

LUPIN SCLEROTINIA DISEASE RISK ASSESSMENT GUIDE

A tool to help lupin growers identify at-risk lupin crops or parts of crops and make decisions on effective, profitable management interventions.

Inspect lupin crop from early bud on the main spike. Sclerotinia risk can vary within the same paddock. The more 'higher risks' present, the more likely Sclerotinia infection will develop.

RISK FACTOR	LOWER RISK	HIGHER RISK	EXPLANATORY NOTES
Paddock risk factors			
Previous history of Sclerotinia	No history or was more than 8 years ago	Yes in any susceptible crop or pasture species, particularly within the last 5 years	Having both canola and lupin in rotation increases risk of Sclerotinia. Most broadleaf crop and pasture species are susceptible (but not cereals). If history unknown, a Predicta B® soil test may show if Sclerotinia DNA is present.
Soil type	Sandy soil that drains/dries quickly	Loamy or clay soils with good water-holding capacity	Finer textured soils such as loams and clays stay wet for longer, favouring sclerotia germination and production of apothecia, canopy humidity, crop growth and disease development.
Location in the landscape	Exposed hill or area prone to drying winds	Lower part of landscape where run-off collects, area protected from wind (for example bordered by trees or hills), riverbank	Determines propensity of the soil surface to hold water and enable crop canopy to remain damp, which favours disease development.
In-season apothecia or disease sighting	No sighting	Apothecia and/or Sclerotinia symptoms seen on-farm or nearby	If observed on-farm or reported nearby during the growing season, it is a signal that the Sclerotinia disease cycle is underway.
Crop risk factors			
Crop density and architecture	Thin crop, ground can be seen from above in branching crop	Dense, bulky crop covers ground, branching crop hard to walk through (Figure 1 overleaf)	Reduced air flow and high humidity in dense bulky crops favours disease. Varies according to soil type, sowing rate, row spacing and crop nutrition.
Time of canopy closure	Late in season	Early in season	When first-order branches form and ground hard to see between plants. The earlier the crop canopy closes over, the earlier the disease cycle could potentially start. Apothecia tend to form after canopy closure. Varies with sowing density and early season rainfall.
Yield potential	Low - Poor	Good - High	Crops of good yield potential tend to be bulkier and more economical to protect.
Growing season risk factors			
Season break and rainfall	Late break and/or below average rainfall	Early break to the season and/or regular rainfall during the season	An early break can mean the disease cycle may start earlier and last longer. Moisture and high humidity favour the disease, so wet years are likely to be higher risk.
Canopy moisture	Dry during the day	Wet leaves during the day	Consistent moisture favours the disease (for example dew or rainfall). Bulky, dense crops are likely to stay wet longer.
Day time temperatures	Cool temps mostly <16°C	Mild temps between 16°C and 25°C	Temperatures <16°C or >25°C significantly slow disease development.

