

Diseases in 2022



What to Expect Next Growing Season

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February 2022





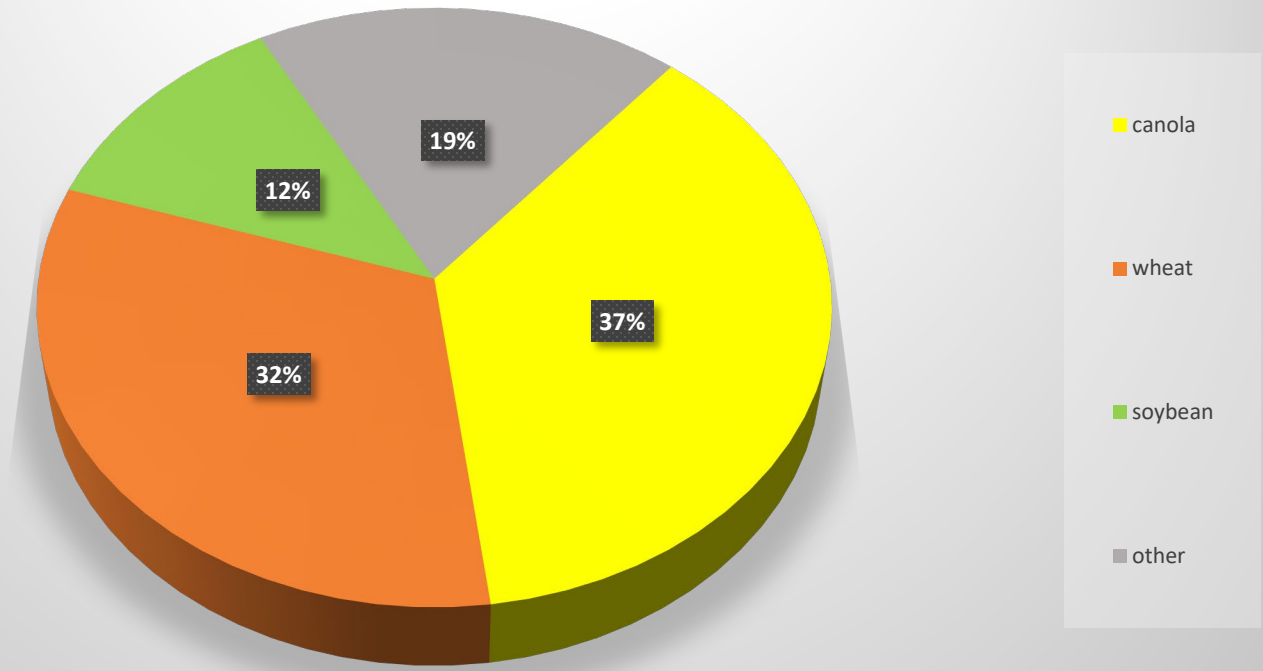
Outline:

- Crop Mix in Manitoba
- Crop Mix in Your Area
- Emphasis on Soybeans
 - Phytophthora Root Rot (PRR)
 - Soybean Cyst Nematode (SCN)
- Cereal Diseases
 - Fusarium Head Blight (FHB)
 - Leaf Diseases
- Canola
 - Clubroot
 - Blackleg
 - Verticillium stripe



