PestFacts WA

Issue: 10
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Why are we seeing native budworm larvae so early?

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Growers are urged to monitor their canola, lupin, and pulse crops for native budworm caterpillars following moth detections in all regions of the grainbelt, and larval detections in some crops in the north and central regions of Western Australia (WA).

Native budworm caterpillar damage on Emu canola crop at Yallabatharra. Photos courtesy of Belinda Eastough (Elders Geraldton).

Belinda Eastough (Elders Geraldton) has found native budworm caterpillars causing extensive damage to a canola crop (var. Emu) at Yallabatharra (pictured). While current damage is confined to leaves, there is concern that caterpillars may start feeding on buds. Belinda noted that no budworm damage was found in a neighbouring canola crop (var. Hunter). At Ogilvie 3-5 caterpillars per 10 sweeps were sampled on canola (8 true leaves).

In a lupin crop at Yallabatharra, Belinda collected 23 native budworm caterpillars per 10 sweeps, and found 6 or more budworm caterpillars per 10 sweeps on lupins (8 true leaves) at Northampton.

Senior Research Scientist Dusty Severtson (DPIRD) has found budworm caterpillars on early flowering lupins near Kondinin. Caterpillar numbers ranged between 0 to 2 larvae per 10 sweeps, and caterpillar size ranged from 5 to 15 mm. These caterpillars are likely to have hatched after a moth migration flight in June.

The PestFacts WA team has also received reports of native budworm caterpillars feeding on wheat at Northampton and Chapman Valley.

Wheat: a non-traditional host for native budworm

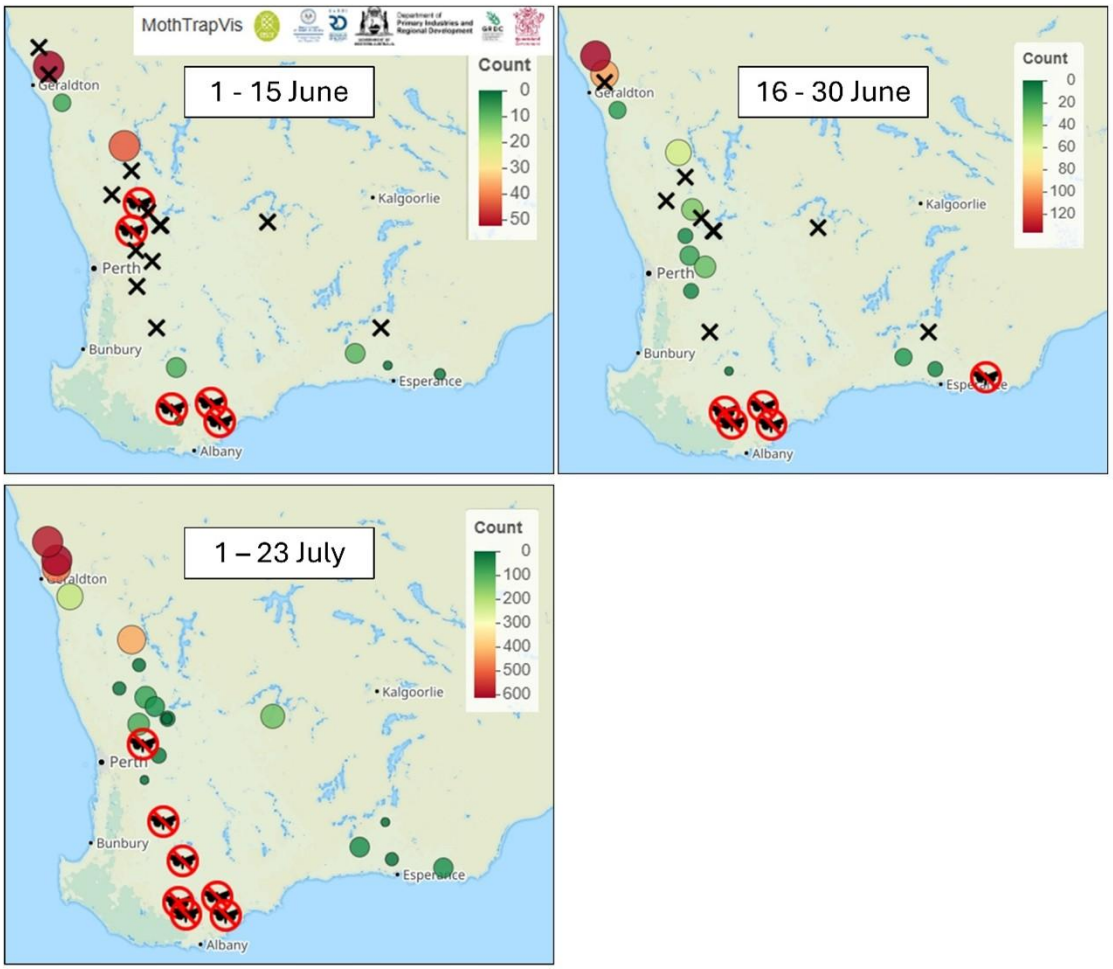
Glasshouse and field research, conducted by DPIRD with investment from the Grains Research and Development Corporation (GRDC), suggests that earlier and heavier moth migration events are not only putting greater pressure on known host crops but also forcing native budworm to colonise and damage non-traditional host crops such as wheat. This has been particularly evident when wild radish was present in the wheat crop, as it served as a brassica host for native budworm moths to lay eggs and for their caterpillars to feed.

