Black Beetle Version 1.1 10 December 2014

Adult Black Beetles are about 15 mm long, and found mainly in drier pastures on free-draining soft soils. They can also attack maize, potatoes, strawberries and sweet potatoes.

Black beetles usually emerge in late summer, then feed on roots, and then over-winter close to the soil surface, sometimes in dung. They re-surface and fly off in thousands, lay eggs in late spring, usually on very short dryish pasture, not on long pasture - possibly because they need to be on and then in soil to hatch and grow. The larvae are like grass-grub larvae but bigger, with a darker coloured rear end. They eat plant roots.

I have seen many paddocks where 50% of perennial ryegrass plants have been pulled out, with the farmers blaming Black Beetles. However in these paddocks I found none, or no more than one black beetle per spade spit, and sometimes only one per m2, when 6 per spade spit is the number suggested by researchers to be needed to cause the amount of damage. Most of the pulling I've seen has been due to insufficient agricultural lime, resulting in high aluminium levels at 7 cm and deeper. This prevents ryegrass roots from going deep, as shown in Elements > Calcium where roots are shown growing horizontally at about 7 cm.

Near us in Hamilton, a green long-cut green lawn following my instructions in GrazingInfo > Gardens > Lawns, had no Black Beetles, while right next door, just a metre across the fence in a short cut, so brown lawn, there was extensive damage, but none where it was green and a bit longer from a leaking gutter. Black Beetles don't like moist soils. Lawns cut short and paddocks grazed short dry out more so have more black beetles than longer grass covered ones.

Don't always blame droughts and over-grazing on the Black Beetles. You control the effects on your farm. Drive around the Waikato and see the differences between farms and pasture types. All farmers know that over-grazing damages pastures, but many continue to do it year after year, and some for ten months in every year. This photo shows ryegrass pulling from a hard pan caused by aluminium which LimeMagPlus gets rid of.

Solutions are to reduce animal numbers and apply sufficient LimeMagPlus because 90% of New Zealand pastures lack magnesium. Grow ample summer forage crops, use on/off grazing, and make or buy hay and/or silage, to avoid overgrazing.

If sufferers of pasture damage and thin cows used the GrazingInfo spreadsheets, especially Dairy Cow Numbers for Max Profit, which has increased farmer profits many times, saving some up to $50 per cow in one year, with more in the future because pastures were not wrecked.

In Australia there are dozens of problem beetles they call Cockchafers. They also have dung beetles, under many botanical names including Acrossidius tasmaniae & Acrossidius pseudotasmaniae.

The adult beetle when newly emerged is a rich chestnut colour, but soon after changes to a characteristic glossy black. It is about 15 mm long, with the male usually slightly smaller than the female.

The male can be distinguished from the female by his much stouter front tarsus [foot].

The eggs are usually found singly; they are about 2 mm long and ovoid, swelling to an almost spherical shape before hatching.

The larvae which are similar in general form to grass grub larvae, may be easily distinguished by the following characteristics.

Size

The overall size of the larva is much greater than that of the grass grub, reaching about 2.5 cm when fully grown.

Colour

The head is light brown, and the body greyish or creamy white except for the hind end Which appears black owing to the contents of the gut showing through the body wall.

Spiracles [breathing pores]: these are more prominent in black beetle than in grass grub, and show clearly as orange spots down the sides of the larva.

Anal cleft [opening of the anus]: in black beetle this is distinctly half-moon-shaped, but in grass grub it is prominently Y-shaped.

The pupae are at first are light yellow, becoming reddish brown before the adult emerges.

Host plants

Black beetle is most commonly found attacking pasture grasses, particularly paspalum and ryegrass. It is also often associated with various crops notably maize, sweet corn, potatoes, kumara, and strawberries. A more extensive list of plants attacked may be found on page 396 of "Plant Protection in New Zealand", by ED. Atkinson et al

Damage

The damage done in pasture by black beetle is very like that done by grass grub, m severe infestation the pasture browns off, and can be rolled back like a mat owing to the complete destruction of the root system by the larvae (see photo). In less severe cases the pasture becomes dominated by clover (legumes are not a favoured food) or open and susceptible to weed invasion. Adults chew at the base of plant stems, and seedling maize can be destroyed in this way. The tubers of potatoes and kumaras are bored into by the larvae, and the aerial parts are destroyed below ground level by the adult beetles. Black beetle outbreaks are associated with higher than average spring and summer temperatures.