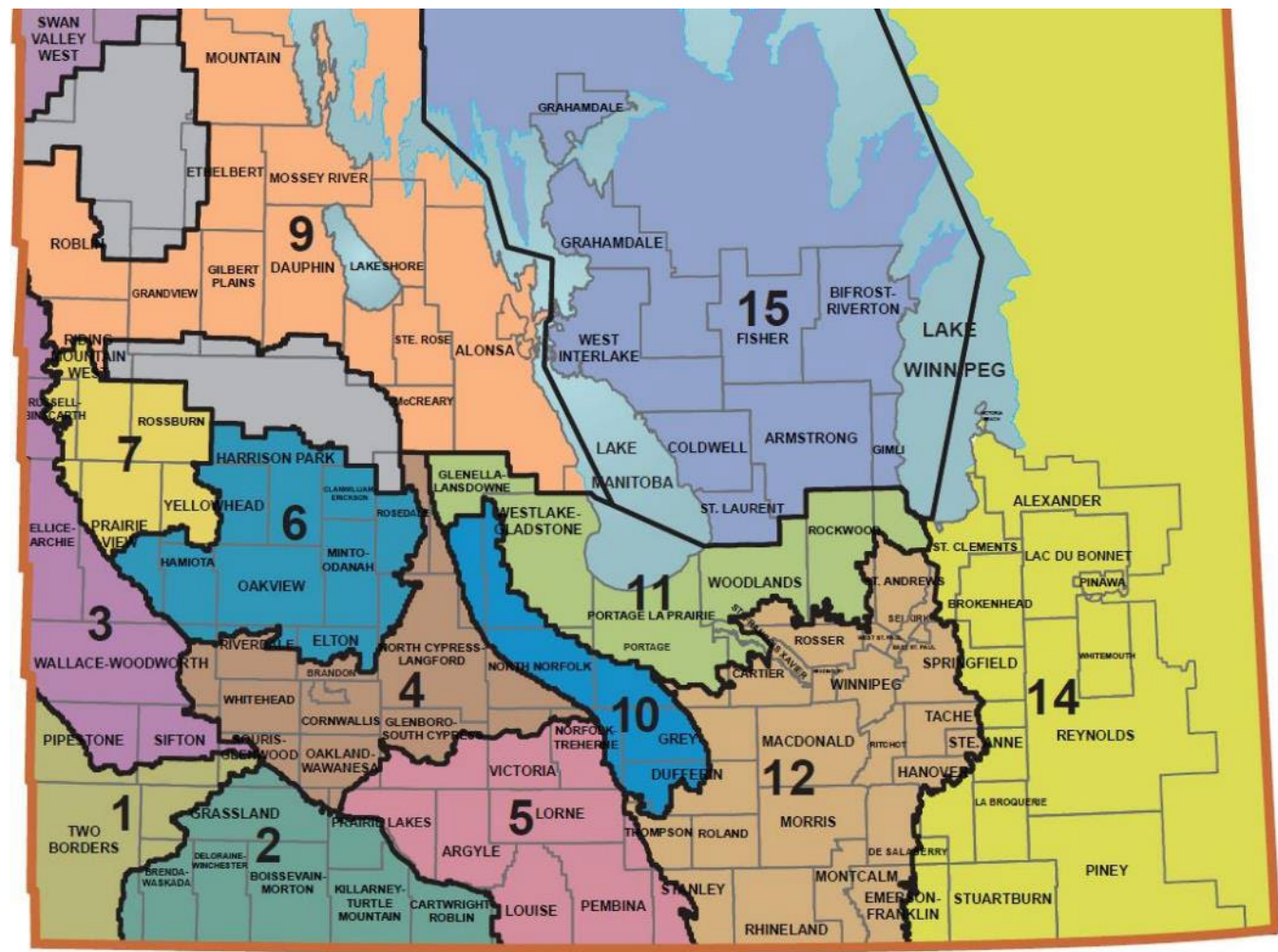


Crop Mix in Manitoba





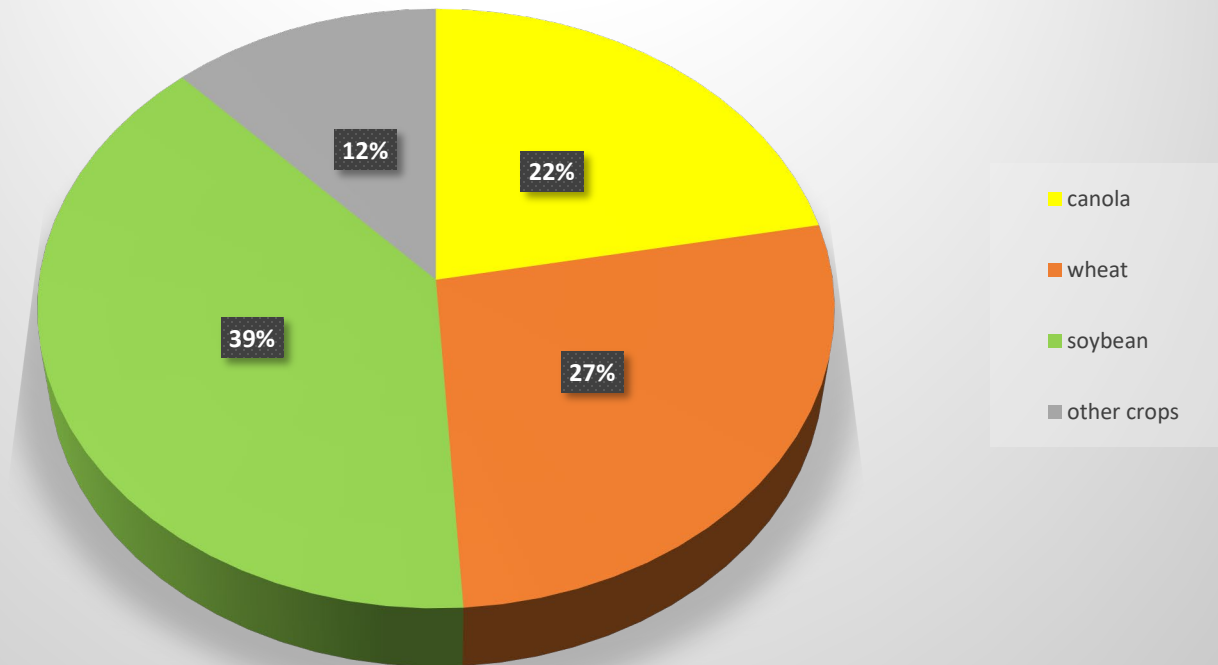
How does your area compare?





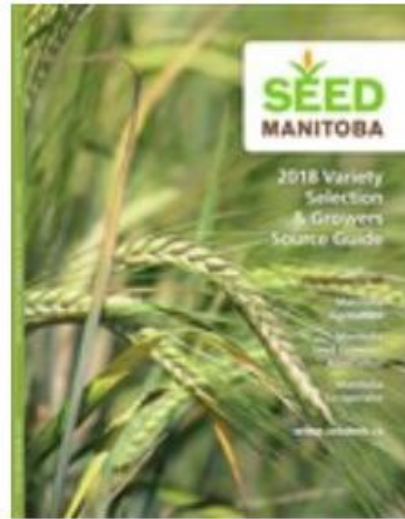
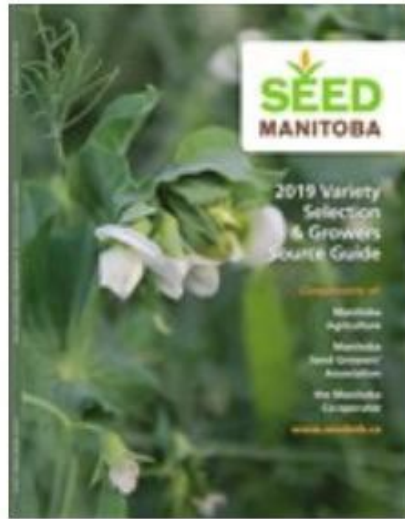
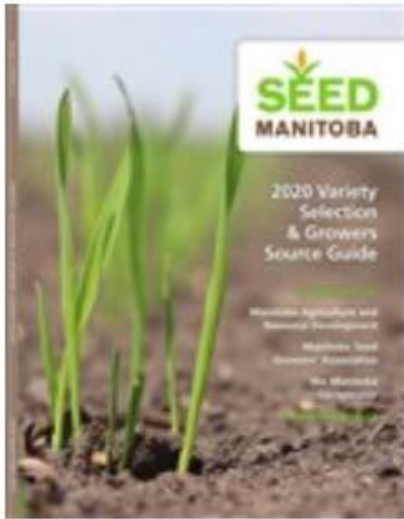
Lots of Soybeans in Risk Area 14

