

Arable Update



Maize: Issue 83

Greasy cutworm control in maize

Introduction

Greasy cutworm (*Agrotis ipsilon*) has a very wide host range including many vegetables, maize, sweetcorn and other cereals, grasses, lucerne, white clover, and weeds such as docks and plantains. Cutworm occurs in all maize growing regions in New Zealand.

Lifecycle

Greasy cutworm produce two or three generations each year in New Zealand. The breeding season starts in spring when adult females deposit around 600 - 800 eggs on vegetation, plant debris or into cracks in the ground. Newly laid eggs are whitish-yellow but turn brown and become darker as hatching approaches. During windy periods eggs are usually laid on the leeward side of shelter (trees, hedges etc.) meaning subsequent crop damage is often worst in these areas.

Greasy cutworm generally spend four to six weeks as larvae and another two to three weeks as pupae. The normal summer life cycle takes from 7 - 12 weeks depending on location and climate. Both larvae and pupae over-winter and may take up to six months to complete development.

Larvae are brownish-black to greyish-green in colour. Larger larvae are typically greyish-green with two yellowish longitudinal stripes down the body (Figure 1). Their skin has a shiny, greasy appearance, hence their name.

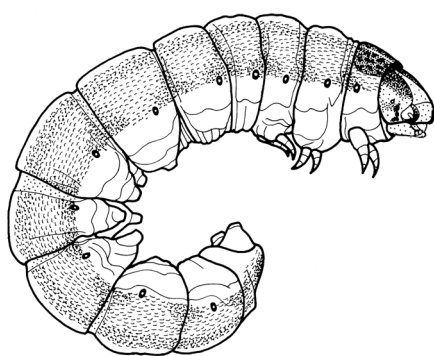


Figure 1. Greasy cutworm larvae.

Images by: Left, Des Helmore, Manaaki Whenua – Landcare Research; Right, Rasbak.

Larvae/caterpillars forage on leaves until they are about one third grown then move to the ground where they lie curled up, 25 - 50 mm below the soil surface, during the day and emerge at night to feed. They go through five to seven instars (moult stages), with the final instar larvae being up to 50 mm long. When fully grown, the larva starts the pre-pupal stage by ceasing to feed and making an earthen cell in the top 50 mm soil.

Key points

- Cutworm attack maize, sweetcorn, cereals, grasses, many vegetables, lucerne, white clover, and weeds such as docks and plantains.
- Greasy cutworm damage can begin before maize emerges but most occurs after emergence.
- Maize seedlings are typically cut at ground level and felled.
- Each cutworm can destroy 2 - 5 plants, and adult female moths lay 600 - 800 eggs each.
- Damage is worst after a short fallow period and in weedy fields, therefore use a six-week fallow period before planting maize.
- Neonicotinoid seed treatments can provide short term (several weeks) control.
- Scout crops regularly from emergence for damage and apply insecticide to the seedlings and soil if required.
- Synthetic pyrethroids are the most cost-effective insecticides for cutworm control.



Figure 2. Greasy cutworm pupae.
Photo by Merle Shepard, Bugwood.org



Figure 3. Greasy cutworm moth.
Photograph by Jerzy Strzelecki.

Pupae are 17 - 25 mm long and reddish-brown in colour (Figure 2), until just before the moth emerges, when they change to almost black. Adults moths are brown to greyish-brown with wingspans of 35 - 50 mm. The forewings are long and narrow with black dashes and are darker than the hindwings (Figure 3).

The moths are nocturnal, can fly strongly and are attracted to lights. During the day they hide amongst vegetation, but will fly if disturbed. Moths can be seen all year around, but numbers are highest from October to April.

Maize damage

Young larvae are foliar feeders while older larvae (from about the third instar stage onwards) feed on seedlings at, or below, ground level. Damage can start before maize emergence, but typically plants are cut and felled at ground level after emergence. Often the severed seedling is dragged into the cutworm's 'burrow'.

In larger maize plants cutworm can be found tunnelling inside the stem. Larval feeding often destroys the growing point, at the base of the plant, killing the seedling (Figure 4). Plants cut above the growing point usually survive but have greatly reduced yields. Cutworm infestations of 3% of plants before the two-leaf stage, or 6% at the two to four leaf stage can equate to losses of over 10,000 plants/ha.



Figure 4. Greasy cutworm larvae and damage to maize seedling. Photo by Frank Peairs, Colorado State University, United States.

Control

The use of Integrated Pest Management (IPM) methods should be considered when trying to reduce the risk of greasy cutworm damage. IPM offers an opportunity to move away from a routine broad-spectrum insecticide-based approach to pest management by considering cultural and biological strategies. For full details of IPM methods and considerations refer to the FAR Focus 12, Integrated Pest Management (although it does not refer specifically to greasy cut worm).

The success of any greasy cutworm control programme depends upon recognising field conditions that favour their development and undertaking frequent scouting, from seedling emergence, to enable early detection. If required, a properly timed application of an appropriate insecticide will achieve good control.

Cultural control

Destroying alternative hosts such as docks, or cultivating before planting will reduce cutworm numbers. A six-week fallow period before planting can also be beneficial.

Chemical control - seed treatment

Treating seed with the neonicotinoids gives short-term control, particularly where cutworm numbers are not high, and also has the added benefit of helping to control black beetle and Argentine stem weevil.

Concern around off-target impacts of neonicotinoid insecticides (acetamiprid, clothianidin, imidacloprid, thiacloprid, thiamethoxam) has led to public concern about their use in crops and seed treatments. It is important that as an industry, we are able to show that these, and all chemicals, are only ever handled and applied using best practice.

Support your industry by adhering to best practice. If you have any concerns or queries about neonicotinoid use on any crop, contact your agrichemical representative or expert. Refer to the FAR publication General Principles for Good Management Practices - Neonicotinoids for full details.

Scouting

It is important to scout paddocks on a regular basis for several weeks after maize emergence. Moths tend to congregate and lay eggs on the leeward side of shelter, so scouting these areas for seedling damage is important. Where seedlings have been felled recently, scratching carefully in the soil around the plant base will usually reveal the curled-up larva. Larvae size will give an indication of future crop damage. Very large larvae close to 50 mm long will soon pupate while smaller larvae will continue to feed and cause plant damage for longer.

Chemical control - after crop emergence

A range of insecticides have registration for cutworm control in maize and sweetcorn. The synthetic pyrethroids are the most effective because of their outstanding soil activity. A synthetic pyrethroid insecticide can be used in combination with pre-emergence herbicides in fields where cutworm is a perennial problem. It is important to note that the overuse of broad-spectrum insecticides can result in encourage the development of insecticide resistance and the loss of beneficial insects.

Acknowledgements

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