Distribution

Black beetle is found throughout the northern part of the North Island, occurring as far south as Cape Egmont on the west coast and Mahia Peninsula on the east coast. In the centre of the island it appears to be still spreading south, and has been found around Rotorua. It favours sandy, peaty, or freedraining loam country, and to a markedly lesser extent the heavier clay soils of the hill country. It is a native of southern Africa and also occurs in Australia.

Black beetle has only one generation per year, but it is quite common to find life stages out of phase with the main generation. In some areas up to 20 percent of the population over-winters as third stage larvae or as pupae, and the adults which develop from these stages probably lay their eggs in January and February, so that virtually all life stages may be found in the soil at any time of the year.

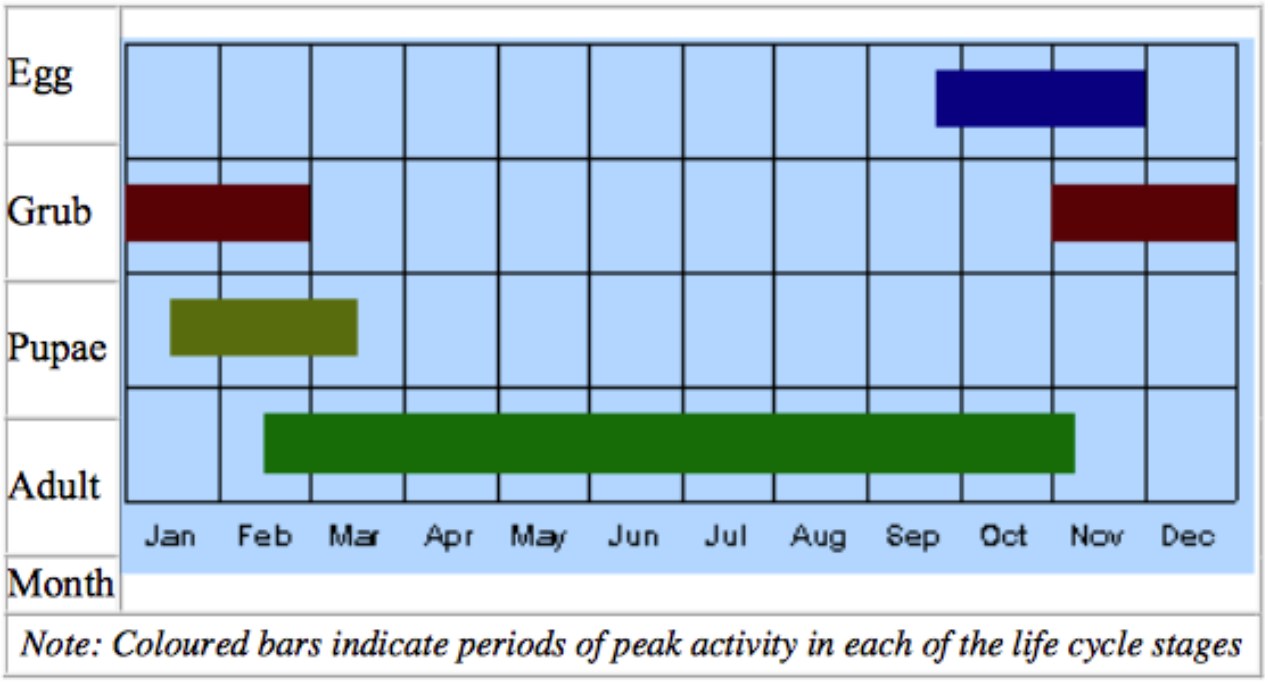
The usual cycle is for adult females to lay 7-10 eggs in the soil from late September, most egg laying occurring from late October to late December. Larvae develop through three instars over the summer and pupate in February-March. New adults begin to emerge from late February and feed actively for a few months. When numbers are high, usually following summer drought, massed dispersal flights may occur in autumn. Adults overwinter in the soil, emerging in spring to start feeding again and to lay eggs.

The eggs are cream-coloured spheres about 2 mm in diameter. Clusters of up to 60 are laid 80-130 mm below the soil surface.

Black Beetle Cycle

Courtesy of Speciality Seeds Ltd, Christchurch, who sell seeds country-wide and are very good with helpful advice on varieties, etc.

Email: stephen@specseed.co.nz Free phone: 0800 727 8873



Note: Coloured bars indicate periods of peak activity in each of the life cycle stages