Acreage, RA 14 (2021)



Yield Manitoba – Source of Stats





The logo for 'SEED MANITOBA'. The word 'SEED' is in a large, bold, green, sans-serif font. Above the letter 'E' in 'SEED' is a stylized green plant with three leaves and a single orange seed. Below 'SEED', the word 'MANITOBA' is written in a bold, brown, sans-serif font. The entire logo is contained within a white rectangular box with rounded corners.

SEED
MANITOBA

2022 Variety
Selection
& Growers
Source Guide



Ways to consider crop type

- Grasses vs. Broadleaves
 - Balanced 46% vs. 54%
- High Residue vs. Low
- Cool Season vs. Warm
 - Skewed 81% vs. 19%
- Herbicide Tolerant vs. Not
- Deep-rooted vs. Shallow
- Are you growing as a commodity or for a specific end use?
- Can you extract more value from what you're already growing?

Cereals Diseases – Effects of Rotation

- Not strong
 - Fusarium head blight (other incl. non-cereal hosts)
 - Rusts (blown in)
- Significant impacts
 - Wheat (Septoria & tan spot)
 - Barley (Net Blotch)
 - Oats (bacterial blight)
 - Corn (Goss' wilt)

Slippery Slope – Pest Buildup

| | Fusarium HB | Root Rots | Net Blotch | Goss Wilt | Sclerotinia | Rhizoctonia RR | Fusarium RR | Pasmo | Phytophthora RR | Blackleg | Ascochyta | Aphanomyces | Clubroot |
|-------------------|-------------|-----------|------------|-----------|-------------|----------------|-------------|-------|-----------------|----------|-----------|-------------|----------|
| BREAK | 2 | 3+ | 2 | 2 | 3+ | 3+ | 3+ | 3 | 3+ | 2 | 3 | 3+ | 3+ |
| Wheat | +++ | ++ | | | | | | | | | | | |
| Oat | + | + | | | | | | | | | | | |
| Barley | + | +++ | +++ | | | | | | | | | | |
| Grain Corn | + | + | | +++ | | | | | | | | | |
| Canola | | | | | +++ | ++ | | | | +++ | | | +++ |
| Flax | | | | | + | ++ | | +++ | | | | | |
| Field Pea | | | | | + | + | | | | | +++ | +++ | |
| Soybean | | | | | ++ | + | ++ | | +++ | | | | |
| Sunflower | | | | | ++++ | + | | | | | | | |



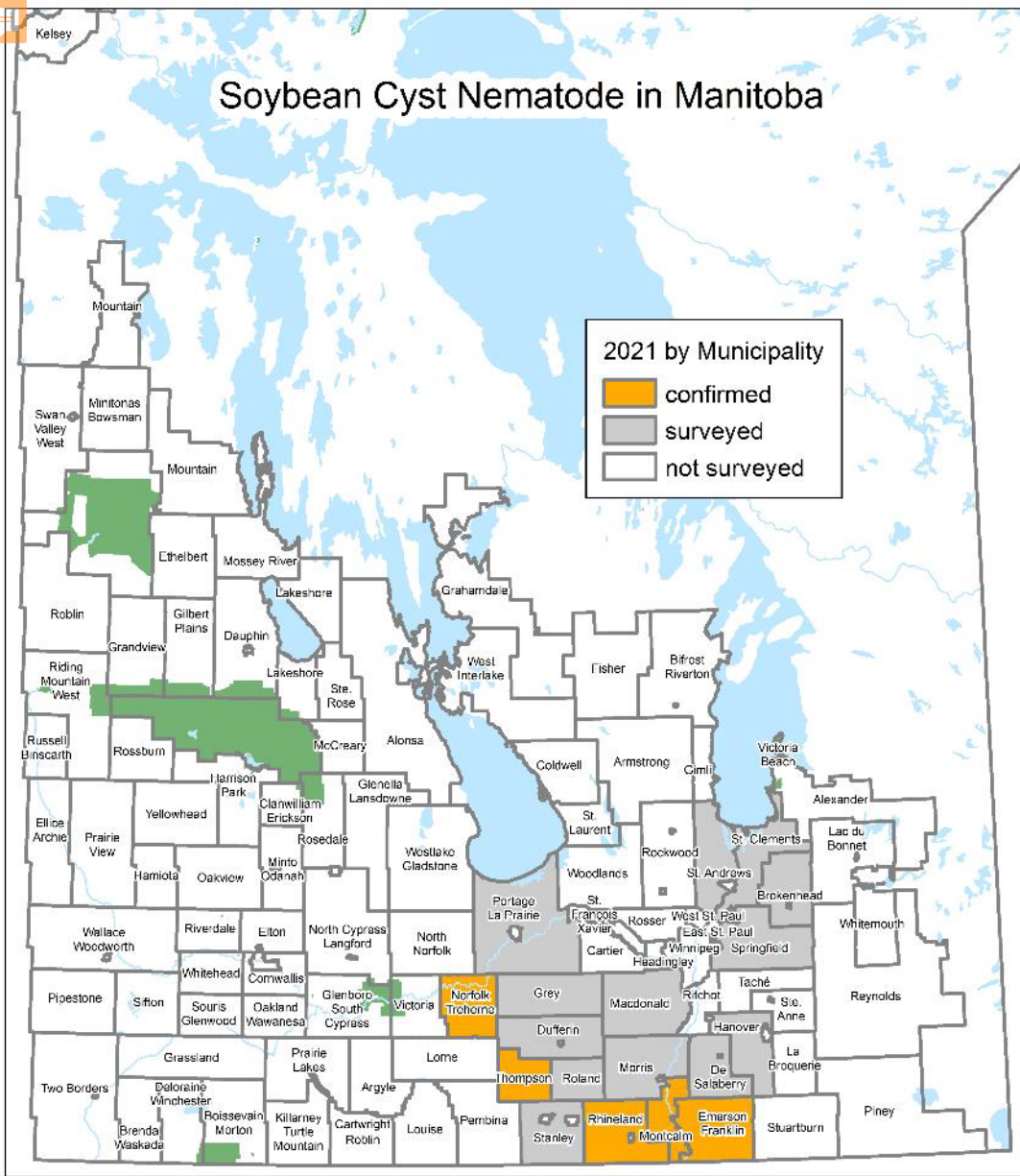
Phytophthora Root Rot (PRR)



