PestFacts WA

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Diamondback moth activity is increasing

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A diamondback moth. Photo courtesy of DPIRD.

Growers are encouraged to sweep their canola crops to check for diamondback moth (DBM) caterpillars after moths were recently captured in pheromone traps at locations ranging from Ogilvie to Howick. At Amelup, 234 moths were captured in the trap over the past 4 weeks, which is a notable increase during this time.

Caterpillar activity typically slows in cold, wet weather and increases in spring as warmer temperatures shorten the DBM lifecycle. With pheromone trap catches signalling the presence of adult DBM in the landscape, and the Bureau of Meteorology forecasting warmer-than-average maximum daytime temperatures for August to October, growers are urged to check their canola crops in the coming weeks, as most larval feeding damage occurs during spring.

For more climate information, refer to the Department of Primary Industries and Regional Development's (DPIRD's) latest Seasonal Climate Outlook newsletter.

Management

Previous Grains Research and Development Corporation (GRDC)-funded research at DPIRD found that early monitoring for larvae is essential in deciding whether chemical control is required. At least four estimates of larval density over 12 days will determine whether the number of caterpillars is increasing or decreasing. On each occasion, five 10-sweep samples should be taken throughout the crop. Sweep netting provides the most precise estimate of caterpillar densities in the shortest time, compared to plant sampling or area counts.

Diamondback moth larvae. Photo courtesy of DPIRD.

If numbers of DBM larvae are found to be increasing over the 12-day monitoring period, insecticide application may be beneficial. However, more than one spray may be required. Research by DPIRD and GRDC in the 2000s revealed that a single spray in mid-August had little impact on reducing DBM across all life stages. In contrast, an early program of 2 spray applications, 3 days apart, resulted in significantly better caterpillar control and reduced yield loss. This two-spray strategy ensures that DBM eggs that survive and hatch after the first application are also controlled. Sweep net sampling of the crop about 3 days after the first spray should be conducted to assess the spray's effectiveness and determine the number of surviving caterpillars before the second spray is applied.

More recent research funded by DPIRD and GRDC showed that more than 100 moths need to be captured in a pheromone trap in a fortnightly period before reliable increases in larvae detections in crops were observed.

Diamondback moth infestations in canola crops are often sporadic and difficult to predict, making pre-emptive spraying for this pest ineffective and not cost-effective.

While activity is expected to ramp up as spring approaches, DBM caterpillars do not always build up to threshold levels in every region and in every year. Sometimes DBM populations crash naturally as a result of fungal infection (especially with a moist canopy) or from other natural enemies, such as parasitoid wasps.

Thresholds for control are:

- pre-flowering (stressed crop): 30 or more caterpillars per 10 sweeps
- pre-flowering (no stress): 50 per 10 sweeps
- early-mid flowering: 50 or more per 10 sweeps
- mid-late flowering: 100 or more per 10 sweeps.

Diamondback moth is difficult to control because the species is resistant to many insecticides, including synthetic pyrethroids and organophosphates. If spraying is required, keep in mind that insecticide sprays have limited coverage in dense canola canopies, and any insecticides that are effective on DBM can only be applied twice per season.

If numbers warrant spraying, growers and consultants can refer to DPIRD's 2025 Winter Spring Insecticide Guide.

Growers should consider insecticide options that are soft on predator insects. For a list of insecticides with their toxicity to beneficial insects, refer to Cesar Australia's Beneficials Chemical Toxicity Table.

Please use the PestFacts WA Reporter app to report and share both sweep net counts of DBM caterpillars in crops and any visual observations of changes in caterpillar or moth numbers.

Further information

For information on DBM biology and earlier DBM activity this season, refer to the 2025 PestFacts WA Issue 8 article Diamondback moths in canola.

For more DBM information, refer to:

- DPIRD's Diamondback moth and its management in canola and crop weeds factsheet.
- GRDC's Diamondback moth best practice management guide - southern
- GRDC's Managing diamondback moth video.

