EXOTIC PEST - FOR SUSPECT DETECTIONS CALL THE HOTLINE ON 1800 084 881

Turnip moth (*Argotis segetum*)

EXOTIC PEST DETECTION & SAMPLING GUIDE

This resource has been developed as part of the collaborative program 'Boosting diagnostic capacity for plant industries'. Funding for this project is from the Rural R&D for Profit Program, Federal Department of Agriculture and Water, and the Grains Research and Development Corporation, with funds from other RDC's – Sugar RDC, Wine Australia, Cotton RDC, Forestry RDC, and Hort Innovation.

Cesar Australia

EXOTIC PEST - FOR SUSPECT DETECTIONS CALL THE HOTLINE ON 1800 084 881

Background

The Turnip moth is a pest species native to Europe. It is found throughout Asia, the Middle East and Africa, however, it is not found in Australia. Like many high priority exotic pest species, Turnip moth affects a wide range of plants with species from 25 plant families having been identified as hosts. This includes leafy vegetable, grains, crops, cereal, tea, and coffee crops.

How would I identify Turnip moth?

Identification by morphology

Adults are generally 18-30 mm in length with a 35-50 mm wingspan. Adult moths vary in colour and range from brown to grey to black. Females are larger and are darker in colour than males. Forewings are fringed by a row of fine hairs with curved dark lines following the periphery of the wing, while hindwings are generally grey (females), or white (males) with distinct wing veins.

The larvae (caterpillars) can grow to 50 mm long and have a glossy texture. They can vary in body colour (grey, brown or black) , however, they consistently show two distinctive parallel stripes that run from head to tail along the dorsal side. If disturbed, they curl up and stay motionless. Eggs are generally spherical and white, are approximately 0.5 mm in diameter, and turn grey prior to larval emergence. They can be found singularly or in clusters in shallow ground or in the cracks of the soil. Turnip moth can survive in cold weather in diapause at the egg life stage.

Identification by damage

Larval feeding generally occurs at night and hide near the base of plants or in the soil during the day. Small seedlings are at particular risk of damage as larvae can lop off the emerging shoot. Tuber and root feeding results in holes of varying severity. Occasionally, leaf drop may occur due to feeding of larvae underground or at the base of the plant.

How do I scout for turnip moth?

Adults can fly, or be spread by wind, over long distances. Surveillance should include pheromone or light trapping to monitor for adults. Plants should be examined for evidence of feeding at night when larvae are active. Look for cut stems and holes in the plant tissue. Attention should be paid to the leaves; however, stems may harbor larvae, which can then bore into plant bases and tubers. Eggs and larvae can be found in the soil. If an infestation is suspected, move earth aside at the base of plants during the day to uncover larvae

Could it be confused with an endemic species?

Agrotis species are commonly distributed throughout Australia. Since there is some host range overlap between endemic *Agrotis* species and Turnip moth, as well as similarities in feeding damage (e.g. cut stems), differentiation of these species may be difficult. Turnip moth adults and larvae are difficult to correctly identify in the field and would require assessment by a trained entomologist as dissection may be necessary.

Figure 1. Turnip moth larvae *(Agrotis segetum)*

Cover image: Merle Shepard, Gerald R.Carner, and P.A.C Ooi, Insects and their Natural Enemies Associated with Vegetables and Soybean in Southeast Asia, Bugwood.org
Image 1: Nigel Cattlin / Alamy Stock Photo

Cesar Australia

EXOTIC PEST - FOR SUSPECT DETECTIONS CALL THE HOTLINE ON 1800 084 881

What should I do if I suspect Turnip moth?

Turnip moth is a priority plant pest, exotic to Australia. If you notice an unusual moth species call the **Exotic Plant Pest hotline on 1800 084 881**. The hotline will divert you to the appropriate state biosecurity agency, which will investigate the suspect detection further. To support an investigation you should take note of:

- The detection location (take a GPS coordinate using your phone);
- The host plant on which the suspect detection has been made;
- Damage symptoms (e.g. cut stems, deep holes in tubers); and
- A photo of all life stages observed (taking close-up photos of the same specimen from multiple angles is most useful for identification).

Taking a sample

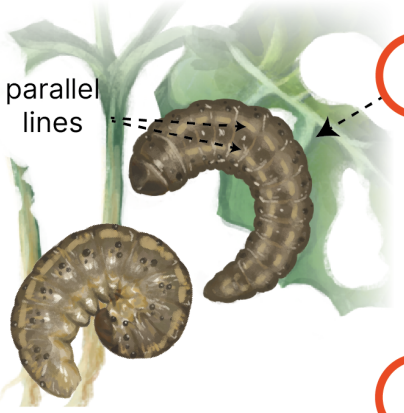
Taking a sample will also assist in a biosecurity investigation. Collect larvae on the plant part on which they are found (e.g. root tissue) and place in a ziplock bag – double bagging of specimens is ideal. Label the bag with the date and collection location and keep in the fridge in case a sample is needed by the biosecurity agency. If suspect adult Turnip moth are collected from pest monitoring traps, place in a jar or vial with 80-95% isopropyl alcohol (rubbing alcohol) or methylated spirit.

Figure 2. Reporting decision making for Turnip moth *(Agrotis segetum)*

You have detected unusual levels of damage including cut stems or abnormal leaf fall in your grain, leafy vegetable, coffee or tea crops. **Should you report it?**

1

If you answer yes to EITHER of the following questions, it could be the exotic turnip moth (*Agrotis segetum*). Report it!



1 When you check around cut stems, leaf fall, and feeding holes in leaves **at night**, do you find glossy brownish caterpillars with a distinct pair of parallel lines down their back?

Yes

2 When you set a light or pheromone trap meant for Agrotis species, or use a sweep net near damaged plants, do you capture brown to grey moths with 3 to 5 cm wingspans?

Yes

There are many native species of Agrotis in Australia, but they cannot be reliably distinguished in the field, so always take a sample and report!

2

[1] W.M. Hantsbarger, Bugwood.org (Agrotis ipsilon pictured, but damage is similar), CC BY 3.0

[2] Merle Shepard, Gerald R.Carner, and P.A.C Ooi, Insects and their Natural Enemies Associated with Vegetables and Soybean in Southeast Asia, Bugwood.org , CC BY 3.0

Figure design and all other illustrated components: Elia Pirtle, eliapirtle.com