Another “slow building” soil-borne disease

- Soybean Cyst Nematode (SCN) – won’t see aboveground symptoms until levels have built for a number of years.
- Cysts on roots are tiny and not likely to be visualized unless roots are washed carefully
- The pest survives as eggs in encysted (dead) females and can move with the soil by water & wind

Soybean Cyst Nematode in Manitoba



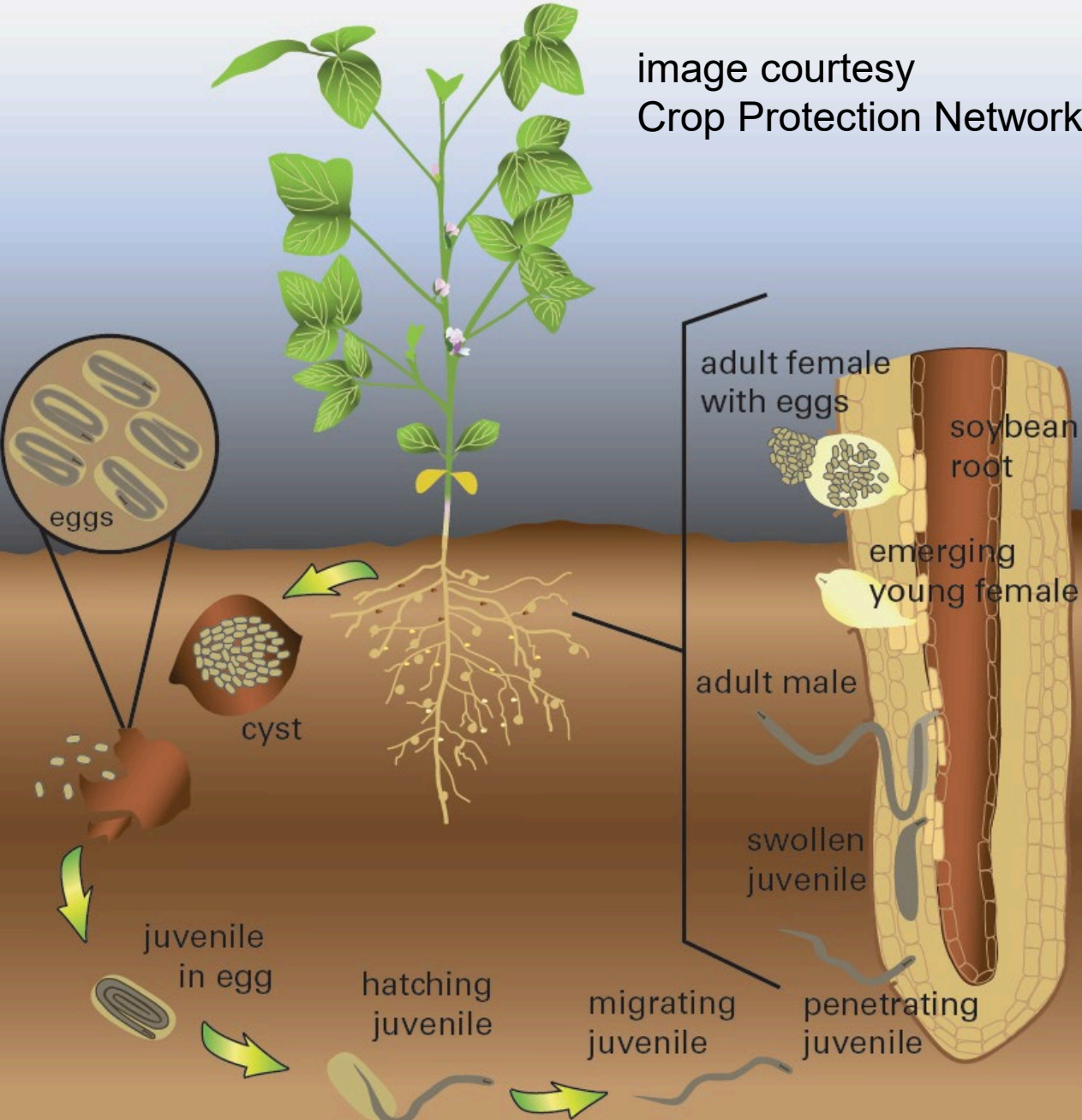
Author: Les Mitchell
 Source: MB ARD confirmation
 Date: July 20, 2021



1:2,300,000



image courtesy
Crop Protection Network



*Life stages not all illustrated at the same magnification



What Can Soybean Producers Do?