For more DBM information contact Senior Research Scientists Dustin Severtson in Northam on +61 8 9690 2160 or Svetlana Micic in Albany on +61 8 9892 8591.

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Article input: Dusty Severtson (DPIRD Northam) and Svetlana Micic (DPIRD Albany).

Native budworm migration update

Native budworm moths

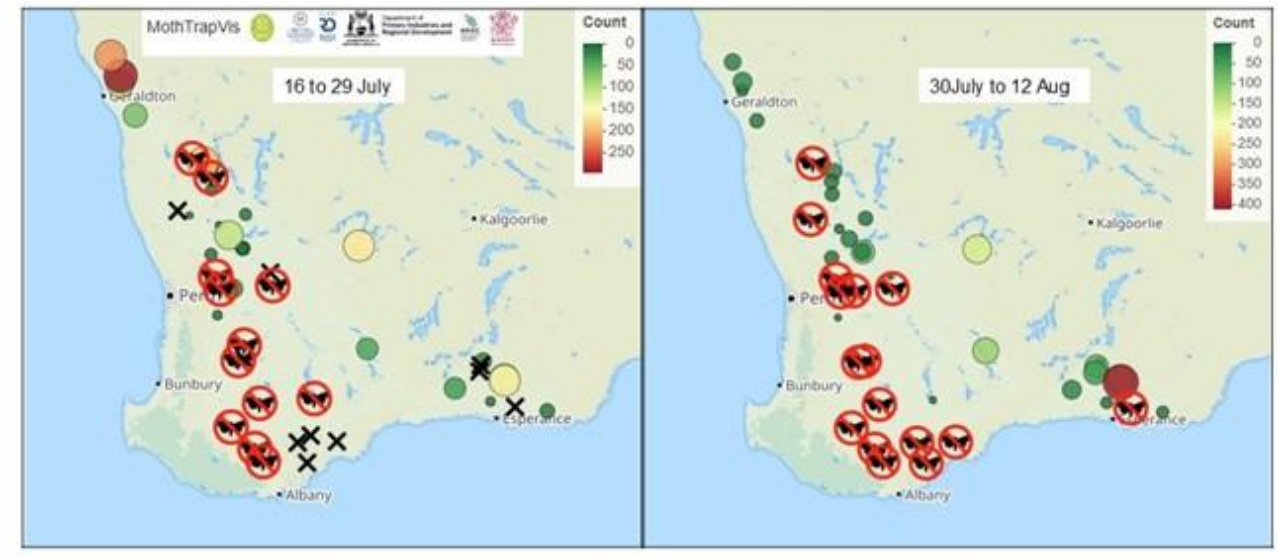
- Buntine
- Wubin
- Badgerin Rock
- Southern Cross
- Dowerin
- Goomalling
- Varley
- Grass Patch

A native budworm moth. Photo courtesy of DPIRD.

Native budworm moth flights have been detected recently in areas of the central and Esperance grainbelt. This follows the early wave of moth migration in the northern region during June and July. Nil or low numbers of moths continue to be detected in western central grainbelt areas, and no moth migration events have been detected in the Great Southern and Albany regions since the commencement of the Department of Primary and Regional Development's (DPIRD's) 2025 native budworm moth volunteer trapping program in June.

Over the past week or so, volunteer trappers have reported the following native budworm moth counts: Grass Patch east (241 and 46 moths in two lentil crops), Southern Cross (chickpeas 94, lentils 88), Dowerin (lupins 27, canola 12), Goomalling (lupins16), Buntine (lupins 14), Wubin (lupins 11), Badgerin Rock (lupins 10), Grass Patch west (canola 11, 7) and Durawah (canola 5). At Varley 111 native budworm moths were trapped in a lupin crop over 14 days.

A mapped view of all recent native budworm trap captures is available at Cesar Australia's MothTrapVisWA page. Viewers need to select the desired trapping date range.



MothTrapVis maps showing native budworm moth trapping results from 16 July to 12 August 2025. X indicates no data, and the red and black moth symbol indicates no moths in trap. Maps courtesy of Cesar Australia.