The economic threshold for budworm in wheat is very high (100 caterpillars per 10 sweeps), but these values are based on damage to heads later in the season. DPIRD

trials showed that native budworm larvae forced onto younger, vegetative wheat either starved to death or caused only low levels of leaf damage. Therefore, it is unlikely that any control measures would need to be taken for native budworm feeding on vegetative wheat, unless concerningly high numbers are present and causing notable damage. For more information on this research, refer to the GRDC Groundcover article Is native budworm targeting wheat crops? or listen to the podcast Native budworm in … wheat?

Early moth migration may result in larvae on younger crops

DPIRD's 2025 native budworm moth trapping program commenced at the start of June and detected an early wave of moths migrating from the northern and north-eastern pastoral areas, where budworm live year-round. Importantly, it showed that the Geraldton port zone experienced high moth numbers throughout June and July (see maps below).



MothTrapVis maps showing native budworm moth trapping results from 1 June to 22 July 2025. X indicates no data, and the red and black moth symbol indicates no moths in trap. Maps courtesy of Cesar Australia.

In 2024, a native budworm moth migration event was also detected in early June. This did not always result in larvae detected in crops. The lack of larvae may be attributed to several factors, including very low winter temperatures not conducive for budworm reproduction and survival, the presence of natural enemies, and natural fungal infection in moist canopies.

The early moth migration in 2024 was followed by a sharp decline in moths being detected in traps throughout July and early August. However, a massive wave of moths was then detected in the northern region in August 2024. Trapping data suggest moths moved down through central and southern areas throughout September. This resulted in larval numbers that were potentially the highest on record in WA crops.

Although larvae may be detected in crops now, it is likely that additional budworm migrations will occur from the northern and eastern pastoral areas, moving south and west into the grainbelt as Spring approaches. It is especially important to monitor crops as the temperatures rise in August, because warmer daytime temperatures increase insect reproduction, growth rate and feeding activity.

What about the spray thresholds?

Current economic thresholds were generated from department trial results based on the number of caterpillars damaging crops during pod formation (most pulses) or pod maturation for lupins and canola. For more information about these thresholds, refer to DPIRD's Native budworm spraying threshold page.

Further research is needed on why native budworm migrations are occurring much earlier, and how we manage budworm larvae in budding and flowering crops – growth stages that traditionally haven't required management as early as they are now.

More 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 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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Loose smut in barley

- Beaumont
- Munglinup

Loose smut spores on a barley head. Photo courtesy of DPIRD.

Quenten Knight (Agronomy Focus) has reported finding very low levels of loose smut in barley (var. Combat) near Beaumont, Western Australia (WA). The majority of the crop was at the stem elongation growth stage (Z32/33), with no heads emerged yet.

There has also been a report of loose smut in barley (var. Neo) at Munglinup.

Barley loose smut was prevalent across many areas of the WA grainbelt in 2024. Infected seed from those crops is expected to have been harvested and sown this season, raising the risk of disease.

Biology and symptoms

Loose smut is a fungal disease affecting barley and wheat seed heads, which can cause yield losses.

Loose smut of barley (*Ustilago* nuda) and loose smut of wheat (*Ustilago* tritici) are caused by different fungal species but have similar life cycles. They are both internally seed-borne and carried as a small colony of fungus inside the embryo rather than as spores on the seed coat.

Loose smut on previous season wheat head. Photo courtesy of Quenten Knight (Agronomy Focus).

When infected seed germinates, the fungus becomes active and grows slowly in the growing point of the plant, ultimately growing into the head of plants. Florets are replaced with a compact mass of dark brown-black powdery spores at heading. These spores are dispersed by wind to infect adjacent plants and produce the next generation of infected seed.

Infection is favoured by rainfall and high humidity during flowering and growing susceptible barley and wheat varieties.

Loose smut can be distinguished from covered smut, an externally seed-borne disease, as covered smut does not readily break-up or blow away while loose smut does.

When examining your paddock for loose smut, look for scattered plants with black heads or bare flower stalks (the backbone or rachis). Diseased plants appear to grow normally but may be slightly taller and earlier maturing than surrounding healthy plants in a crop.

Infected seed is symptomless, and the presence of infected plants in the source paddock is a good indicator of the risk of harvesting infected seed.

Management

Infected seed is the primary source of the fungus that causes the disease, and highly contaminated seed should not be re-sown.

A registered fungicide seed dressing can effectively manage transmission of infection from seeds. The correct application of seed dressings is critical to ensure adequate control.

Research conducted by Dr Kithsiri Jayasena (DPIRD) has found high label rates of a tebuconazole-based product, applied at early head emergence can also reduce embryo infection from seed-borne loose smut on susceptible barley.

