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Protect Grow Innovate

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Contents

Black cutworm caterpillars are damaging wheat crops and pastures

- Irishtown

Image 1: Black cutworm caterpillar. Photo courtesy of: Cameron Smith (Elders).

Cameron Smith (Elders) recently found high numbers of black cutworm caterpillars feeding during the daytime on a wheat crop neighbouring a long-term pasture crop near Irishtown. Up to 30% of the wheat crop, at flag to one leaf stage, had been damaged. High numbers of brown pasture loopers were also present.

Cutworm caterpillars are generally nocturnal and feed on leaves and stems of crop and pasture plants at or near ground level, often cutting stems off at the base. Daytime feeding occurs occasionally when numbers are very high. Cutworms are most damaging to winter crops when large caterpillars (>20 mm) transfer from summer or autumn weeds onto young crop seedlings. Pastures can be attacked at any time during the season, and the damage may go unnoticed unless numbers are very high.

Cutworm caterpillarss hide in the soil during the day, often at the base of lopped plants or at the edge of a damaged patch.

Description

Mature cutworm caterpillars are smooth and plump with a greasy appearance and a dark head. They grow to 40 to 50 mm long and after reaching their final larval instar they pupate in the soil.

Moths of the black cutworm have brown or grey-black forewings and stout bodies. These moths can fly large distances and are often seen on windowpanes at night after being attracted to lights. Eggs are laid onto summer and autumn weeds near the soil surface.

There are several species of cutworm which are similar in appearance. Common cutworm is the larvae of *Agrotis infusa*, or Bogong moth, and is dark brown to black in colour. Common cutworm is a sporadic pest that can cause extensive damage in most agricultural areas. Other species of black cutworm, *Agrotis* spp. are very similar in appearance and difficult to tell apart from common cutworm. Pink cutworm, *Agrotis munda*, have a pale grey-green body with a pinkish tinge and are known to have caused widespread damage in northern agricultural regions. Large numbers of patterned cutworm caterpillars, belonging to different genera, *Rictonis* and *Omphaletis*, have also been known to damage cereals in agricultural areas.

Growers and consultants can use the PestFacts WA Reporter app to request or confirm identification of caterpillar crop pests.

Monitoring and management of cutworm and considering beneficials

Growers are advised to monitor their paddocks for cutworm activity, especially the edge of crops adjacent to pasture or crops seeded into paddocks with a green bridge.

Caterpillars are usually just below the soil surface during the day and emerge to feed at night. Check the base of healthy or recently damaged plants adjoining damaged or bare areas. Two large caterpillars per 0.5 m row of cereals can cause extensive damage.

Applications of insecticide sprays are advised only if cutworm are present and feeding on the crop. As with armyworm caterpillars, cutworm caterpillars are more likely to come into contact with insecticides applied in the late evening when they are actively feeding.

If cutworm numbers warrant spraying then growers and consultants can refer to DPIRD's 2024 autumn winter insecticide guide.

Growers should consider insecticide options that are soft on predator insects if spraying. For a list of insecticides with their toxicity to beneficial insects, refer to Cesar Australia's Beneficials Chemical Toxicity Table. For more information on beneficials refer to DPIRD's Know what beneficials look like in your crop page.

More information

For more information on cutworm refer to DPIRD's Diagnosing cutworm in cereals and Cutworm: pests of crops and pastures pages.

For more information on brown pasture looper refer to DPIRD's Diagnosing brown pasture looper page and the recent 2024 PestFacts WA issue 11 article Brown pasture looper activity update.

For more information on caterpillar pests contact DPIRD Research Scientists Svetlana Micic in Albany on +61 (0)8 9892 859, Andrew Phillips in Geraldton on +61 8 9956 8567 or Dusty Severtson in Northam on +61 8 9690 2160.

Article author: Bec Severtson (DPIRD Northam).

How to monitor effectively for pests in winter crops

Inspecting your crop for pests now may assist with foreseeing possible damaging populations in spring when pest activity can ramp up to levels that cause economic damage. In fact, pests like native budworm may have already flown into pulse and canola crops in your area, laid eggs and the emerging caterpillars will have their eye on delicious buds, flowers and early pods. Remember that pasture legumes are also very susceptible.

Effective monitoring is achieved by choosing the correct methods for key economic pests in your crop and region, and by planning monitoring activities for the correct pest life cycle stages and crop development stages. Growers and consultants can also keep an eye out for beneficials responding to pest presence.

