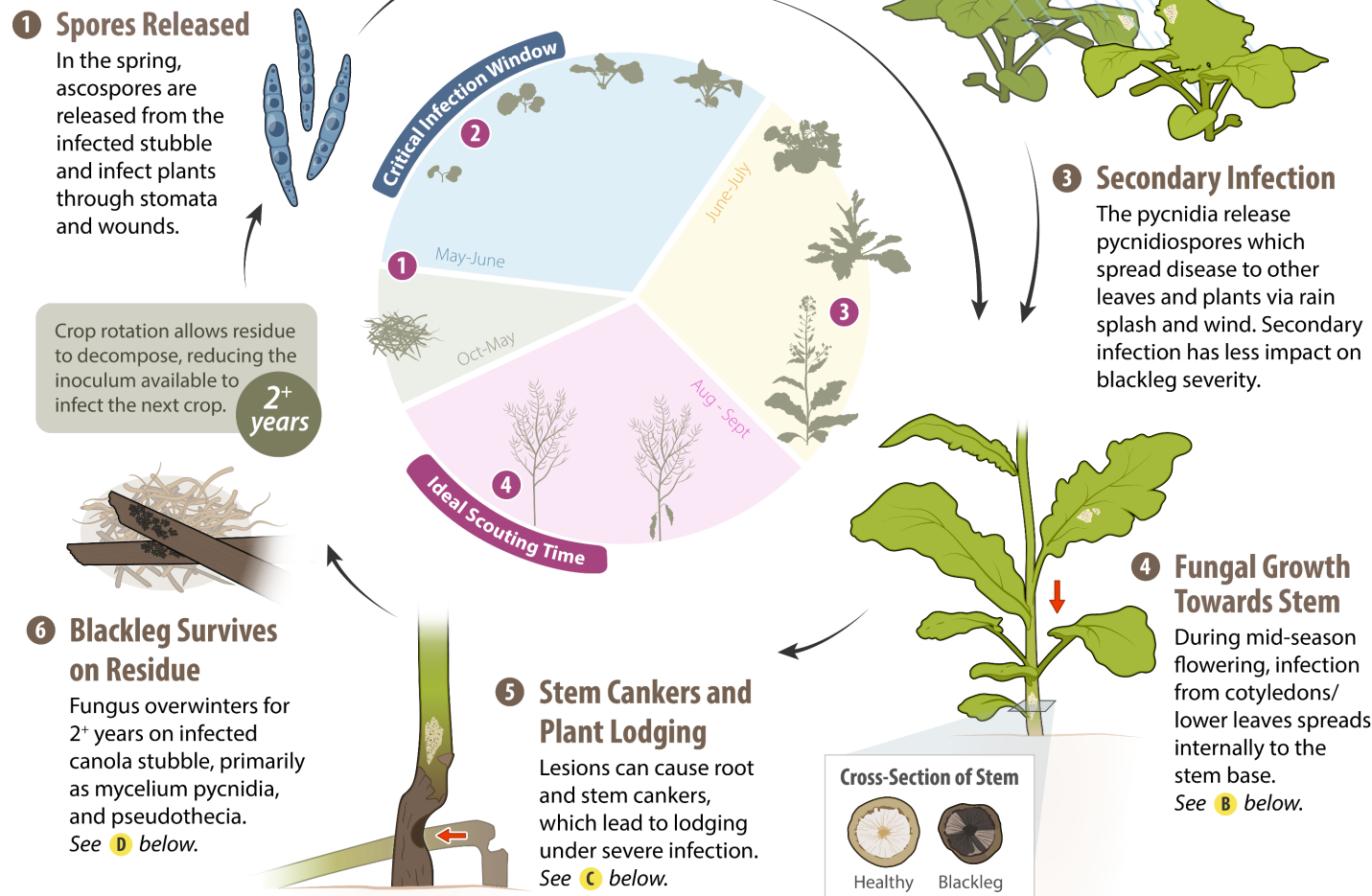
4 Fungal Growth Towards Stem

During mid-season flowering, infection from cotyledons/lower leaves spreads internally to the stem base. See [B](#) below.

5 Stem Cankers and Plant Lodging

Lesions can cause root and stem cankers, which lead to lodging under severe infection. See [C](#) below.