- Investigate your own fields
- Consider rotation with non-host crops for 2-3 years
- Prevent the movement of soil between fields
- Consider SCN-resistant varieties in RMs with positive cases

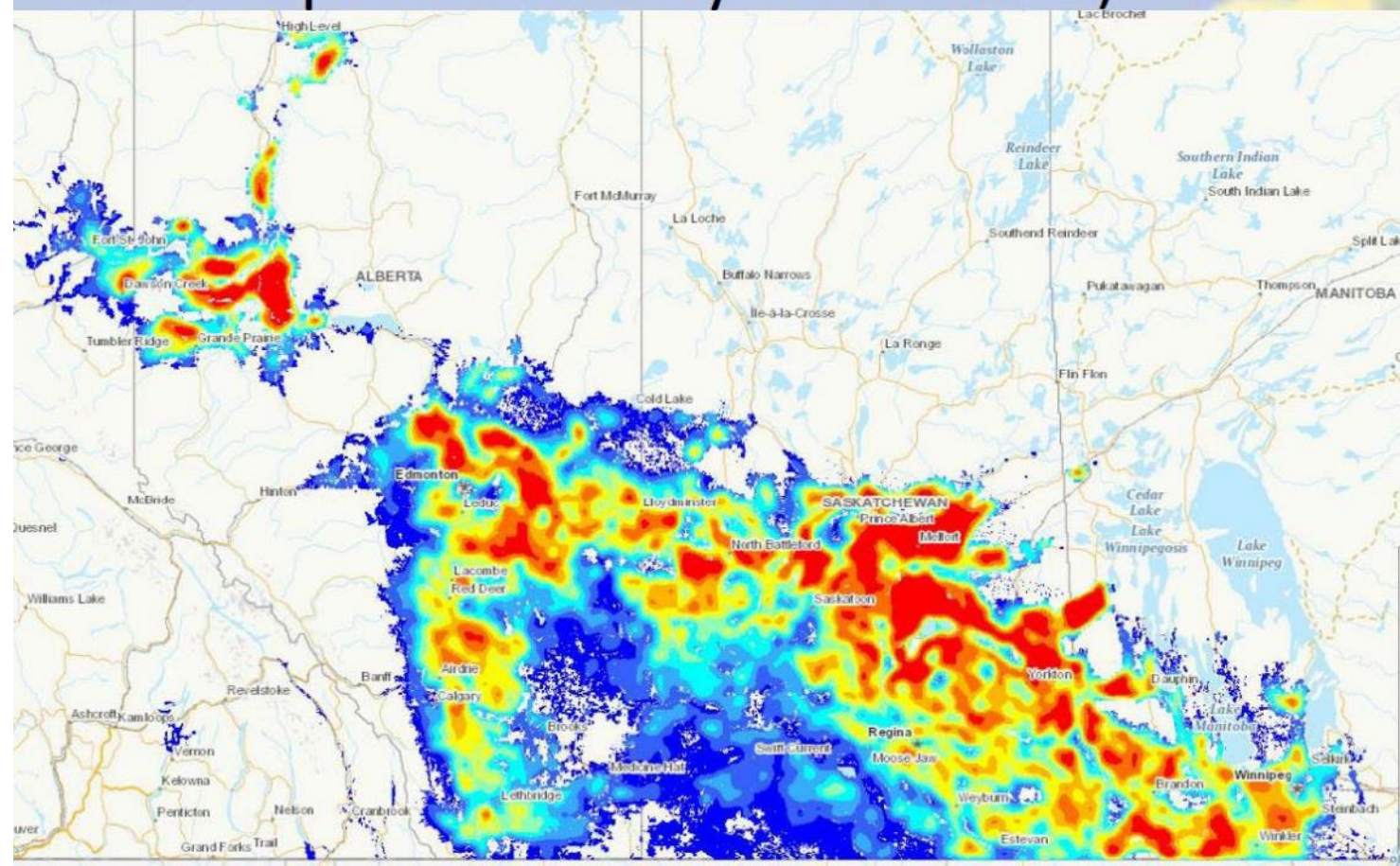