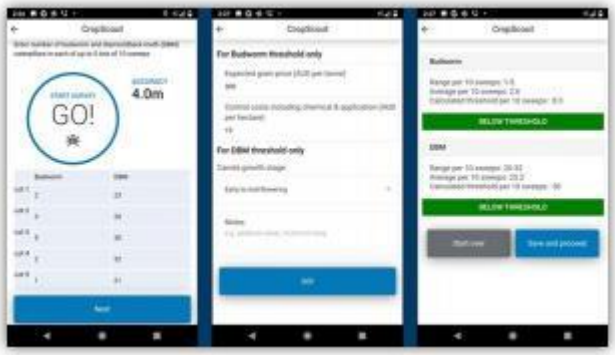
Tools available to assist crop monitoring

Growers and agronomists can access the free MyPestGuide CropScout application. This tool was designed to aid crop technicians to apply insect spray thresholds in the field. It also records and maps results which can then be used to optimise spray timing and, where possible, to target sprays to pest infestations where they are aggregated, such as along crop edges or in a portion of a crop.

Results are saved in your personal account and can be exported and shared with others for viewing in Google Maps/Earth.

There are two modules available:

1. Canola aphid module
2. Sweep net module for caterpillars in all crops with threshold calculators.



Monitoring techniques for key economic pests

Sweep netting for assessment of diamondback moth, native budworm, and other pest caterpillars

Image 2: DPIRD Research scientist Amber Balfour-Cunningham sweep netting a canola crop to assess diamondback moth and native budworm caterpillars. Photo courtesy of: Jordan Turnock (Public).

Canola is best monitored for caterpillars by sweep netting when the crop is knee high or taller. It is recommended to do at least 4 lots of 10 sweeps with an insect net at various locations in each crop. The standard sweep net is 38 cm in diameter, 70 cm deep with a 120 cm long handle. Brush the sweep across the top of the crop canopy in a continuous

motion in a 2 m arc. Approximately four sweeps of the net will cover 1 m² of the crop. Sweep netting is also useful for monitoring canopy pests such as armyworm and native budworm in pulses, lupins and cereals.

More information on sweep netting in advanced canola crop refer to GRDC's Managing Diamondback Moth video.

Some helpful tips to consider:

- A high proportion of small diamondback moth (DBM) caterpillars (less than 3 mm) in a sample can indicate that numbers will increase further.
- Regular assessments of the crop are required to see if caterpillar numbers are increasing. Numbers can fluctuate and are just as likely to decrease as they are to increase at any stage throughout the growing season. Caterpillar numbers may reduce in cool, wet and windy conditions or fine and mild weather.
- When checking crops with a sweep net, be mindful that small native budworm caterpillars can easily be confused with DBM caterpillars in canola crops. DBM caterpillars typically wriggle rapidly when disturbed while native budworm do not.
- Native budworm caterpillars are far more damaging as they grow to larger sizes (up to 40 mm long) and will chew into the pods.

Shaking insects off plants

Without a sweep net on hand, it may be more effective to shake individual plants onto a sheet, tote box or ice cream container.

- Place a length of light coloured plastic or equivalent between rows and vigorously shake or beat the plants over the bag. Collect the insects into a container for identification and counting.
- Alternatively, gently pull up the plants and shake or bang into a plastic container.

Moth traps to indicate the presence of diamondback moth and native budworm

Delta traps with species specific pheromone lures are commercially available for monitoring DBM and native budworm moths in crops. While the presence of trapped moths indicates that they are in the landscape, it doesn't mean that caterpillars will be present above threshold levels in the coming weeks. Rather, the presence of moths can guide growers and consultants as to when they should start monitoring their canola crops for DBM or native budworm caterpillars.

Manual delta traps are relatively inexpensive, however they are also labour intensive and require regular checking by growers. Automated traps are showing potential to replace traditional manual traps, and Trapview Wingtraps were investigated as part of a GRDC and DPIRD research project. Automated traps use sensors and cameras to transmit live data on pest populations via the 4G network to a server or website.

Visual inspections for aphid pests

Growers should look for live, healthy non-parasitised aphids and note what stage of development the crop is at, where the aphids are on the plants, and how many aphids there are. It is important to identify which type of aphid is present in the crop and to apply insecticide only if aphids are at thresholds.