Photo: DPIRD

Photo: DPIRD

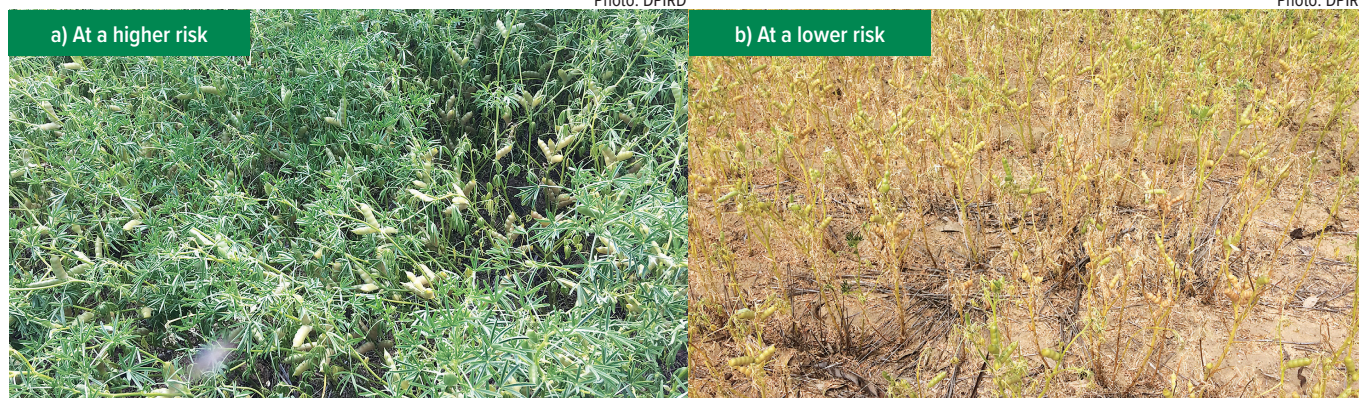


Figure 1

a) shows an example of a dense bulky lupin crop which would be at higher risk of developing Sclerotinia compared to b) a thin lupin crop where the soil can be seen in between plants. These photos were taken at different parts of the same crop in the same paddock at the same point in the growing season indicating that Sclerotinia risk can vary within the same paddock.

Crops or parts of paddocks at higher risk are the areas to prioritise when considering in-season canopy Sclerotinia disease management strategies.

- If a crop meets both a high risk criteria AND there is an outlook for ongoing moist and humid weather with temperatures between 16°C and 25°C, there is a significant risk that Sclerotinia will develop and yield loss may occur. In this situation, a foliar fungicide application may be profitable.
- Aim to apply fungicide from full to late flowering/early pod emergence on the main spike. This timing aims to protect main stem pods and maximise canopy penetration to protect stems and branches.
- Fungicide application is most effective before significant infection is present.
- A range of foliar fungicides is now registered for lupin. See DPIRD website for details: <https://www.agric.wa.gov.au/lupins/registered-foliar-fungicides-lupin-and-other-pulse-crops-western-australia>
- Use high water rates (>100L/ha) to achieve good coverage and canopy penetration.
- Foliar fungicides applied during crop flowering are generally not effective for reducing ground level (basal) Sclerotinia infection.



MORE INFORMATION

DPIRD website: <https://www.agric.wa.gov.au/grains-research-development/understanding-and-managing-sclerotinia-stem-rot-lupins>
 DPIRD Plant pathologists **Ciara Beard**, Geraldton on (08) 9956 8504 or **Geoff Thomas**, South Perth on (08) 9368 3262

Information presented was developed from research conducted by Department of Primary Industries and Regional Development (DPIRD), Mingenew Irwin Group (MIG) and Centre for Crop and Disease Management (CCDM), a joint initiative of Curtin University and GRDC, as part of a GRDC investment DAW2104-002RTX – Sclerotinia management for narrow leaf lupin crops in Western Australian farming systems. The research undertaken as part of this project is made possible by the significant contributions of growers through both trial cooperation and the support of the GRDC, the authors would like to thank them for their continued support.

DISCLAIMER Any recommendations, suggestions or opinions contained in this publication do not necessarily represent the policy or views of the Grains Research and Development Corporation. No person should act on the basis of the contents of this publication without first obtaining specific, independent, professional advice. The Corporation and contributors to this Fact Sheet may identify products by proprietary or trade names to help readers identify particular types of products. We do not endorse or recommend the products of any manufacturer referred to. Other products may perform as well as or better than those specifically referred to. GRDC will not be liable for any loss, damage, cost or expense incurred or arising by reason of any person using or relying on the information in this publication.

CAUTION: RESEARCH ON UNREGISTERED AGRICULTURAL CHEMICAL USE Any research with unregistered agricultural chemicals or of unregistered products reported in this document does not constitute a recommendation for that particular use by the authors or the authors' organisations. All agricultural chemical applications must accord with the currently registered label for that particular agricultural chemical, crop, pest and region.

Copyright © All material published in this Fact Sheet is copyright protected and may not be reproduced in any form without written permission from GRDC.