Cross-Section of Stem





Scouting

Identifying Blackleg throughout the growing season









Disease Severity

- Used at 60% seed colour change to rate the severity of the disease
- Can be used to determine yield losses



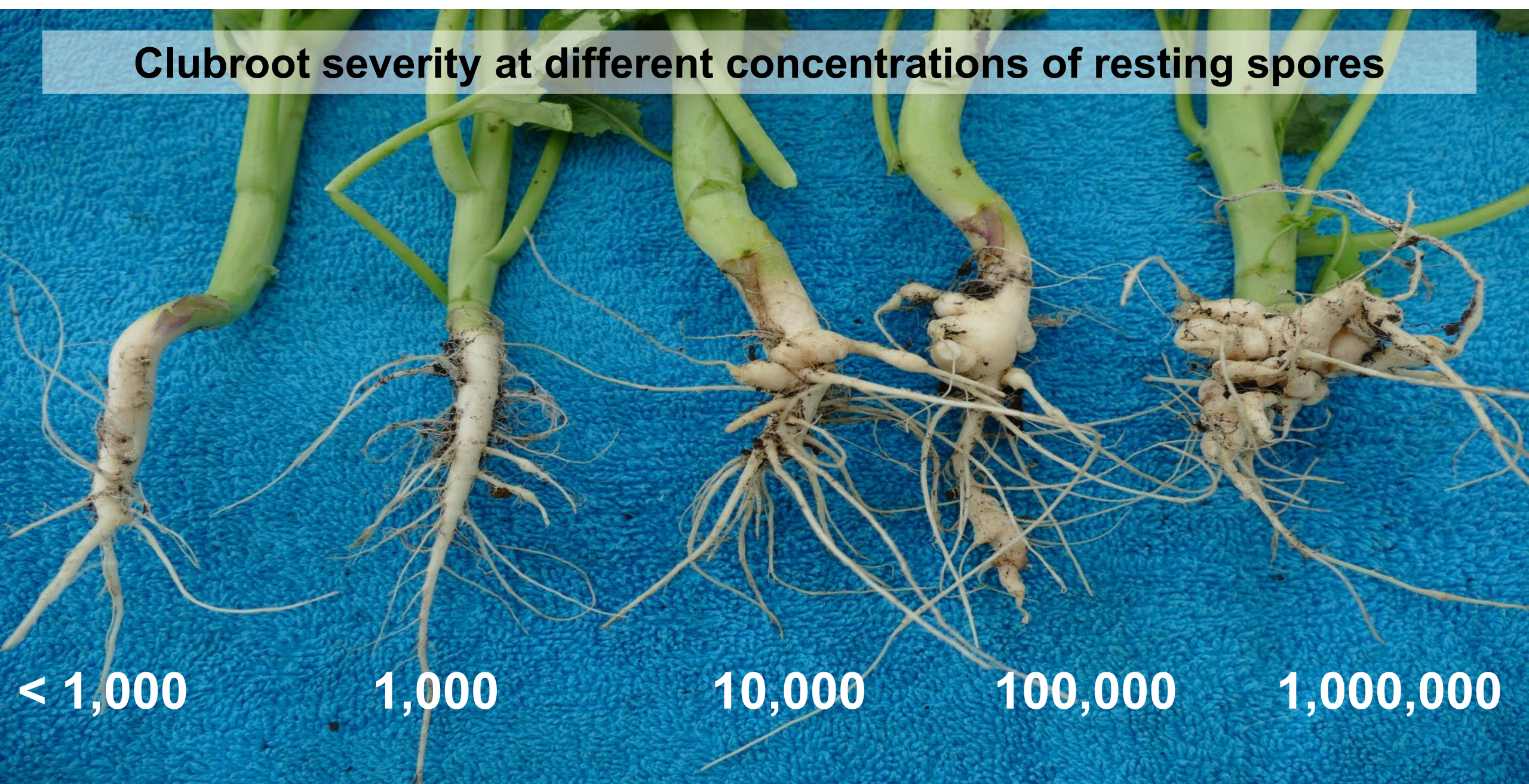
BLACKLEG Disease Severity Rating Scale

Blackleg severity is scored for each canola plant using the following scale based on the area of diseased tissue in the cross section