Some helpful tips to consider when inspecting for aphids:

- Green peach aphids (GPA) usually feed on the underside of leaves and research has shown that very high numbers (>1,000 per plant) are required before any economic damage is experienced in winter/spring.
- GPA are resistant to many insecticides and spraying should be considered only if these aphids are retarding crop growth or causing plant losses.
- Canola crops are most sensitive to cabbage and turnip aphids during flower bud formation through to the late flowering stage.
- Cabbage and turnip aphid are easily controlled by registered insecticides.
- The spray threshold for cabbage and turnip aphids in spring is 20% of plants infested with >1 cm aphid colony.
- Infestations of cabbage and turnip aphids are often aggregated along field edges, unless moisture stress causes wider distribution.
- Dry, warm and moisture stressed conditions exacerbate damage by aphids and encourages quicker reproduction.

For more information on how to identify aphid pests on canola see DPIRD's Aphid management in canola crops page.

Close examination for ground pests

This simply involves getting down onto your hands and knees and observing the crop and soil. This is necessary when assessing small pests, especially those that live on or near the ground like redlegged earth mites, webworm, aphids and weevils. You may need to crawl around looking at the base of plants and among leaf litter. A warm sunny afternoon is often the best time to search for ground pests and a magnifying lens may assist your observations. Clip on magnifying lenses are readily available for smart phones.

Some pests are difficult to find, especially those that attack plant roots like cockchafer grubs, so it is important to check below as well as above ground during your assessment.

Pitfall traps and shelter traps for difficult to find ground pests

Some ground pests are only active at night. If night searches are not practical then shelter traps can be left overnight to provide a cool, moist and dark environment for pests to shelter in during the day, and these are easily monitored. Hessian bags, carpet squares or tiles are commonly used.

A pitfall trap placed in the ground is another method to assess hard to find pests. A simple cup with a small amount of water can be placed into the soil within the paddock, left overnight and checked the next day. Earth mites, earwigs, weevils and other beetles passively fall into pitfall traps.

Image 3: Technical Officer Danae Warden (DPIRD) installing a remotely monitored pitfall trap in pasture at Brookton in May 2024. Photo courtesy of: Christiaan Valentine (DPIRD).

DPIRD researchers are currently investigating remotely monitored pitfall traps to provide near real time identification of pest threats in a number of paddocks.

For more information on manual and automated pitfall traps see the 2024 PestFacts WA issue 3 article on Using pitfall traps to detect pests.

Interpreting the results of your crop monitoring

If pest insects are identified, you should make note of the following:

- type of insect
- number of plants affected
- severity of damage to individual crop plants
- area of crop affected by the pest.

The next step is to determine whether or not the crop is likely to suffer further economic damage. When deciding whether the pest should be controlled take into consideration factors such as the:

- insect pest threshold levels for your crop
- stage of crop development
- stage of insect development
- potential for crop yield/income loss
- other environmental conditions (which are likely to influence pest survival)
- level of predators/parasitoids present
- cost of control.

For more information on insect threshold levels see the following DPIRD webpages:

- Canola crops
- Cereal crops
- Pulse crops.

Insecticides can have limited effects on some pests, particularly redlegged earth mite, green peach aphid and diamondback moth, with resistance to most registered insecticides being a concern and multiple sprays required to achieve good control. Control of these pests should be carefully considered and spraying decisions made based on threshold numbers.

For more information refer to DPIRDs 2024 PestFacts WA Issue 10 article To spray or not to spray?

If numbers warrant spraying then growers and consultants can refer to DPIRD's 2024 winter spring insecticide guide.

Growers should consider insecticide options that are soft on predator insects if spraying. For more information on beneficials refer to DPIRD's Know what beneficials look like in your crop page.

For a list of insecticides with their toxicity to beneficial insects, refer to Cesar Australia's Beneficials Chemical Toxicity Table.

Follow up monitoring post insecticide treatment

When an insecticide treatment has been applied, it is important go back and continue monitoring to ensure it has been successful. In some cases, the pests may still be alive. This often happens with weevils (which typically require higher doses of insecticide) or redlegged earth mites (which may be resistant).

More information

Growers and consultants can use the PestFacts WA Reporter app to request or confirm identification of crop pests.

For more information on sustainable pest management in crops refer to the GRDC IPM Checklist fact sheet.

For more information on monitoring pests contact DPIRD research scientists Svetlana Micic in Albany on +61 (0)8 9892 859, Andrew Phillips in Geraldton on +61 (0)8 9956 8567 or Dusty Severtson in Northam on +61 (0)8 9690 2160.

Article author: Bec Severtson (DPIRD Northam).

