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GOVERNMENT OF WESTERN AUSTRALIA
Protect Grow Innovate

PestFacts WA

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Contents

Strategies for disease management in 2025

Image 1: Volunteer cereal plants forming a green bridge. Photo courtesy of DPIRD.

Growers need to consider potential disease carryover into the 2025 growing season if wet conditions are experienced during summer and autumn resulting in weed and crop regrowth. This regrowth can serve as a ‘green bridge’ for diseases (biotrophs) and pests which need a living plant to survive, such as cereal rusts and powdery mildew, nematodes, root diseases and aphids. If weeds and/or volunteers are present at the start of the new cropping season, particularly in or adjacent to cropping paddocks, there is a greater risk of

early spread of pests, viruses and diseases to newly emerging crops. Early pest, virus and disease outbreaks often have the greatest impact on grain yield potential.

This year, blackleg, sclerotinia stem rot and turnip yellows virus were prevalent in canola crops across the grainbelt. Lupins were affected by sclerotinia and bean yellow mosaic (necrotic) virus, particularly in northern areas that experienced above average winter rainfall. Barley was affected by loose smut and both forms of net blotch, while common wheat diseases observed included powdery mildew, septoria nodorum blotch and yellow spot mixed infections. The presence of leaf rust in wheat and oats, along with stem rust in oats, though observed at low levels and in some locations late in the season, is a warning for 2025.

Disease management strategies for 2025

To minimise the risk of carry over on the green bridge, growers are encouraged to monitor the following:

- Check the PestFacts WA map for disease reports by region in 2024. This includes above-ground foliar diseases and below-ground soilborne diseases and nematode pests. Identify the cause of any disease symptoms and/or poor patches observed in crops this season in order to put the right management plan in place for 2025. For further information on identifying and managing root diseases and nematodes see the 2024 PestFacts WA issue 17 article Diagnose patchy crops to form strategies for next season.
- Monitor any green bridge that is present in summer and autumn for disease and virus vectors (such as aphids), so that timely action can be taken to identify the pathogen and limit the spread and build-up of inoculum. It is crucial that growers eradicate weeds and crop volunteers, including those along fence lines, prior to the start of the cropping program. This will reduce potential pest and disease outbreaks, including foliar diseases, root diseases and viruses.

Ideally, there needs to be a break (a fallow period) of at least 2 weeks, free of vegetation capable of hosting disease and pests, prior to sowing. To achieve this, weeds and volunteers should be sprayed with a herbicide at least 4 to 6 weeks before sowing to ensure weeds are completely dead at planting.

Alternatives to herbicides include heavily grazing or cultivating weeds and crop volunteers, which will reduce their potential as a ‘green bridge’ or host of diseases and pests. However, growers should be aware that cultivating in high crown rot risk paddocks could be detrimental, as it may spread infected material, grass weeds and volunteers further. Fusarium crown rot was reported from several areas of the Esperance and Albany port zones this year. For more information refer to the 2024 PestFacts WA Issue 21 article Fusarium crown rot.

When managing the green bridge, growers need to consider retaining at least 50% ground cover to reduce the risk of erosion during crop establishment. Especially on soils that are prone to erosion.

In addition to managing the green bridge, other strategies growers can employ include the following:

