

French's canegrub *Negatoria canegrub*

(*Lepidiota frenchi*)

(*Lepidiota negatoria*)

Introduction

French's and negatoria canegrubs both have a two-year lifecycle and are indistinguishable from each other in the larval stage. A one-year variant of French's canegrub occurs at beach areas near Mackay.

French's canegrub occurs northward from Bundaberg, being most common in northern Queensland. Negatoria canegrub occurs from Proserpine south to Beenleigh.

Both species overlap from Bundaberg to Proserpine, but negatoria is predominant from Bundaberg southward.

Both species inhabit a number of soil types. French's favours well-drained sandy loam soils, and is also found in red volcanic loams, red schists and silty alluvial loams, particularly those that originally supported open eucalypt woodland. Negatoria canegrubs mostly inhabit forest loams and light clay soils.

Description

Adults of French's canegrubs (Photo 1) are dark brown and about 25 mm long, with round white scales on the wing covers.

Adults of negatoria canegrubs (Photo 2) are also dark red brown with round white scales on the wing covers.

Adults of the two species can be distinguished by looking at the beetles' second last abdominal segment on the top side (Photos 4 and 5).

The larvae of both species (Photo 3) look identical and can only be reliably separated by a molecular (DNA) test.

The raster pattern of both French's and negatoria larvae (Photo 6) are identical, being pear-shaped with about 50 long hairs on each side. The central path is clear.



Photo 1 (left): Adults of French's canegrub.

Photo 2 (right): Adults of French's canegrub.



Photo 3: Third-instar larvae of French's and negatoria canegrub appear identical.

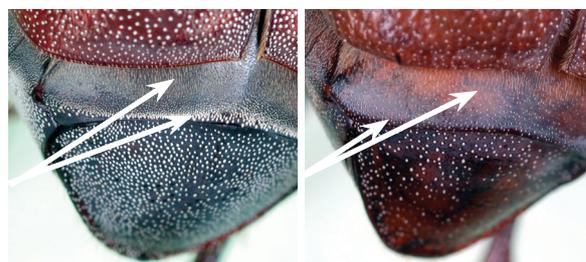


Photo 4 (left): Adult of French's canegrub: scales along posterior margin of second-last dorsal abdominal segment are much larger and more crowded than those in front of them.

Photo 5 (right): Adult of negatoria canegrub: scales on second-last dorsal abdominal segment (behind wing covers) are small, uniform in size and well-separated.

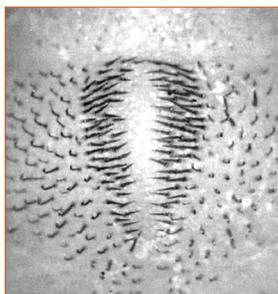


Photo 6:
Raster patterns for French's and negatoria canegrubs are identical.

Biology

French's and negatoria canegrubs have a 2-year lifecycle (Figure 1). A 1-year variant of French's canegrub occurs near Mackay. Adults emerge and begin their flights at dusk after rain between November and January. Adults mate and fly to feeding trees. Females then head back to canefields to lay their eggs. An egg batch contains about 30 eggs, usually laid 17-25 cm deep in the soil. Females may spend about 1 week in the soil before they oviposit. Females usually lay only one egg batch, but may lay more eggs over the following 8 weeks before they die. Subsequent egg batches are usually smaller than the initial batch. The eggs hatch in about 16 days.

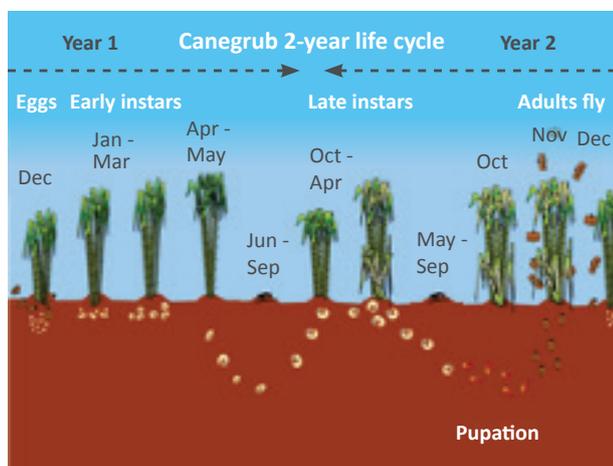


Figure 1: 2-year life cycle of French's and negatoria canegrubs.

