



Vegetable -Matters-of- Facts

Potato (tuber) Moth

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Key points to remember

- Potato tuber moth is a major pest in potatoes world wide.
- This pest damages potatoes in the field and in storage.
- Potato moths are most active at dusk.
- Moth larvae damage both tubers and foliage.
- Cultural practices are the main method of control.
- Handle and store tubers carefully and destroy rejected tubers.
- Use crop rotation and plant tubers deeply to help protect them.



Potato tuber moth adult
(Photo Jack Kelly Clark – www. potatonews.com)

What is potato moth?

The potato tuber moth (*Phthorimaea operculella*) adult has a narrow silver-grey body approximately 8 mm long, with grey-brown wings spanning 12mm speckled with small dark spots. The moth reduces yield on heavily infested plants and damages the tuber.

The moths are most active at dusk, but can be occasionally viewed flying within potato crops during the day.

Females begin laying eggs 2 days after emerging from their cocoons, and will deposit 50-100 eggs over two weeks. Oval eggs are laid on the underside of leaves and on exposed potato tubers. When the eggs are first laid they appear a pearly white colour, but change to yellow when mature, and black just prior to hatching.

The newly hatched larva (caterpillar) is 1-2mm long, growing through four stages to a length of about 12 mm. Young larvae are grey or a yellow-white colour, whilst mature larvae display a pink or green colour. All stages have a dark brown head.

The pupa is a silk cocoon covered with soil particles and debris for camouflage. This stage occurs amongst dead potato leaves on the soil, or on stored potato tubers.



Leaflets damaged by larvae
(Photo Jack Kelly Clark - www.potatonews.com)

POTATO

Host plants

Other host plants for potato moth are from the *Solanaceae* family, which includes potatoes, tomatoes, tobacco and egg plants. It also infests weeds including nightshade, thornapple and apple of Peru.

Climate and Life Cycle

Potato moth prefers hot dry summers. As many as 6-8 generations may be present in a field during summer. As the temperature declines in autumn, so does the population and the moth life cycle lengthens to a maximum of 20-24 weeks over winter.



Above: Tuber worm larvae
Below: Black tunnels and feeding damage
(Photos - Jack Kelly Clark – www.potatonews.com)



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Symptoms and damage

Potato moth larvae damage both tubers and foliage. Foliage damage includes transparent blisters, eaten out patches on leaves and cavities in leaf stalks. The tops of heavily infested potato plants die prematurely, which causes yield reduction. Tubers developing under these plants become infested by larvae from the top of the plant, or by new larvae developing from eggs laid on the tubers.

On tubers, larvae enter through the eyes, creating narrow, dirty looking tunnels throughout the potato. The larvae mine in the tubers, filling the tunnels with excrement. The damage caused by the larvae also allows entry of decay organisms.

In the field, tuber infestation normally occurs during summer, whilst stored potatoes can be affected all year round. Egg laying on the tubers and development of the larvae continues as potatoes are harvested and put into storage.

How to manage potato moth

Insecticides should need to be used only occasionally or under high pest pressure. Minimal pesticide usage allows numbers of parasitic wasps and predators to build up. These help control moth populations. Predators include spiders, earwigs, ladybird and red and blue beetles. Crops should be monitored regularly and before making management decisions such as spraying.

Cultural Practices:

- Do not plant infested seed potatoes.
- Prepare land thoroughly before planting.
- Plant tubers deeply (at least 10cm) and regularly mound the soil so that tubers are always covered by at least 5cm of soil.
- Provide adequate irrigation to avoid soil cracking.
- Harvest potatoes as soon as possible once the crop is mature.
- Do not leave harvested potatoes in the field overnight.
- Do not cover harvested potatoes with potato tops or other debris.
- Remove infested tubers from the field
- Plough in debris as soon as possible after harvest to prevent larvae pupating in dry stems left in the field.
- Destroy volunteer potatoes and host plants.

Resources used to compile this document

- A field Guide to Insects and diseases of Australian Potato crops by Paul Horne, Rudolf De Boer and Dennis Crawford
- Potato Tuber worm – A Threat for Idaho Potatoes by Juan Manual Alvarez, Eric Dotseth and Phil Nolte (www.potatonews.com)

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