0		0: No diseased tissue visible in the cross section.
1		1: Diseased tissue occupies 25% or less of cross section
2		2: Diseased tissue occupies 26-50% of cross section
3		3: Diseased tissue occupies 51-75% of cross section
4		4: Diseased tissue occupies >75% of cross section with little or no constriction of affected tissues
5		5: Diseased tissue occupies 100% of cross section with significant constriction of affected tissues; tissue dry and brittle, plant dead



Clubroot severity at different concentrations of resting spores

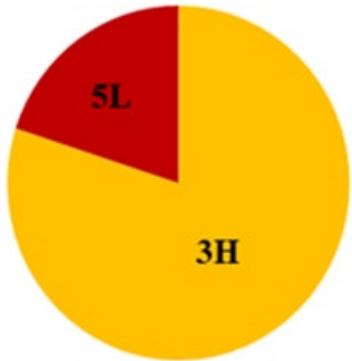


Resistance Management

Pathogen populations can adapt in response to selection pressure

Ex. Canola hybrid is resistant to pathotype 3H (yellow spores)

Year 1



Year 3



Year 5



Sclerotinia Management

Plan to use fungicide unless

- BELOW to normal rainfall
- Under 30-35 bushel crop
- Crop canopy is continually dry

Spray window 20-50% bloom

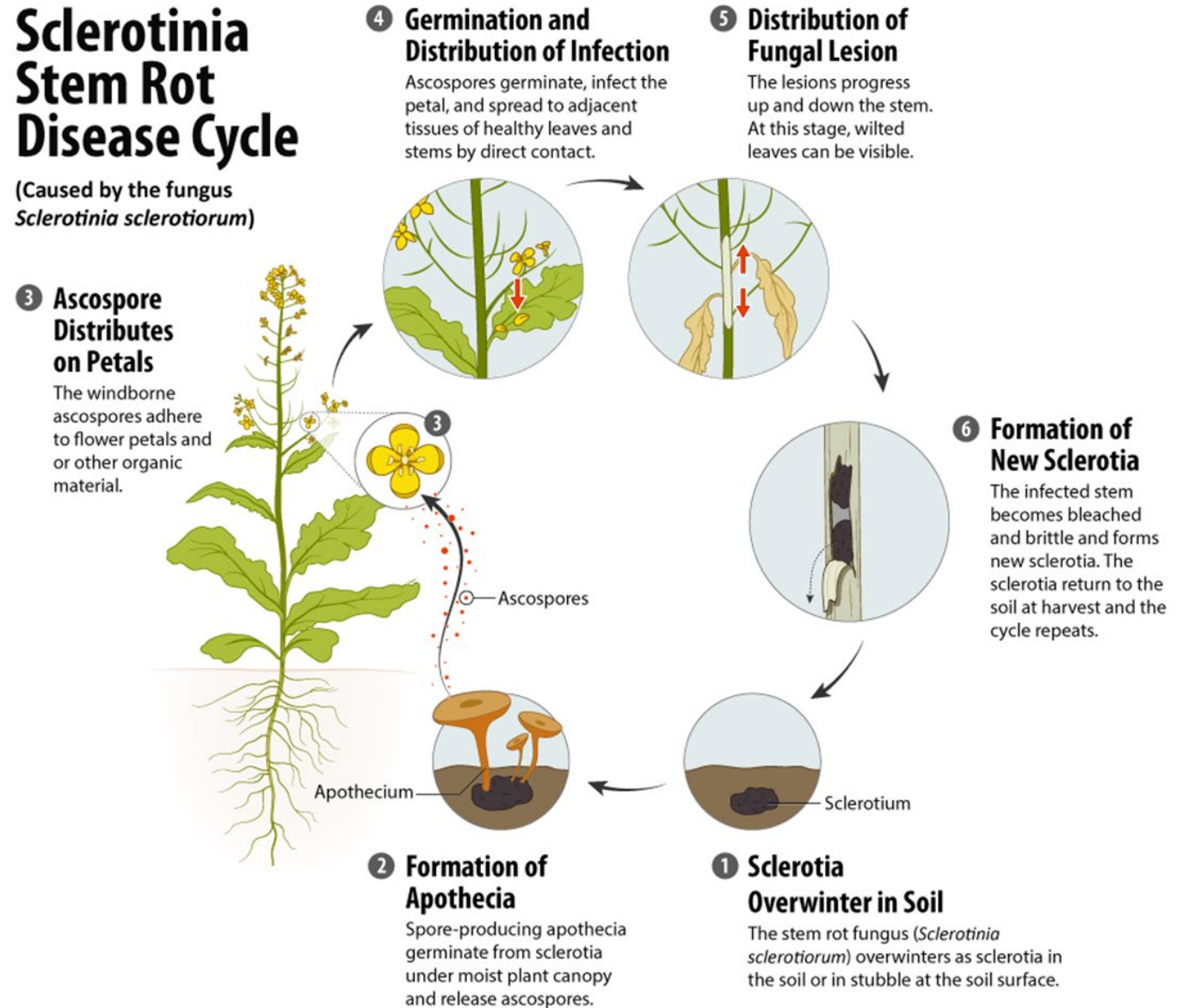
Rotate fungicides

Use tolerant varieties?

- A new tool in the kit

Sclerotinia Stem Rot Disease Cycle

(Caused by the fungus *Sclerotinia sclerotiorum*)



Blackleg seed treatments

Product	Company	Group	Active ingredient	Control
Helix Saltro	Syngenta Canada Inc.	3,4,7, 12	Pydiflumetofen 500g/L Difenoconazole 16 g/L Metalaxyl-M and S-isomer 5 g/L Fludioxonil 1.7 g/L Sedaxane 3.4 g/L	seed and air-borne blackleg
Helix Vibrance	Syngenta Canada Inc.	3, 4, 12, 7	16 g/L difenoconazole, 5 g/L metalaxyl-M and S isomer, 1.7 g/L fludioxonil, and 3.4 g/L sedaxane	seed-borne blackleg
Prosper EverGol	Bayer	4, 7, 11	10.7 g/L penflufen, 7.15 g/L trifloxystrobin, 7.15 g/L metalaxyl	seed-borne blackleg
