December 2025

AGRONOMY UPDATE

Sclerotinia Fungicide Resistance

Sclerotinia sclerotiorum, more commonly known as Sclerotinia stem rot or white mold, is the most economically significant disease in canola and can also affect pulse crops. Management of Sclerotinia is essential to maintain a high yield, however, recent research has shown that some strains of sclerotinia have started to develop fungicide resistance or insensitivity creating an even greater potential for economic impact.

Unfortunately, Canada is late to the game in studying the potential for Sclerotinia fungicide insensitivity or resistance compared to other countries like the US or China, which have already found hundreds of strains over the last decade that exhibit at least a decreased sensitivity to one or more groups of fungicides. In the last two years, a strain of Sclerotinia that is highly resistant to boscalid (Group 7) and insensitive to prothioconazole (Group 3) and azoxystrobin (Group 11) has been confirmed in southern Manitoba, with other strains found to be insensitive to at least one of the fungicide groups. Although resistance has not been found in Alberta, it cannot be determined if it is due to a lack of resistant strains or lack of detection efforts, as there is little information about Sclerotinia fungicide resistance in Canada, especially Alberta which has not been investigated to the same lengths as Manitoba or Saskatchewan. Currently there are no testing options for farmers to send in field samples to see if there is a resistant strain which makes management factors even more important.

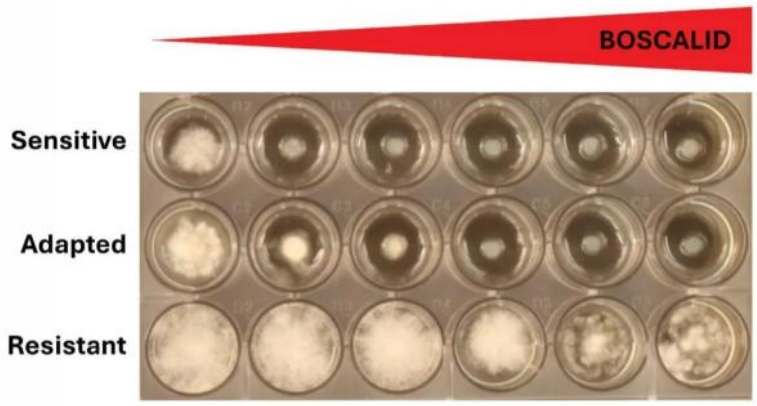

Figure 1: Resistance assay of three strains of *Sclerotinia sclerotiorum* at increasing concentrations of oscalid (Group 7) fungicide. Strain marked sensitive is the control, adapted is insensitive and resistant.

To slow the development of resistance in sclerotinia, it is important to rotate fungicides ensuring that several different modes of actions (groups) are used interchangeably. In addition, the management of stubble and crop rotation will become increasingly important. Sclerotinia also has alternative hosts in some broadleaf weed species such as wild mustard which can inoculate healthy fields, regardless of rotation length. Therefore, controlling broadleaf weeds is also essential for controlling Sclerotinia stem rot.

Sclerotinia overwinters in the soil or crop stubble and is viable for 5 or more years. The disease pressure increases with shorter canola rotations, when susceptible pulse or forage crops are integrated into rotations, and broad leaf weeds are not managed, as the fungal spores build up in the soil. When conditions are suitable the overwintering spores will either infect root systems directly or create a fruiting body which releases airborne infectious spores to inoculate flower petals, with most infections coming from airborne spores. Canola plants are infected at the flowering stage, when the spore laden petals fall into leaf axils and infect the stem as water pools in the leaf axil.

