

DIAMONDBACK MOTH

Diamondback moth - Adult (Image: Rothamsted Research)

Diamondback moth (*Plutella xylostella*) is a common pest of brassica forage crops across Australia, particularly through spring and early summer. Diamondback moth caterpillars can cause significant damage at all stages of crop development. Natural predators such as wasps and spiders are usually able to keep diamondback moth numbers under control. However, at times the population may reach a size where intervention is required to prevent economic impact. Routine monitoring of spring brassica fodder crops is critical in preventing yield loss due to diamondback moth.

KEY MESSAGES

Diamondback moth can cause damage to brassica forage at all stages of crop development

Monitor routinely to identify the presence early

Act fast to control insect pressure and avoid yield loss

Description and Lifecycle

The adult diamondback moth is approximately 10mm long, having a distinctive diamond pattern along the wings when at rest. Diamondback moth development is primarily driven by temperature. Females lay eggs on the underside of brassica leaves, which in spring/summer usually hatch within 12 days (40 days in winter). In warm weather, caterpillars take 14-17 days to reach the mature size of 10mm length, after which they pupate in loosely woven cocoons on the underside of the leaf for a period of two to three weeks before emerging as adult moths. Multiple generations are produced every year (AgResearch, 2018).

Monitoring and control

A simple visual inspection of a brassica crop will provide a good indication of the level of pest pressure from diamondback moths. There are three visual observations suggesting a current or impending moth challenge may be happening:

| Pest | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Eggs | | | | | | | | | | 🔍 | 🔍 | 🔍 |
| Larvae | | | | | | | | | | 🔍 | 🔍 | 🔍 |
| Pupae | | | | | | | | | | 🔍 | 🔍 | 🔍 |
| Adults | | | | | | | | | | 🔍 | 🔍 | 🔍 |

🔍 Monitor Critical Management

Flying moths

When walking into a crop, disturbance caused by footsteps and brushing against crop foliage will typically cause moths to take flight.

Caterpillars

Caterpillars range in size from 3 to 10 mm in length. They are yellow/green in colour and typically reside in the crown of the plant. To assess the caterpillars, sample at least five plants across the paddock (transect line) by thoroughly inspecting the base of the leaves (pull the crown apart). If two or more caterpillars are present in the crown of each plant sampled and the crop is at least 7 days from being grazed, then action is required.

Eggs

Eggs are 0.5mm in size and are laid in groups of up to 20 on the underside of leaves. If large numbers of eggs and low numbers of caterpillars are present, then continue to monitor the crop until the eggs begin to hatch before considering a management intervention such as insecticide application.

Biological control

A variety of parasitic wasps have been introduced to control diamondback moth (McQuillam, Ireson, Hill, & Young, 2007). Populations of these beneficial predators are typically highest mid to late summer. If high numbers of caterpillars are present then the biological control is most likely proving inadequate and alternative control measures are required.

Rainfall or irrigation

Greater than 5–8 mm of rainfall in 24 hours can significantly reduce number of caterpillars as they are dislodged and drowned by the water or are killed by disease carried in the wet conditions (Kimblor & Baker, 2015). Good control has also been observed in other brassica varieties from the use of overnight irrigation (McHugh & Foster, 1995). If these control measures are to be used, it is strongly advised that follow up monitoring be conducted to quantify the reduction in moth populations.

Insecticide

Several insecticides with varying levels of effectiveness are available for controlling diamondback moth. Some will provide 5–7 days protection from diamondback moth caterpillars. Spraying is best conducted early morning or late afternoon. Observe the grazing withholding period and the export slaughter interval.



Diamondback moth larva damage (Image: Rothamsted Research)



Diamondback moth larva (Image: Rothamsted Research)



Diamondback moth pupa (Image: Whitney Cranshaw, Colorado State University, Bugwood.org)



Diamondback moth eggs (Image: Derek Russell, Museum Victoria)