

# Prairie Crop Disease Monitoring Network

## Guide to scouting and identification of blackleg of canola

**July 2024**





**PRAIRIE CROP DISEASE  
MONITORING NETWORK**

# General inspection of your canola field



**Look at what is causing the premature ripening. Is it a plant disease, insect damage (e.g. root maggot), root rot, etc.? If it is plant disease then, which one is it? Don't ignore what is happening underground, i.e. to the root system.**



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# Work with the direction that the plants are leaning



**Red arrows indicate  
direction plants are leaning**

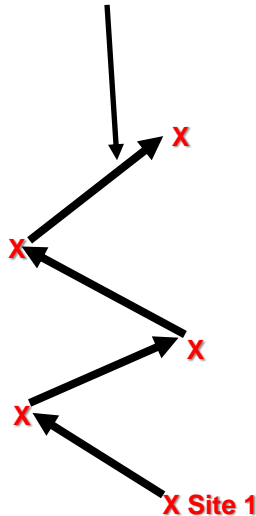


# Open the canopy and work along a row



# Suggested sampling pattern

**“W-shaped” sampling path  
(total path length ~400-500 feet  
in length, with 50-100 feet  
between sampling points (X))**



**Headlands  
of field  
(avoid or  
assess  
separately)**

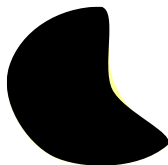
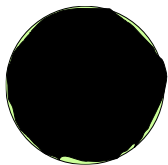

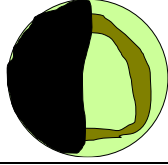
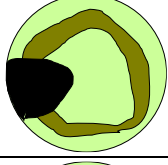
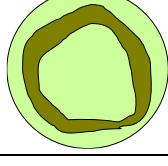


**Exploded view of Site 1. Assess along row  
(direction of white arrow) looking at each  
consecutive plant within a single row. Assess a  
minimum of 25-50 plants at each of 4-6 sites in a  
field.**

## Rating scale for blackleg of canola severity assessments

Rating scale for assessing the severity of blackleg of canola for each individual plant. Taken from: Guo, X. W., and Fernando, W. G. D. 2005. Seasonal and diurnal patterns of spore dispersal by *Leptosphaeria maculans* from canola stubble in relation to environmental conditions. Plant Dis. 89:97-104; <https://www.canolacouncil.org/canola-encyclopedia/diseases/blackleg/#genetic-resistance> and <https://www.canolacouncil.org/canola-encyclopedia/diseases/blackleg/#identifying-blackleg>.

Graphics courtesy of H.R. Kutcher and G. Peng, AAFC Saskatoon and Carter Peru, Sask. Ag., Regina

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



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# Symptoms of blackleg of canola

Note distinct black pepper spots or bumps (pycnidia) that cover lesion surfaces. With moist conditions these pycnidia (asexual fruiting bodies) can ooze masses of reddish pink pycnidiospores.



R. Kutcher



R.K. Gugel





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# Symptoms of blackleg of canola

**Leaves, basal stems and root pieces:**

- **Dirty white to tan coloured circular to irregular lesions surrounded by dark purple-black margins**
- **Cankers may be present at stem bases**
- **Lesions/cankers eventually covered with small black fruiting structures (pycnidia, asexual stage). With moist conditions these pycnidia can ooze masses of reddish pink pycnidiospores**
- **Interior blackish discolouration of stem or root tissue**
- **Pseudothecia (sexual fruiting bodies) & pycnidia may be present on old stem base & root tissues**





# Typical symptoms of sclerotinia stem rot

**Note lack of small black fruiting bodies (pycnidia) covering the stem rot lesions**



**Bleached,  
infected  
tissue**

**Green  
healthy  
tissue**



**Bleached, infected  
tissue**

**Green  
healthy  
tissue**

**R.K. Gugel**



# Basal stem cross sections showing blackleg infections (L) versus healthy and sclerotinia infected stems (R)



With basal stem blackleg infections the pith tissue remains intact, but it may be discoloured due to blackleg. Blackleg infected tissues are not brittle and do not shred and shatter like canola tissues infected with sclerotinia.

With sclerotinia stem rot the pith is typically missing (diseased, red arrow), and infected stem tissue would be brittle, shred and shatter easily, and you may feel sclerotia as small bumps as you run the infected stem between your thumb and forefinger.

# Symptoms that are not due to blackleg



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**Brown  
girdling  
root rot**

Symptoms of brown girdling root rot (BGRR) initially appear as reddish-brownish lesions on the canola tap root (see right), which may expand to girdle the entire tap root. With severe infections the entire tap root may be affected and even rotted off (see left) and the entire plant is prematurely ripened. BGRR is mainly an issue with polish canola (*B. rapa*), while argentine types (*B. napus*) are much less affected.

# Symptoms that are not due to blackleg

**Clubroot**



**Clubroot symptoms – below ground symptoms. Above ground symptoms are typically comprised of prematurely ripened plants that may be yellowish and stunted.**



# Symptoms that are not due to blackleg

## Deteriorating clubroot galls



**Prematurely ripened stem, that has no sclerotia and doesn't shred and shatter easily and where the pith tissue is still intact.**

# Prairie Crop Disease Monitoring Network (PCDMN) Funders 2023-2028