- Sow cleaned and graded seed. Cleaning and grading seed will remove disease agents such as sclerotia or ryegrass ergot, preventing their spread and significantly improving the efficacy of seed dressing applications by reducing dust levels. DPIRD also provide a range of seed testing services, including fungal, bacterial and virus infection, through the DPIRD Diagnostic Laboratory Services – Plant pathology services.
- Know the latest disease ratings of your varieties and plan accordingly. Use adult plant resistant varieties. The DPIRD 2025 WA Crop Sowing Guide will soon be available on the DPIRD website, which details the disease susceptibility for each variety.
- Consider applying in-furrow or seed dressing fungicides to reduce your risk of early infection of diseases such as cereal rusts, net blotches and powdery mildew in susceptible varieties, and rhizoctonia, crown rot and take-all as well as blackleg crown canker in canola. Fungicide seed dressings are an important tool to employ in protection against cereal smut and bunt diseases. For more information see DPIRD's Seed dressing and in-furrow fungicides for cereals in Western Australia and Seed dressing and in-furrow fungicides for canola in Western Australia.
- Insecticide seed treatments can be effective at preventing early aphid infestations and subsequent virus spread in some crops such as cereals. Seed treatments are less effective for controlling green peach aphid and turnip yellows virus in canola and should not be used solely to control them.
- Reduce exposure to stubble-borne diseases through rotation and careful paddock planning (to avoid sowing on or downwind of infected stubble) or stubble management practices, such as grazing, windrowing, baling, incorporation or burning. Wheat powdery mildew can be both stubble-borne and spread on green bridge.
- Avoid early sowing of susceptible varieties. Earlier sown crops are generally more at risk of foliar diseases such as powdery mildew, net blotches of barley, nodorum blotch and yellow spot of wheat so consider later sowing of susceptible varieties and at-risk paddocks. At the least, plan to monitor earliest sown paddocks closely for disease.

For more information refer to the DPIRD Control the green bridge for pest and disease management factsheet and the Grains Research and Development Corporation's (GRDC) Green Bridge factsheet.

Wheat flag smut and barley loose smut

Flag smut in wheat was at higher incidence in some regions this year and is of particular concern as it is both seed (externally on the seed coat) and soil borne. Where crops were infected this year, some harvested seed will be infected and soil in these paddocks should be considered to contain spores which could infect wheat crops for at least the next 2 to 3 years, possibly longer.

Barley loose smut has been observed throughout many areas of the grainbelt and a proportion of the seed being harvested this season will be infected.

In 2024, to minimise the expression of these smuts, it is advisable to replace highly contaminated seed with clean uninfected seed and treat seed with a registered seed

dressing. For more information refer to DPIRD's 2024 PestFacts WA Issue 18 article Smuts in cereals - this year and going forward.

Sclerotinia in lupin and canola

Sclerotinia stem rot in lupins and canola is caused by the same fungus (*Sclerotinia sclerotiorum*) and continues to pose a risk for 2025 crops. The incidence of this disease in lupins was particularly significant in the Geraldton and Kwinana North port zones this year. Even in areas where incidence in canola and lupin was lower than previous seasons, the risk for 2025 remains high due to the disease inoculum (sclerotia) surviving in paddocks from previous high disease years. Sclerotia have been found to survive for at least 6 years in soil and stubble, so careful consideration should be given to paddock rotations. Sclerotinia can infect most broad leaf crop and pasture species but not cereals, making cereals a suitable break crop for the disease.

To read about earlier sclerotinia activity this season, refer to the 2024 PestFacts WA Issue 15 article Basal sclerotinia stem rot in lupins and vetch.

Blackleg in canola

Blackleg is stubble-borne so it is crucial to avoid sowing a canola crop into last year's canola stubble. Evaluate different blackleg canker strategies pre-sowing by using the DPIRD BlacklegCM tool. For more information refer to DPIRD's upcoming 2025 WA Crop Sowing Guide and GRDC's Blackleg Management Guide.

Further information

For more information on crop foliar diseases contact Plant pathologists Geoff Thomas in South Perth on +61 428 947 287, Ciara Beard in Geraldton on +61 8 9956 8504, Andrea Hills in Esperance on +61 8 9083 1144 or Kithsiri Jayasena in Albany on +61 8 9892 8477.

For more information on crop viruses contact Virologist Benjamin Congdon in Perth via Benjamin.Congdon@dpird.wa.gov.au.

For more information on crop soil borne diseases contact Senior Nematologist Sarah Collins in Perth on +61 8 9368 3612, Plant Pathologist Daniel Hüberli in Perth on +61 8 9368 3836 or Research Scientist Carla Wilkinson in Perth on +61 8 9368 3862.