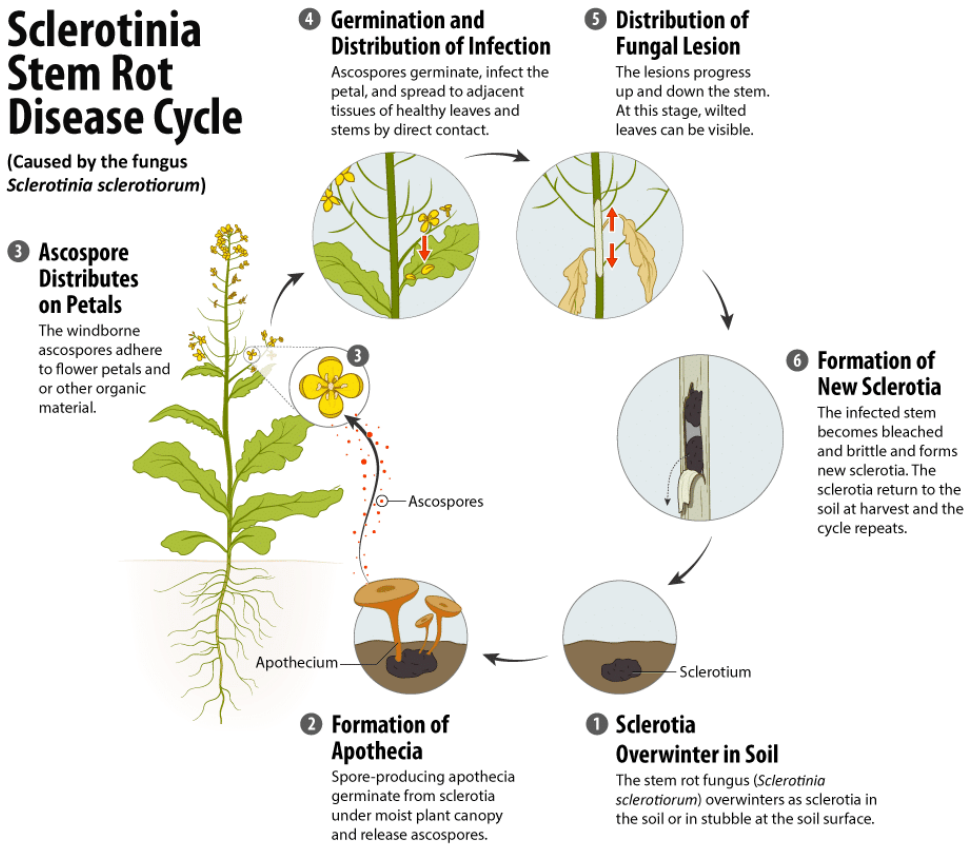

Figure 2: *Sclerotinia sclerotiorum* disease lifecycle

Sclerotinia requires prolonged moist soil conditions, requiring at least 10 days above the wilting point, shaded soil surface and moderate temperatures for the overwintering spores to break dormancy. Most often, Sclerotinia does not start to emerge until the late rosette stage when the crop canopy closes. Once emerged, infections start when petals start to drop with humidity, dew, and rainfall increasing the severity and prevalence of infection. Most fungicides recommend timing application to cover the maximum number of canola petals with fungicide at the early stages of the flowering period (20-50%

bloom) as the fungicide is only active on petals present at the time of spraying and will not protect petals that emerge after spraying.

To decide if spraying fungicide is economical, it is important to understand the risk of disease development. There are 4 main questions to answer to determine sclerotinia risk.

1) Have environmental conditions prior to flowering been wet enough for soil dormant Sclerotinia to break dormancy and develop fruiting bodies? (i.e. prolonged soil moisture, moderate temperature, shaded soil)
2) Is the canola crop canopy dense and is yield potential high?
3) Does the weather forecast predict precipitation and/or humidity during the flowering period?
4) Is the pathogen present in sufficient quantities? (rotation length from last host plant, neighboring fields, previous field year's infection rate)

Articles on Sclerotinia fungicide resistance research in Canada:

https://www.grainews.ca/features/good-news-bad-news-for-fungicides-meant-to-fight-stem-rot-in-canola/

Top Crop Manager West : November 2025

Current Canadian Sclerotinia fungicide resistance projects:

https://www.canolacouncil.org/research-hub/assessing-fungicide-sensitivity-in-s-sclerotiorum/

Sclerotinia fungicide resistance assessment of strains collected in US, China, and Brazil:

https://doi.org/10.1094/PDIS-07-22-1707-RE

Sclerotinia lifecycle and fungicide application:

https://www.canolacouncil.org/canola-encyclopedia/diseases/sclerotinia-stem-rot/

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