Growing Concern for Canola - Clubroot

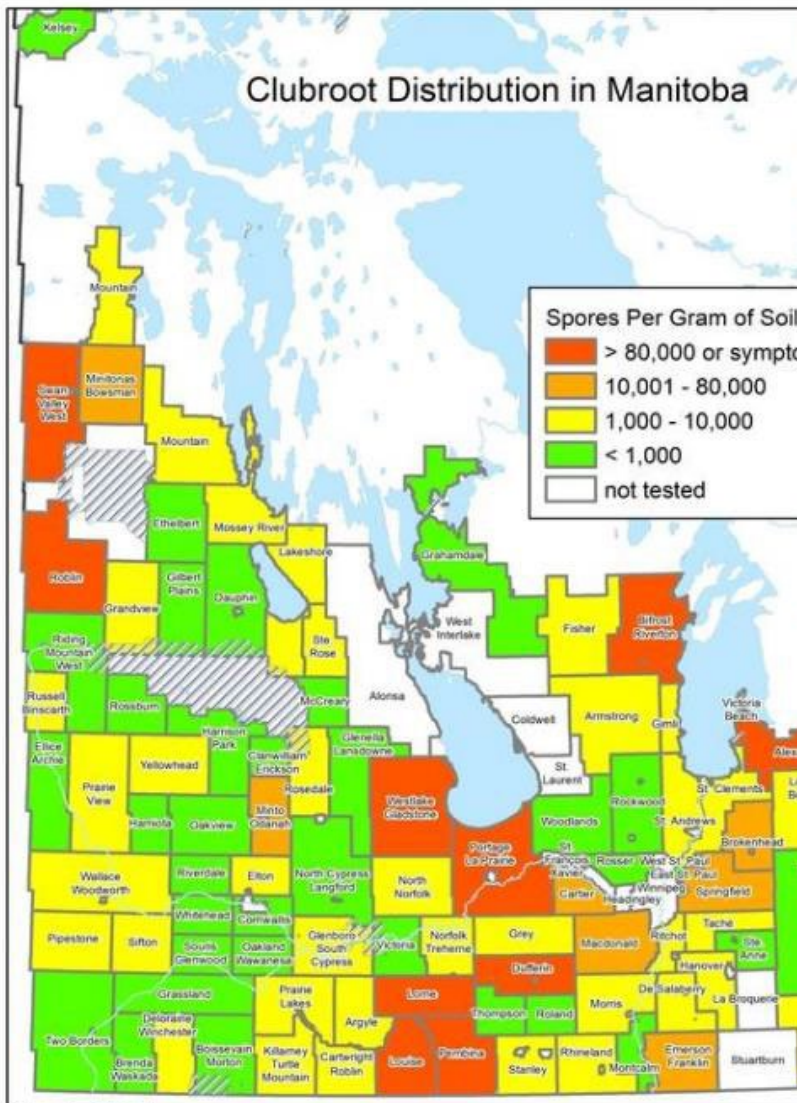




Canola Frequency on Prairies (2009-16 Spatial Density from AAFC)



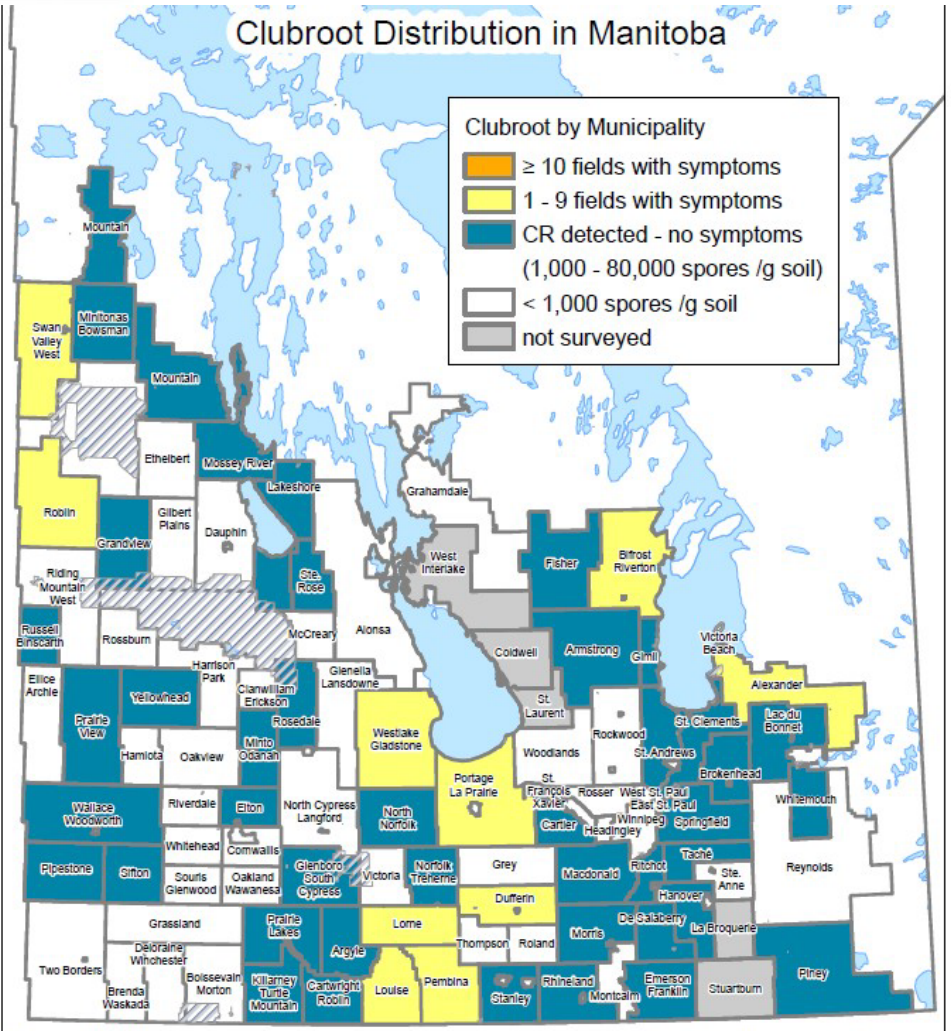
Source: Murray Hartman, presentation at Canola Discovery Forum 2019