Article authors: Ciara Beard (DPIRD Geraldton), Andrea Hills (DPIRD Esperance) and Geoff Thomas (DPIRD Perth).

Article input: Kithsiri Jayasena (DPIRD Albany) and Benjamin Congdon (DPIRD Perth).

Fusarium crown rot

- Lake Grace
- Lake King
- Dunn Rock

- South Stirling
- West River
- Lort River
- Munglinup
- Salmon Gums
- Scaddan
- Wittenoom Hills

Image 2: Fusarium crown rot on barley stems. Photo courtesy of: Andrea Hills (DPIRD).

DPIRD Plant Pathologists have recently found fusarium crown rot in barley and wheat crops, ranging from Lake Grace to Wittenoom Hills.

Crown rot mainly affects wheat and barley. It is caused predominately by *Fusarium pseudograminearum*. This is a stubble-borne fungus which infects plants at the crown and subcrown internode through contact with infected stubble of cereals and/or grass weeds from previous seasons. The fungus can survive in infected stubble for several years. The infection reduces water supply to the stem, causing the premature hay-off of the heads known as whiteheads.

The hot, dry weather currently experienced in many areas of WA, has increased the risk of whitehead expression and consequent increased yield loss risk in paddocks where the crown rot fungus is present. This risk is especially significant in low rainfall areas such as the eastern grainbelt.

Image 3: Fusarium crown rot in wheat. Photo courtesy of: Kylie Chambers (DPIRD).

Infected tillers of plants may show whiteheads that fail to fill grain in seasons with a dry finish. In severe cases, the entire plant develops whiteheads. While whiteheads may not develop in paddocks where plenty of water is available to the plant, they can still be seen in areas with soil compaction, such as tracks or around trees.

Image 4: The honey-brown discolouration of stem bases caused by Fusarium crown rot. Photo courtesy of: DPIRD.

It is important to check crops and correctly determine the cause of whiteheads in the paddock. Crown rot symptoms can look similar to other soilborne diseases and frost, and several may occur in the same paddock. Crown rot can be distinguished from frost by the presence of the honey-brown discoloration of the stem base or lower node when leaf sheaths are removed. This honey-brown discolouration distinguishes it from the whiteheads produced by take-all, which produces black roots and black stems in severe cases. Frost, copper and molybdenum deficiency can also produce whiteheads, but will

not have the honey-brown discolouration at the base. While frost will not have stem discolouration at the base of the plant, in some it can cause discolouration further up the stem of the plant.

Direct signs of the crown rot fungus may sometimes, but not always, be present on the crowns as a pink colouration, particularly if rainfall has been recently experienced.

Plant samples can be collected in a large 'W' pattern for stem assessment to determine the level of crown rot present as outlined in GRDC's Crown rot – Western fact sheet. For more tips on distinguishing between whitehead causes, refer to the flow chart below.

Flow chart for identifying some of the main causes of whiteheads. Chart courtesy of: DPIRD.

The leadup to harvest is an important time to monitor crops and identify fusarium crown rot to assist planning to minimise its impact next year.

Crop rotation to non-cereals with good grass weed control is the key to management of affected paddocks. This is because there are currently no in-crop fungicides registered to address crown rot. Therefore, paddock management decisions based on this year's observations will be critical to next year's cropping program.

If sowing cereals into a paddock with a high level of crown rot inoculum present, then choose an appropriate barley or wheat variety with increased resistance to the disease. Variety resistance ratings for wheat and information on barley varietal yield loss responses have been provided in DPIRD's 2024 Sowing Guide for WA. DPIRD's 2025 WA Crop Sowing Guide will soon be published.

Seed dressings registered for crown rot suppression, in combination with other management tools, can be used to minimise the initial infections. For more information refer to GRDC's Crown rot – Western fact sheet and DPIRD's Seed dressing and in-furrow fungicides for cereals in Western Australia page, which is updated annually.