Rancona V RS	UPL AgroSolutions Canada Inc.	3, 7	9.38 g/L ipconazole and 87.5 g/L carbathiin	seed-borne blackleg



Foliar Fungicides for Blackleg

Active ingredient	Product brand	Company	Group	Active ingredient details
Azoxystrobin	Azoshy 250 SC	Sharda Crop Chem Canada	11	250 g/L azoxystrobin
	Emissarius	UAP Canada	11	250 g/L azoxystrobin
	Quadris	Syngenta Canada	11	250 g/L azoxystrobin
	Quasi	AgraCity Crop & Nutrition Ltd.	11	250 g/L azoxystrobin
Propiconazole	Bumper 432 EC	ADAMA Canada	3	432 g/L propiconazole
	CO-OP Pivot	Federated Co-operatives Limited	3	418 g/L propiconazole
	Fitness	Loveland Products	3	418 g/L propiconazole
	Modo	AgraCity Crop & Nutrition Ltd.	3	250 g/L propiconazole
	Pivot 418 EC	Interprovincial Cooperative Ltd.	3	418 g/L propiconazole
	Princeton	Sharda CropChem	3	418 g/L propiconazole
	Propel	Syngenta Canada	3	250 g/L propiconazole
	Propi Super 25 EC	Sharda CropChem	3	250 g/L propiconazole
	Tilt 250E	Syngenta Canada	3	250 g/L propiconazole
Pyraclostrobin	Headline EC	BASF Canada	11	250 g/L of pyraclostrobin
	Preach	Sharda Crop Chem Canada	11	250 g/L of pyraclostrobin
	Raclos	Albaugh	11	250 g/L of pyraclostrobin
Blends	Dyax	BASF Canada	7, 11	250 g/L of fluxapyroxad and 250 g/L of pyraclostrobin
	Fungtion SC	Sharda CropChem Limited	3, 11	75 g/L azoxystrobin and 125 g/L propiconazole
	Nexicor	BASF Canada	7, 11, 3	30 g/L fluxapyroxad, 200 g/L pyraclostrobin and 100 g/L propiconazole
	Priaxor	BASF Canada	7, 11	167 g/L of fluxapyroxad and 333 g/L of pyraclostrobin
	Quilt	Syngenta Canada	3, 11	75 g/L azoxystrobin and 125 g/L propiconazole
	Veltvma	BASF Canada	3, 11	200 g/L mefentrifluconazole and 200 g/L pyraclostrobin