It is likely that additional native budworm moth migrations will occur from the northern and eastern pastoral areas of WA, moving south and west into the grainbelt as spring approaches. It is important that growers monitor crops (especially canola and pulse crops) for native budworm larvae (caterpillars) as the temperatures rise in August, because warmer daytime temperatures increase insect reproduction, growth rate and feeding activity.

Native budworm caterpillars detected

- Southern Cross

A native budworm caterpillar. Photo courtesy of DPIRD.

A volunteer trapper near Southern Cross detected 6 budworm caterpillars per 10 sweeps in a chickpea crop. The caterpillars ranged in size from less than 5 mm to more than 10 mm in length. No caterpillars were detected in a nearby lentil crop.

In the past fortnight, DPIRD's surveillance team has found no native budworm caterpillars during sweep netting at 17 canola sites, from north of Geraldton to east of Esperance.

The presence of native budworm caterpillars in crops may not be immediately obvious, as there may be very little leaf feeding damage due to the caterpillars' preference for feeding on developing buds. The only way to be sure of the possible presence of budworm caterpillars is to sweep net the crop at multiple locations.

Management

Pesticide options for the control of native budworm caterpillars can be found in DPIRD's 2025 Winter Spring Insecticide Guide.

Further information

For more information about the native budworm, and its impact on crops, refer to the department's Native budworm page.

To read about native budworm activity earlier in the season, and how to manage this pest, refer to the 2025 PestFacts WA articles in:

- Issue 10 article Why are we seeing native budworm larvae so early?
- Issue 9 Native budworm moth update
- Issue 8 Native budworm moth flights have started
- Issue 7 Native budworm moth trapping program will begin in July. Would you like to host a trap?

Native budworm moth counts from the trapping program can be viewed at Cesar Australia's MothTrapVisWA page, which is regularly updated with the latest trap counts. If you are interested in hosting a trap, please contact DPIRD Research Scientists Bec Severtson in Northam or Andrew Phillips in Geraldton.

For further information on native budworm contact Senior Research Scientist Dusty Severtson in Northam on +61 8 9690 2160 or Research Scientist Andrew Phillips in Geraldton on +61 8 9956 8567.

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Rust in oats – diagnosing leaf rust from stem rust

- York

An oat leaf with visible stem rust pustules, but no visible symptoms on the plant stem.

Research Scientist Kylie Chambers (DPIRD) has reported finding a hot spot of oat stem rust in oats (var. Goldie) near York. The plants were at the booting growth stage. Interestingly, the stem rust pustules were only visible on the leaves of infected plants, rather than the stem. Kylie also found bacterial blight and *Septoria avenae* blotch in the same paddock.

Monitoring oat crops for rust at this time of year is important, especially for susceptible varieties that have not received any fungicide application. While many varieties have some resistance to common oat leaf rust pathotypes in Western Australia (WA), resistance to stem rust is poor in many varieties.

Rusts predominantly spread via wind from infected plants, but spores can also be transported through the movement of people, machinery and plants. Growers are urged to adopt hygiene (biosecurity) measures during their paddock checks to reduce the risk of spreading the disease. Oat plants are at greater risk of rust infection if rust was present in the previous season, a green bridge was present in summer and autumn to harbour and build up rust levels, and spring conditions are suitably wet.

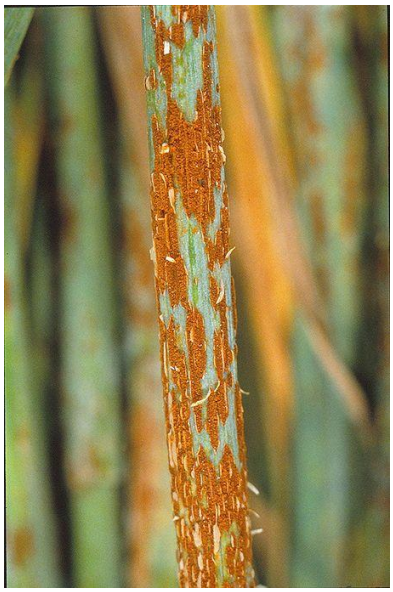
Symptoms of leaf rust and stem rust

Oat leaf rust (also known as crown rust) and stem rust can impact the yield and quality of both hay and milling oat crops. Both rust types can affect the leaves, leaf sheaths and panicles of oat plants and can even infect the same plant.