Growers with whiteheads or other patchy, poor growth in barley and wheat paddocks are advised to check for the presence of the disease and confirm suspected infections by taking plant samples now or a soil sample with added stubble after harvest. Plant samples can be dispatched to the DPIRD Diagnostic Laboratory Services – Plant pathology lab to confirm what soilborne disease they may be dealing with. The PREDICTA® B soil test can detect the presence of the crown rot fungus in soil samples to which stubble samples have been added as recommended in the PREDICTA B sampling protocol as well as several other soilborne pathogens including take-all, rhizoctonia bare-patch and some types of parasitic nematodes.

For more details on crown rot refer to:

- GRDC's Crown rot – Western fact sheet.
- SoilsWest's Soil Quality: 5 Soil Biology e-book. The Apple Books version includes information on crown rot and other soilborne diseases and nematodes.

For more information contact Research scientists Daniel Hüberli in South Perth on +61 (0)8 9368 3836 or +61 (0)427 426 522 or Kylie Chambers in Northam on +61 (0)8 9690 2151.

Article authors: Cindy Webster (DPIRD Narrogin), Daniel Huberli (DPIRD South Perth) and Kylie Chambers (DPIRD Northam).

Phomopsis on lupins and its impact on livestock grazing

- Mingenew
- Walkaway
- Nabawa
- Northern Gully
- Alma
- Yathroo
- Tenterden
- Neridup
- Katanning.

Image 5: Phomopsis lesions on lupin stems. Photo courtesy of: Geoff Thomas (DPIRD).

Phomopsis lesions are being found on lupin pods and/or stems at Mingenew, Walkaway, Nabawa, Northern Gully, Alma, Yathroo, Tenterden, Neridup and Katanning.

Symptoms and impact

Phomopsis stem and pod blight is caused by the fungus *Diaporthe toxica*. It occasionally causes yield losses, however the major impact of infection is the production of a toxin by the fungus as it grows in mature or senesced lupin stems or in seed. The toxin can cause livestock sickness or death (lupinosis) if they graze on infected stubble or if they are fed infected seed.

Image 6: Phomopsis infected narrow leafed lupin pod and seed. Photo courtesy of: Geoff Thomas (DPIRD).

Pod infection can appear as a dark lesion on the surface of the pod, affecting part or all of the pod. Pod lesions can lead to fungal growth inside the pod and seed infection, causing shrivelled or discoloured light to golden brown seeds. Cotyledons inside infected seeds can remain green rather than yellow.

Pod and seed infection are more likely when there is heavy rain during the period of seed and pod maturation.

Phomopsis stem lesions are not usually visible on green plants, the fungus will infect green plants but remains latent as microscopic structures until senescence of the plant tissue. Rain and moisture on senescing or dry lupin stems allow the fungus to grow saprophytically, producing characteristic black fruiting bodies on affected stubble. Chemical desiccation or plants suffering a period of premature moisture stress can lead to rapid expression of stem symptoms as plants senesce. After above-average rainfall in the Geraldton port zone this season, it is important to look and feel for black fruiting bodies to confirm if it is actually stem phomopsis.

All lupin varieties can suffer some level of infection, however varieties such as Coyote, Jenabillup and Quilinock are more susceptible to infection in stems and pose a greater risk of lupinosis for grazing animals, particularly after summer rainfall. Varieties such as

Mandelup and Quilinock have greatest risk of infected pods and seed. Stem and pod Phomopsis resistance ratings of lupin varieties can be found in DPIRD's 2024 WA Crop Sowing Guide. DPIRD's 2025 WA Crop Sowing Guide will soon be published.