Author: Les Mitchell
 Source: MB ARD Analysis
 Date: September 10, 2020

0 25 50 Kilometers

CANADIAN | PARTNARIAT



Author: Les Mitchell
 Source: MB ARD Analysis
 Date: February 2, 2021

0 25 50 100 Kilometers

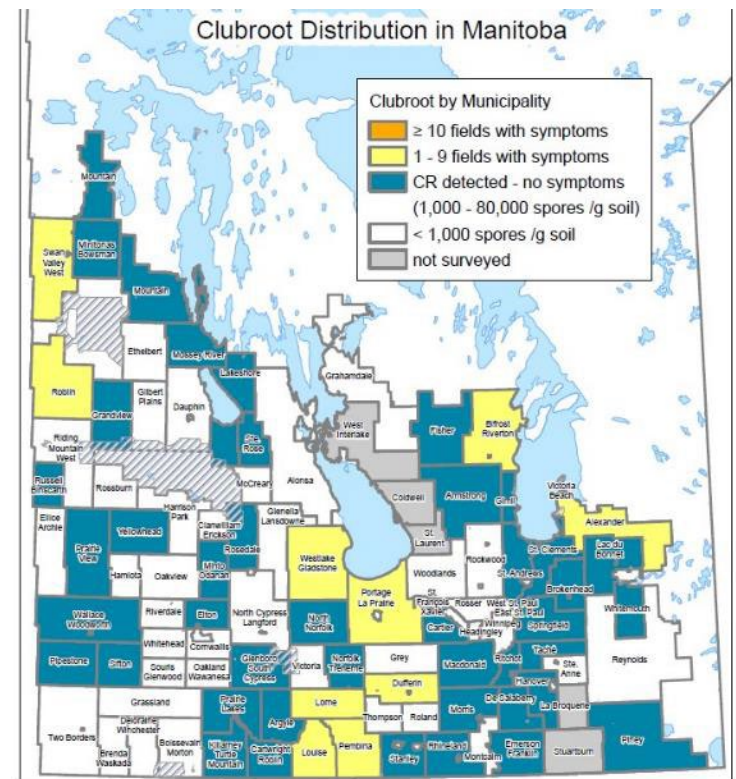
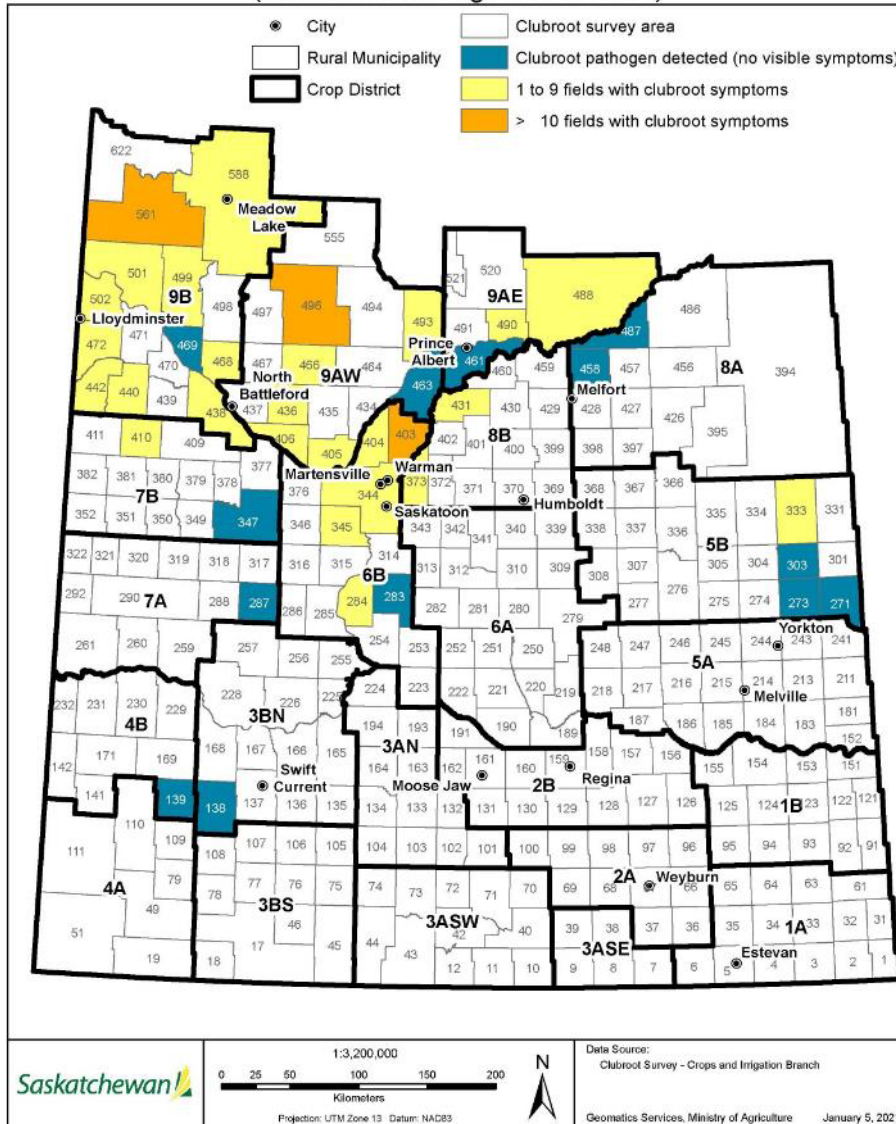
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Manitoba 

Canada 

Clubroot Distribution in Saskatchewan (cumulative testing 2008 to 2020)



Author: Les Mitchell
Source: MB ARD Analysis
Date: February 2, 2021



0 25 50 100 Kilometers

It 's all about the numbers

- Soils in Alberta can have 10 million or 100 million resting spores per gram
- A 90% reduction could still leave a million spores

Keep the numbers as low as possible!