First-instar larvae feed for up to 9 weeks on organic matter and cane roots and are sporadically distributed throughout the root zone. Second instars start aggregating around the stool towards late summer and autumn. Second instars stop

feeding during May or June and burrow into the subsoil, forming small chambers where they over-winter. In spring, second instars moult to third instars and move back towards the surface where they start feeding on cane roots again. Feeding continues until March to May of this second year of development. Third instars then burrow back into the subsoil to pupate. The pupal stage usually lasts until October-November and the fully developed beetles then remain in their underground chambers until triggered to emerge by suitable rainfall and temperature.

Damage

Feeding larvae prune sugarcane roots. By the first autumn, stools may become loose in the soil but otherwise do not show obvious yield effects. Crop damage becomes visible in spring and early summer when grubs are in their third instar, about one year after eggs had been laid. Crop losses are mostly due to reduced water and nutrient uptake (Photo 7) through the impaired root systems (Photo 8) and, in severe infestations, stool death. Severe weed invasion accentuates loss. Stool-tipping may occur in autumn.



Photo 7: Stressed ratoons under heavy French's canegrub attack.



Photo 8: Severe root pruning by French's canegrub.

Management

In the central, Burdekin and northern regions, French's or negatoria canegrubs are normally managed as a by-product of greyback canegrub control. However, on some farms, especially in the central region, French's canegrub is the primary pest.

In the Bundaberg to Maryborough regions (where greyback canegrub does not occur), control specifically for negatoria canegrub may be required.

Monitoring of grub populations and damage symptoms is needed for effective management. Registered insecticide options are listed.

Product labels give full information on correct application methods. suSCon® Maxi and Confidor® Guard have largely replaced suSCon® Blue and Rugby® for the control of canegrubs.

Additional useful information

Allsopp PG, McGill NG, Tucker GR. 1997. *Rugby® 100G for the control of some canegrubs in southern Queensland*. Proceedings of the Australian Society of Sugar Cane Technologists 19, 127-131.

Chandler K, Tucker G. 2011. *suSCon® Maxi and control of Childers, negatoria and southern one-year canegrubs in sugarcane*. Proceedings of the Australian Society of Sugar Cane Technologists. 33, 1-10.

Information Sheet IS13037CG. *Canegrub management in the Bundaberg and Maryborough districts – survey in autumn: plan to manage canegrubs in spring*. SRA.

Samson, P. Sallam, N. Chandler, K. 2013 *Pests of Australian sugarcane – field guide*. SRA.

Registered insecticides for French's and negatoria canegrubs			
Product (active constituent)	Species	Single row – all row spacings	Length of control
Plant			
suSCon® Maxi (imidacloprid)	Negatoria	150 g/100 m of row	3 years
Confidor® Guard (imidacloprid)	Negatoria	11-16 mL/100 m of row	1 year
Senator® 700 WG Nuprid®700 WG (imidacloprid)	Negatoria	5.5-8 g/100 m of row	1 year
Rugby® (cadusafos)	Negatoria	300 g/100 m of row	One crop (for knock-down of grubs present)
suSCon® Blue (chlorpyrifos)	Negatoria	420 g/100 m of row	3 years
	French's	315 g/100 m of row	3 years
Ratoons			
Confidor® Guard (imidacloprid)	Negatoria	11-16 mL/100 m of row	1 year
	French's	16-22 mL/100 m of row	1 year
Senator® 700 WG Nuprid®700 WG (imidacloprid)	Negatoria	5.5-8 g/100 m of row	1 year
	French's	8-11 g/100 m of row	1 year
Rugby® (cadusafos)	Negatoria	300 g/100 m of row	One crop (for knock-down of grubs present)