Livestock grazing

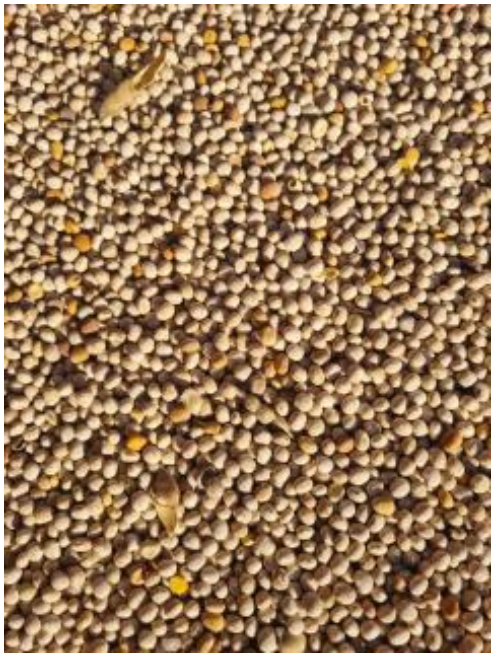


Image 7: Harvested lupin seed sample containing orange-yellow coloured seed infected with Phomopsis. Photo courtesy of: Anonymous grower.

The toxin can cause sickness or death (lupinosis) in livestock. This most commonly occurs when they graze on infected stubble, but can occur from the feeding of infected seed. Infected seeds are usually discoloured, ranging from golden to dark purple-brown colour.

For more information refer to DPIRD's 2023 Ovine Observer article Lupinosis in Sheep.

If you see unusual disease signs in your stock, call your private veterinarian or DPIRD field veterinary officer or the Emergency Animal Disease hotline on 1800 675 888.

Further information

For more information on lupin diseases contact Plant Pathologists Ciara Beard, Geraldton on +61 8 9956 8504 or Geoff Thomas, Perth on +61 428 947 287.

Article authors: Ciara Beard (DPIRD Geraldton) and Geoff Thomas (DPIRD Perth).

Article input: Rod Thompson (DPIRD Northam) and Anna Erickson (DPIRD Narrogin).

Final PestFacts WA newsletter for 2024!

Harvesting wheat. Photo courtesy of: DPIRD.

This is the 21st and final issue of the PestFacts WA newsletter for the 2024 growing season. Extra editions may be circulated if extraordinary circumstances occur.

2024 PestFacts WA statistics

This year the PestFacts WA team received more than 2,500 insect and plant disease reports (current to 31 October 2024).

What were the top five reported invertebrates?

The PestFacts WA team recorded more than 1,800 invertebrate reports this season. Native budworm was the most reported invertebrate pest, and we received 799 reports via the spring trapping program and non-trapping reports. This was followed by diamondback moth (312) and green peach aphid (98). The top 5 invertebrates reported are listed in Table 1 below.

Table 1 The top 5 invertebrates and number of reports to the PestFacts WA service during 2024.

Insect	Number of reports
Native budworm - trapping and non-trapping reports	799
Diamondback moth	312
Green peach aphid	98

Table 1 The top 5 invertebrates and number of reports to the PestFacts WA service during 2024.

Insect	Number of reports
Redlegged earth mite	86
Hoverfly	70

It was very encouraging to see the number of beneficial insects found and reported across the WA grainbelt during the growing season. To see beneficial insect reports made this season, refer to this PestFacts WA map.

The collaborative Canola Allies project (supported by GRDC) is seeking information from growers and consultants about your beliefs, attitudes and goals relating to the use of biological control to help manage pests in canola. If you wish to participate in this 10-minute survey click here.

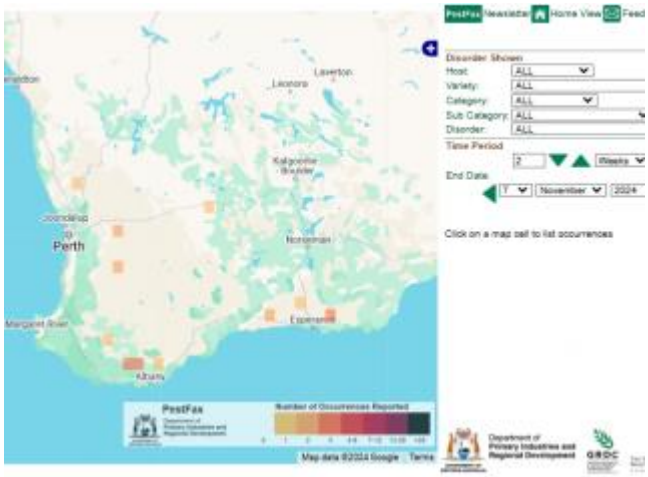
What were the top 5 reported plant diseases for 2024?