< 1,000

1,000

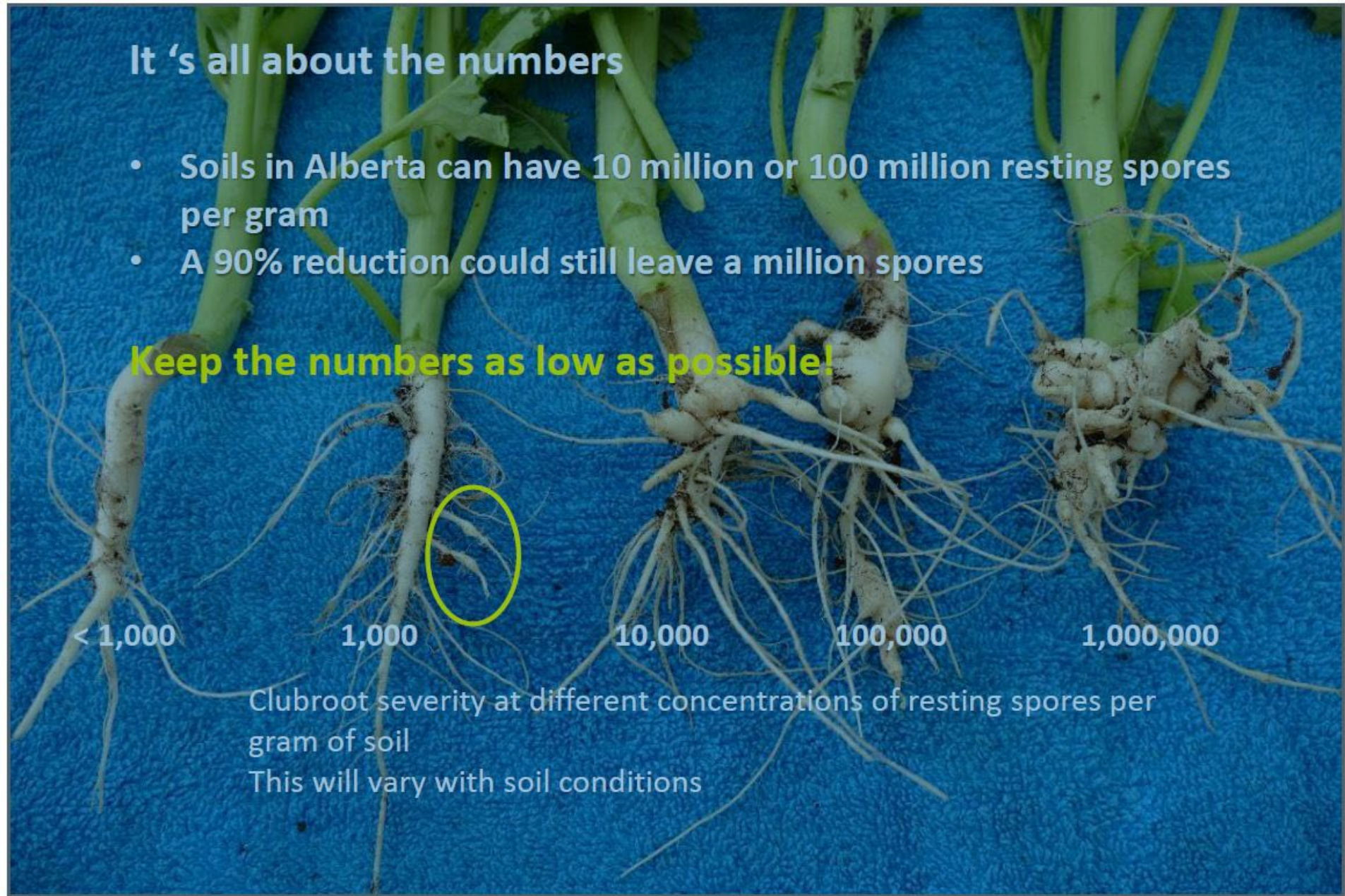
10,000

100,000

1,000,000

Clubroot severity at different concentrations of resting spores per gram of soil

This will vary with soil conditions



How to manage clubroot

- Rotation, rotation, rotation
 - Scout for disease & pathogen
 - Stop movement of resting spores
 - Stop spore increase
 - Employ patch management
 - Use CR varieties if your area has higher spore loads or fields with symptoms



Sanitation & Biosecurity

- Regulating entry to your fields
- Requiring booties or cleaning footwear with bleach
- Staging field operations to reduce soil transfer
 - e.g. Till field when drier, preventing clods sticking on equipment
 - Do field work last on infected field, then clean equipment

Both these pests (Clubroot and SCN) will establish where rotation is “too tight”

- Can go undetected until such time as they require lengthy breaks to allow breakdown of the pest
- Resistant genotypes are already available but may need to be rotated as well to prevent overcoming resistance.



Rotational concerns with too much canola

- Blackleg
 - Selection of new pathotypes
 - Sexual spores are a neighborhood issue
 - Inoculum overload

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YOUR READING LIST

- Measuring blackleg's impact on profitability
Jan 24, 2019 NEWS
- Blackleg resistance may be breaking down in Alberta
Jan 24, 2019 NEWS
- Alberta receives bertha armyworm warning
Jan 24, 2019 NEWS
- Global outlook predicts fewer dairy farms
Jan 24, 2019 LIVESTOCK
- Prince Rupert optimistic about ag handlings
Jan 24, 2019 NEWS

Measuring blackleg's impact on profitability

By Robin Booker

Published: January 24, 2019
News



Blackleg may not be the most yield-robbing fungus that prairie canola producers face, but it is certainly a concern.

"Growers shouldn't assume that blackleg doesn't have a repercussion for their overall profitability," said Clint Jurke of the Canola Council of Canada.



Sclerotinia Diseases?

The most destructive disease affecting annual broadleaf crops *in wetter years*

- *Sclerotinia sclerotiorum* (Lib.) de Bary
- Causes stem rot, white mold, wilt, head rot
- Infects most broadleaf crops:
 - Canola, pulses and sunflowers



Conclusions

- Over-reliance on a few crops leads to buildup of hard-to-manage (esp. soil-borne) diseases
- A minimum 2-year break between crops generally serves to allow pathogen breakdown
- Adding dis-similar crops to a rotation helps to manage and spread risks from both pests and environmental extremes

Questions?

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