Wheat disease update

Powdery mildew and yellow spot/nodorum blotch

- Eradu
- Carnamah
- Marchagee
- Cunderdin
- Lake Grace
- Hyden

Image 3: Powdery mildew on Vixen wheat. Photo courtesy of: Jesse Rowe (Nutrien).

Powdery mildew has been reported recently in Vixen wheat crops near Eradu and Carnamah. For the Carnamah report, mildew pustules were found on stem and leaves, and Yellow spot and nodorum blotch were also reported in this crop. A wheat crop at Hyden also has yellow spot and nodorum blotch.

Image 4: Powdery mildew pustule on Scepter wheat. Photo courtesy of: Dan Taylor (DKT Rural Agencies)

Powdery mildew has also been found in Scepter wheat near Marchagee, Cunderin and Lake Grace.

When diagnosing powdery mildew, look for fluffy, white powdery growths of fungal spores on the surface of leaves and leaf sheaths.

In WA, nodorum blotch and yellow spot often occur together as a disease complex on wheat and are difficult to visually distinguish. The disease nodorum blotch (previously known as septoria nodorum blotch) is caused by the fungus *Parastagonospora nodorum*. Yellow spot is caused by the fungus *Pyrenophora tritici-repentis*.

Yellow spot symptoms start as yellow-tan oval spots or lesions on leaves that become tan-brown in their centre with a yellow edge as lesions grow. Lesions expand, merge and produce large areas of yellow and necrotic diseased tissue.

Plant leaves infected with nodorum blotch have tan-brown oval or irregular shaped leaf blotches with yellow margins. Tiny brown fruiting bodies can occasionally be seen in lesions but are not easily visible to the naked eye. Badly affected leaves die back from the tip as blotches converge. Later in the season, nodorum blotch can spread to glumes (known as glume blotch) and stems, and heavy infection may cause blotching across the entire grain head. Shrivelled grain at harvest causes yield and grain quality losses.

It is important to optimise control of nodorum blotch on upper leaves to reduce risk of infection of heads. This can be best achieved by applying a registered fungicide before or during crop heading.

For more information on diagnosing and managing powdery mildew and yellow spot/septoria nodorum blotch refer to the earlier 2024 PestFacts WA Issue 8 article Leaf rust, powdery mildew, yellow spot/nodorum blotch and flag smut are appearing in wheat.

Pseudo black chaff

- Mullewa

Image 5: Wheat heads with pseudo (false) black chaff. Photo courtesy of: Ciara Beard (DPIRD).

Pseudo (false) black chaff has been found in an early sown wheat trial near Mullewa. The plants are flowering.

This is not a disease, but rather the melanisation of tissue that sometimes occurs in wheat varieties that have the sr2 gene for stem rust resistance. It causes brown-black discolouration on the stem just below the head and often also mottling on the head itself. There is no evidence that this symptom negatively affects yield and there is no control.

Wheat varieties that have the sr2 resistance gene, and are therefore prone to expression of pseudo black chaff under certain environmental conditions include Scepter, Mace, Cobra, Carnamah, Corack, Emu Rock, Denison, Hammer CL Plus and Eradu.

Further information can be found on the department's Diagnosing false black chaff in wheat page.

It is important that growers and consultants do not confuse glume blotch with pseudo black chaff and other causes of darkening on the glumes (loose smut, frost and copper deficiency).

Further information

For more information on wheat diseases contact Plant Pathologists Kithsiri Jayasena in Albany on +61 (0)8 9892 8477, Ciara Beard in Geraldton on +61 (0)8 9956 8504, Geoff Thomas in Perth on +61 (0)428 947 287, Jason Bradley in Perth on +61 (0)447 864 707 or Andrea Hills in Esperance on +61 (0)8 9083 1144.

Article authors: Geoff Thomas (DPIRD Perth), Ciara Beard (DPIRD Geraldton), Jason Bradley (DPIRD Perth) and Cindy Webster (DPIRD Narrogin).

Sclerotinia and blackleg infections in canola and lupin canopies

Sclerotinia stem rot

- Geraldton port zone
- York
- Northam
- Munglinup

Image 6: Sclerotinia symptoms on a lupin plant. Photo courtesy of: Ciara Beard (DPIRD).

Plant pathologist Ciara Beard (DPIRD) has recently observed sclerotinia stem rot infections in lupin and canola crops in the Geraldton port zone in paddocks with history of sclerotinia.

Image 7: Sclerotinia stem rot symptoms on a canola leaf started from an infected petal (indicated by red arrow). Photo courtesy of: Zia Hoque (DPIRD).