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Verticillium

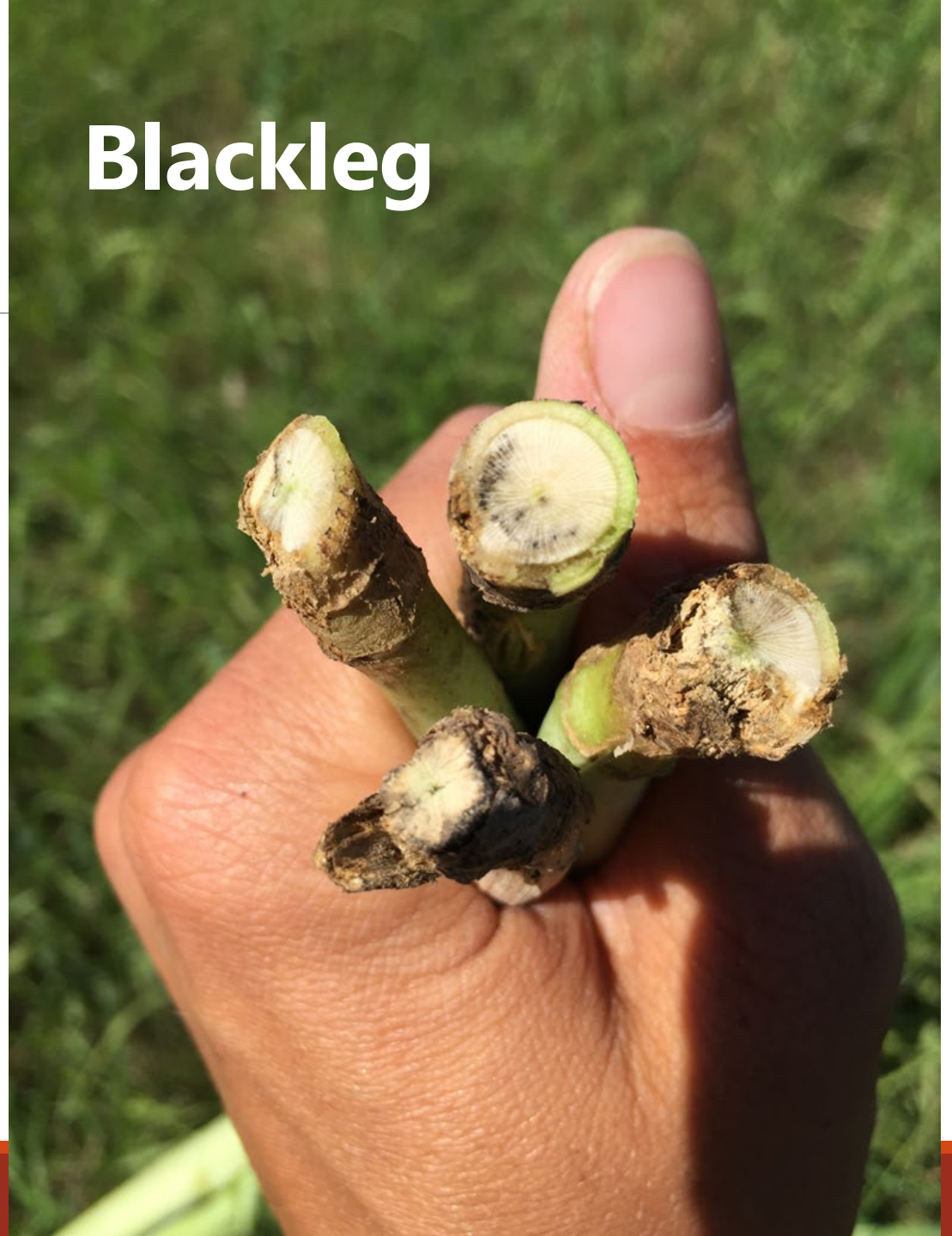
Blackleg

Clean

Verticillium



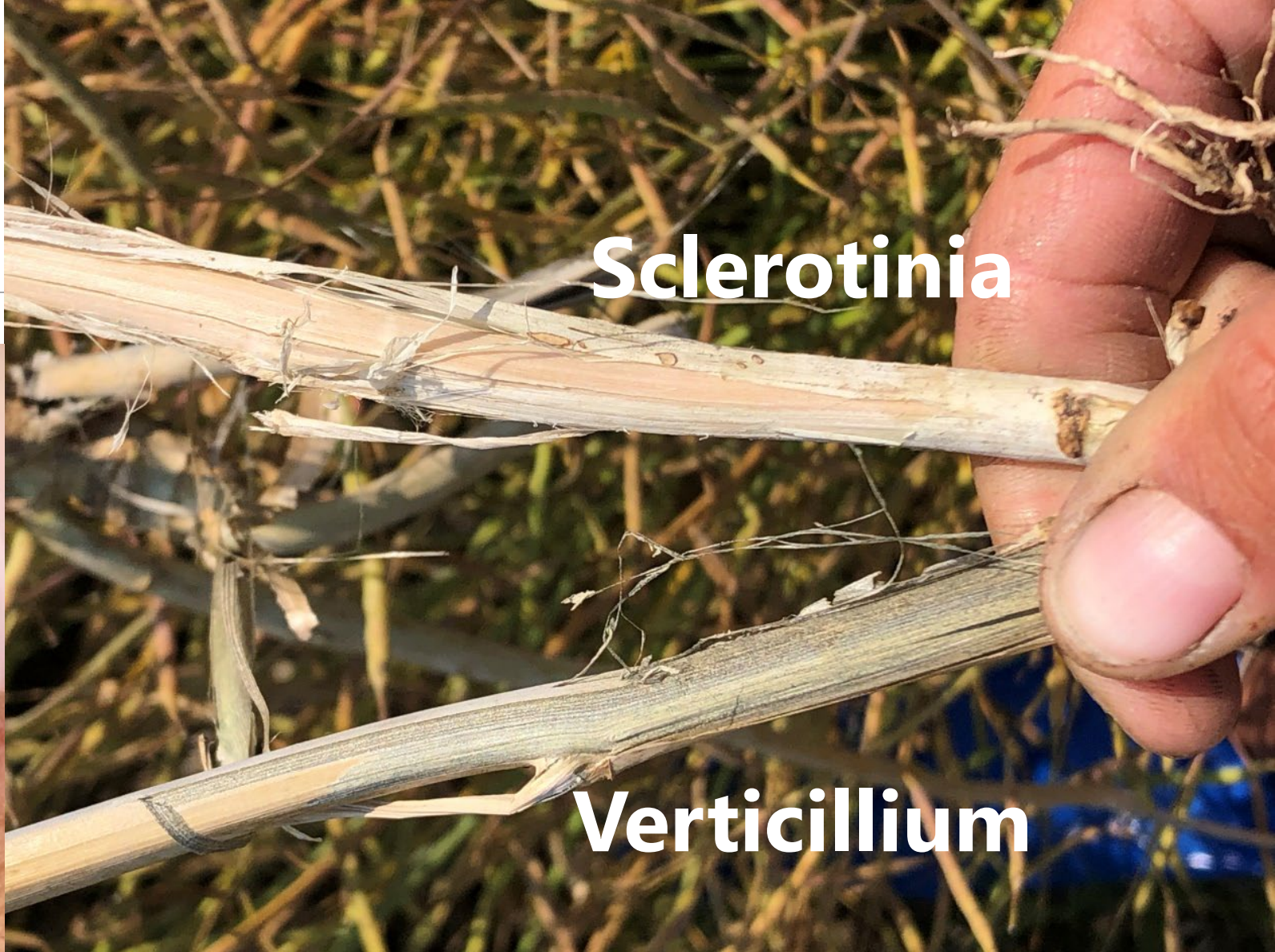
Blackleg



Year: 2020

Crop stage: 60% SCC

Location: Lenore, MB



Sclerotinia

Verticillium

Thanks!

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