More information

For more information on barley loose smut refer to the department's Smuts and bunts of cereals and their management factsheet.

For more information contact DPIRD Senior Research Scientists Kithsiri Jayasena, Albany on +61 8 9892 8477, Andrea Hills, Esperance on +61 8 9083 1144; or Research Scientist Kylie Chambers, Northam on +61 8 9690 2151; or Principal Research Scientist Geoff Thomas, Perth on +61 8 9368 3262.

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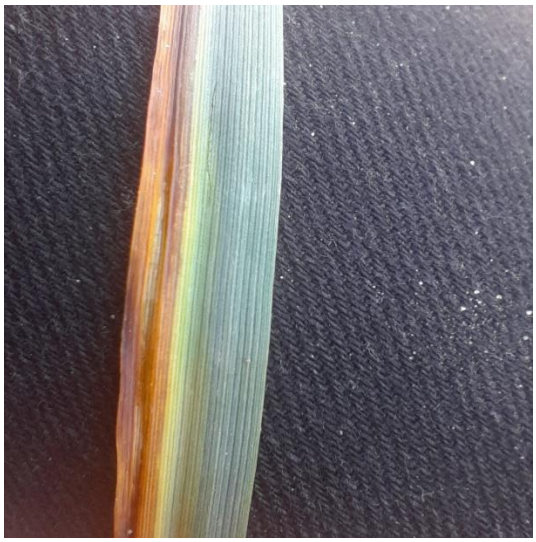
Bacterial blight and septoria avenae blotch in oats

- Three Springs
- Northam



Bacterial blight symptoms on an oat leaf. Photo courtesy of DPIRD.

Research Scientist Kylie Chambers (DPIRD) recently found bacterial blight on oats and septoria avenae blotch on wild oats in a paddock at the Muresk Research Institute near Northam, Western Australia (WA).

An Agworld app user has also reported finding septoria avenae blotch in oats near Three Springs.

Bacterial blight

There are two types of bacterial blight that affect oats in WA: stripe blight (*Pseudomonas syringae pv. striafaciens*) and halo blight (*Pseudomonas syringae pv. coronafaciens*).

Stripe blight on oat leaves. Photo courtesy of: DPIRD.

Stripe blight is the more common form of the disease in WA. It forms long, red-brown stripes on leaves during winter, which can join into blotches and cause leaf collapse.

Halo blight. Photo courtesy of: DPIRD.

Halo blight causes pale green or yellow coloured, oval-shaped spots surrounded by a pale halo with a water-soaked appearance. As the disease develops, these spots turn brown and join to form blotches.

Both bacterial blights need cool, moist conditions, to infect plants and spread. Normally the infection will stop spreading as canopies dry, and crops are able to outgrow the infection in spring.

It is important not to confuse bacterial blight with fungal diseases like Septoria avenae or oat rusts, as fungicides are not effective against bacterial blight. Currently there are no crop protection chemicals suitable (or registered) to control this disease.

Further information about these diseases can be found in DPIRD's Leaf diseases and their management in oats factsheet.

Septoria avenae blotch

Septoria avenae blotch symptoms on oats. Photo courtesy of: DPIRD.

Septoria avenae blotch is the most prevalent oat disease in WA. Under high disease pressure, it can impact both hay and grain yield and quality. Septoria symptoms can appear as brown to purple oval shaped spots on leaves. These lesions then develop into larger brown blotches up to 2 cm in size, which can coalesce to cover most of the leaf. Severe infections can lead to plant lodging. Florets and glumes of plants can also develop blotches, which can cause black staining of seed in some varieties.

The main source of infection is infected crop residue from previous seasons. The sexual stage of the fungus occurs on infected stubble and following rainfall produces ascospores that are spread moderate distances by wind, infecting new crops. Secondary spread occurs when the asexual spores formed in the lesions are spread through the crop canopy by rain splash.

Yield and grain quality losses can occur in high disease pressure scenarios, such as continuous oat crops, growing susceptible or very susceptible varieties, and in favourable environments (such as higher rainfall regions) where disease develops into the upper canopy. In these circumstances, foliar fungicides can reduce disease severity and reduce potential losses to disease.

For a list of registered fungicides to use as foliar sprays for managing Septoria avenae blotch in oats, refer to DPIRD's Fungicides page.

For more information on Septoria avenae blotch, refer to DPIRD's Leaf diseases and their management in oats factsheet and AgriFutures Septoria avenae blotch disease management guide.

Further information

To check your oat variety susceptibility ratings to these diseases, refer to DPIRD's 2024 WA Crop Sowing Guide - Oats.

For more information on oat diseases, refer to DPIRD's Leaf diseases and their management in oats factsheet.

For more information on oat foliar diseases, contact DPIRD Research Scientists Kylie Chambers in Northam on +61 8 9690 2151, Jason Bradley, Perth on +61 (8) 9368 3982; Senior Research Scientists Andrea Hills, Esperance on +61 (0)8 9083 1144, Kithsiri Jayasena, Albany on +61 (0)8 9892 8477; or Principal Research Scientist Geoff Thomas in Perth on +61 (0)8 9368 3262.

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