

Grass grub (*Costelytra zealandica*)

Introduction

Grass grubs (GG) are found throughout NZ. The larvae graze the roots of grass and clover causing poor growth and plant death, mainly from March-July. With severe damage, turf can be rolled back like carpet.

Identification

GG damage is seen in mid to late autumn, typically as patchy areas of dead plants, often pulled out by stock. These damaged areas can expand outward from year to year.

The damage is caused by GG larvae which hatch from eggs in October - December and develop through three instars (or stages). The small first and second instar feed on roots and soil organic matter, doing little damage. By autumn they have developed into the larger and most damaging third instar, feeding 1-3 cm below the ground on plant roots. GG larvae prefer white clover but eat most other species too.

GG larvae are best found by digging. They are whitish grubs, 25 mm long, with six legs and a honey brown head. When disturbed grubs will curl into a "C" shape, and become inactive.

The threshold levels for economic control of grass grub have been estimated (see table).



Patchy grass grub damage shows in pastures during late autumn.



GG larvae found in the root zone.

Threshold levels for economic control of grass grub

Situation	Grass grub larvae	
	Per spade square	Per m ²
Newly sown pasture	3	75
Southland, Otago, irrigated Canterbury	8	200
Dryland Canterbury	6	150
Other regions	4	100

Source: AgResearch AgFact Grass grub: biology, damage & detection (1996), B. Willoughby

Populations typically grow over a three to five year cycle followed by a population crash due to disease build up in the soil. Within a single paddock however infestations can be at any stage in the cycle.

One and two year life cycle

The GG life cycle typically takes one year, but in cooler regions a proportion of grubs two years to develop.

One year GG pupate in spring, emerging as adult beetles which fly in October - December, starting the larval stage again.

In dry or cool areas GG larvae grow more slowly and can take two years to become adults. In these areas larvae cease to feed over their first winter, and resume feeding on pasture through spring, rather than pupating. They can cause spring pasture damage.



GG larvae showing the difference between the one year life cycle (left) & two year life cycle.

Prevention and management

Sowing new pasture

If establishing a new pasture into a paddock with GG problems, use of an insecticide or *Gaucha*® or *Poncho*® seed coating is recommended.

Note GG primarily feed in the autumn, but control may be required for spring sowings in areas where GG have a two-year cycle.

Cultivation usually drastically reduces GG larval numbers, but also disrupts natural diseases allowing a rapid resurgence of the population over the next two to three years. Direct drilling techniques are often used in GG prone areas to maintain more stable populations and damage levels.

Established pasture

Control of GG with insecticide has had mixed results, as soil dwelling insects are relatively difficult to kill. Best success is through early applications of chemical in February-March, when GG are smaller.

Mob stocking and heavy rolling when soil is damp can reduce GG populations, but effects are variable.

Bioshield Grass Grub® a bio-pesticide produced by Ballance is also available for GG control.