Image 8: Advanced sclerotinia disease symptoms on dropped older leaves near ground level. Photo courtesy of: Zia Hoque (DPIRD).

Plant pathologist Zia Hoque (DPIRD) found sclerotinia stem rot leaf infection in a canola crop near York and in canola, lupins, chickpea and vetch at Northam. At York the infection started from a dropped petal and symptoms were visible on older leaves at ground level.

Image 9: Sclerotinia leaf infection in canola at Munglinup. Photo courtesy of: Andrea Hills (DPIRD).

Plant Pathologist Andrea Hills (DPIRD) has found sclerotinia leaf infection on canola plants near Munglinup.

The disease has progressed from the apothecia stage to petal infection, and now infected petals are falling into crop canopies. Cool, wet weather (<25°C) favours the pathogen, and mist, dew and fog provide enough moisture for subsequent crop infection. Crops with dense canopies on loamy soil types that retain moisture are at higher risk.

Sclerotinia lesions occur in the upper half of the plant's main stem or branches and can be observed on leaves and pods.

Blackleg - leaf and upper canopy infection

- Ogilvie
- Northam
- Merredin
- Southern region

Image 10: Blackleg infection on a canola flower. Photo courtesy of: Amber Balfour-Cunningham (DPIRD).

Research Scientist Amber Balfour-Cunningham (DPIRD) has found some upper canopy blackleg infection (UCI) on Renegade canola near Northam.

Image 11: Blackleg abortion of a young pod in Invigor R 4520P at Munglinup. Photo courtesy of: Andrea Hills (DPIRD).

Blackleg infection on canola leaves has been reported to the PestFacts WA team for canola crops ranging in location from Ogilvie to the whole south coast. Crops in the southern region have blackleg leaf lesions and those flowering have flower abortion and even some stem lesions already developing. However, the variety DG Bidgee TT is still showing good blackleg resistance.

Leaf infections are common on varieties with no effective resistance, especially where the variety has been grown for more than two years. Most major blackleg resistance genes are ineffective in WA, apart from Groups H and S with limited protection from Groups D and H.

UCI is usually worse in very early sown crops and can infect all parts of the canola plant including flowers, heads (causing head abortion), stems, branches and pods. Most grain yield damage results from early stem and branch infections that limit pod filling. Variety resistance ratings for UCI blackleg and regional gene effectiveness are now available in GRDC's 2024 Blackleg Management Guide.

Management of sclerotinia stem rot and blackleg upper canopy infection

Two decision support tools are available for canola growers to use during flowering to help with management decisions for sclerotinia stem rot and blackleg upper canopy infection (UCI). The tools are available on phones and tablets and can help determine the likely economic returns from applying fungicide during early to mid-flowering. For more information, refer to DPIRD's SclerotiniaCM decision support tool or DPIRD's UCI BlacklegCM decision support tool.

Lupin growers can refer to GRDC's Lupin sclerotinia disease risk assessment guide fact sheet.

Several fungicide products are registered for the control of sclerotinia stem rot and blackleg UCI in canola. As canola crops start to flower across the grainbelt growers are urged to consider management of sclerotinia stem rot and blackleg UCI. Fungicides applied during the bloom stage may reduce UCI and sclerotinia stem rot, and there are now a range of products registered for use. For more information on registered fungicides refer to DPIRD's Registered foliar fungicides for canola in WA.

For more information regarding canola variety resistance ratings and blackleg management, refer to GRDC's Blackleg Management Guide 2024 Winter Fact Sheet.

Options for management of canopy sclerotinia in lupin are more limited. Fungicides need to be applied as recommended per product label. Strategic and responsible use of fungicides will reduce the risk of fungicide resistance developing. For more information refer to DPIRD's Registered foliar fungicides for lupin crops in WA pages.

Growers and consultants are encouraged to use the PestFacts WA Reporter app to report any apothecia finds or disease observations as the season progresses.

Further information

Further information on sclerotinia symptoms, fungicide management and identification of canola bloom stages was covered in the previous 2024 PestFacts WA articles in Issue 11 Sclerotinia stem rot update and Issue 9 Sclerotinia disease in progress in WA.

More information on blackleg is available at DPIRD's Managing blackleg in canola page.

For more information on sclerotinia and blackleg in canola contact plant pathologists Andrea Hills, Esperance on +61 (0)8 9083 1144, Ciara Beard, Geraldton on +61 (0)8 9956 8504 or Jean Galloway, Northam +61 (0)8 9690 2172.

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