Both oat leaf and stem rust species are oat specific and do not infect barley or wheat.

Oat leaf rust pustules. Photo courtesy of DPIRD.

Oat leaf rust produces round to oblong-shaped pustules, containing yellow-orange powdery spores. The pustule areas turn black with age. The pustules of oat leaf rust are more velvety in appearance than those of oat stem rust and are most commonly found on the leaf surface. The leaf area surrounding the pustule can also turn pale green in colour.



Oat stem rust pustules. Photo courtesy of DPIRD.

Oat stem rust pustules are darker in colour, containing dark red-brown, powdery spores and are larger in size. These pustules can be found on stems, leaf sheathes, leaves (both sides) and sometimes on heads. The edges of stem rust pustules are frequently ruptured with appear tattered. In some cases, oat stem rust can also be found exclusively on the leaves of the plant, and the area around the pustule can turn pale green (similar to that of oat leaf rust).

Stem rust thrives in warmer conditions than leaf rust and is usually detected later in the season (mid-spring). Continued monitoring of susceptible oat varieties is recommended until plants reach the early grain fill growth stage.

Management

Variety selection is the best defence against rust diseases in-crop. Varieties rated as moderately resistant to moderately susceptible (MRMS) or better will show significantly less rusting than susceptible (S) and very susceptible (VS) varieties. These varieties are unlikely to require a fungicide application to maintain grain yield, except in exceptional years with very high disease pressure. For variety disease ratings, refer to DPIRD's 2025 WA Crop Sowing Guide.

If rust is detected in a susceptible variety (rated VS to S), fungicide is more likely to be needed to protect yield. In these cases, fungicide should be applied before the epidemic becomes severe, taking into consideration the stage of crop development. Spraying after crop flowering is normally not economic for leaf rust. However, stem rust is more detrimental to yield loss than leaf rust, is favoured by warmer temperatures and may need prompt spraying in susceptible varieties even into grain filling. As the season progresses and warmer, drier conditions occur, the likelihood of an economic response to fungicide will diminish but less so, for stem rust.

Spray decisions should consider the level of disease in the crop, varietal susceptibility, the time of the season and growth stage of the crop. Additionally, consider the likelihood of ongoing rainfall after spraying, as this is favourable for disease development.

Use high rates of fungicide for longer duration of protection, for example, when seasonal conditions favouring infection are likely to persist, or for more susceptible varieties. Cost should be aligned to crop yield potential and crop season length.

It is important to correctly identify the type of oat rust in the paddock, as this will impact fungicide choice and application rate.

For a list of registered fungicides to use as foliar sprays, visit DPIRD's Fungicides page. Always follow fungicide label recommendations for application rates and withholding periods.

Rust pathotype testing

Growers and agronomists are encouraged to send samples of all rusts for pathotype testing at any time of the year to the Australian Rust Survey. Possible new rust strains need to be continuously monitored for, as they have implications for existing varieties, and this assists wheat breeders in developing new resistant varieties.

Infected leaf samples should be mailed in paper envelopes (do not use plastic wrapping or plastic lined packages) along with your details and collection information (location, variety etc.) directly to; The University of Sydney, Australian Rust Survey, Reply Paid 88076, Narellan NSW 2567. Optional free reply-paid envelopes can be ordered from University of Sydney. For further details, refer to the University of Sydney's Australian Cereal Rust Survey page.

Further information

For further information on rusts in oats, refer to DPIRD's Leaf diseases and their management in oats factsheet or the AgriFutures Oat stem and leaf (crown) rust disease management guide.

For more information on oat diseases contact Research Scientist Kylie Chambers, Northam on +61 8 9690 2151 or Principal Research Scientist Geoff Thomas in Perth on +61 428 947 287.

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