As of 31 October 2024, there were 694 plant disease reports recorded by the PestFacts WA team from a variety of sources. Blackleg in canola was the most reported disease (95 reports), followed by Sclerotinia stem rot in canola (64). Table 2, below displays the top 5 diseases that were most reported.

Table 2 The top plant diseases and number of reports to the PestFacts WA service during 2024.

Disease	Number of reports
Blackleg in canola	97
Sclerotinia stem rot in canola	64
Spot-form net blotch in barley	62
Powdery mildew in wheat	62
Yellow spot in wheat	56

2024 PestFacts WA map statistics



PestFacts WA map displaying occurrences for all disorders reported for the previous 2 weeks, current to 7 November 2024. Map courtesy of: DPIRD.

The PestFacts WA map provides a visual display of the pests and diseases reported by members of the grain cropping industry since 1996. Viewers can generate maps based on host, disorder, and time period. They also have the option of viewing a 'same time as last year' map to highlight seasonal commonality or differences.

In 2024, viewers generated an impressive total of 4,376 maps (as of 7 November 2024). This number includes every map generated between each dropdown box selection.

Maps displaying occurrances of diamondback moth (424) and net-form net blotch of barley (72) were the top disorder maps viewed. The other top disorder maps viewed are shown in Table 3 below. These disorders may have been viewed for previous season’s distribution (historical data) as well as this season’s distribution.

Table 3 The most popular PestFacts WA disorder maps (disease, insects and other) viewed in 2024.

Disorder	Number of maps generated
Diamondback moth	424
Net-form net blotch of barley	72
Native budworm	54
Stem rust	54

Table 3 The most popular PestFacts WA disorder maps (disease, insects and other) viewed in 2024.

Disorder	Number of maps generated
Smuts and bunts	47

Acknowledgements

The PestFacts WA team would like to say a big thank you to everyone who took the time to submit insect, plant disease reports and identification requests this year to the PestFacts WA service.

We would also like to acknowledge the following people and projects for sharing their invertebrate and/or plant disease reports:

- Consenting clients using the Agworld and Back Paddock Adviser apps. This collaboration was made possible through a competitive grant process by DPIRD's eConnected Grainbelt project that was initiated in 2017.
- DPIRD and GRDC co-investment project titled: Scaling commercial technology for disease spore trapping (BIS2305-001RTX).
- DPIRD and GRDC co-investment project titled: Sclerotinia management for narrow leaf lupin crops in WA farming systems (DAW2104-002RTX).
- DPIRD and GRDC co-investment project titled: National Grains Diagnostics and Surveillance Initiative (DAW2305-004RTX).
- DPIRD and AgriFutures co-investment project titled: Understanding and reducing weather induced fungal staining of oaten hay windrows (PRO-16604).
- DPIRD and GRDC co-investment project titled: Minimising damage of invertebrate pests in canola through a better understanding of the impact of beneficial insects (CSP2309-004RTX).
- UWA PhD project with investment from the GRDC Research Scholarship: Natural enemies of key invertebrate pests of WA grain crops: Impacts and monitoring techniques (UWA2402-008RSX), Amber Balfour-Cunningham.
- DPIRD and GRDC co-investment project titled: Furthering grower knowledge and understanding of the scientifically unidentified 'Dongara weevil' (DAW2212-001 RTX).
- DPIRD and GRDC co-investment project titled: Effective virus management in grains crops (DAW2305-003RTX).

All reports are greatly appreciated and are vital for PestFacts WA to keep growers and consultants informed and up to date with what is happening across WA.

For more information on the PestFacts WA service please contact PestFacts WA newsletter editor Cindy Webster, Narrogin on +61 8 9881 0201.

Article author: Cindy Webster (DPIRD Narrogin).

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