Investigating the potential of *Beauveria bassiana* as a biocontrol agent for Fuller's rose weevil (*Naupactus cervinus*)

P.W. Shaw¹, D.R. Wallis¹, T.L. Nelson² and T.A. Jackson²

¹Plant & Food Research, Old Mill Road, RD 3 Motueka 7198, New Zealand

²AgResearch, Private Bag 4749, Christchurch 8140, New Zealand

Corresponding author: peter.shaw@plantandfood.co.nz

Fuller's rose weevil (FRW, *Naupactus cervinus*) is a troublesome pest in pipfruit orchards since adult weevils often lay their eggs in irrigation sprinkler heads, causing blockages throughout the season. Adult weevils feed mainly on apple foliage and can damage and lay eggs on fruit. The entomopathogenic fungus *Beauveria bassiana* was assessed as a biocontrol agent against Fuller's rose weevil in a field trial at a Nelson pipfruit orchard with a large FRW population. Larvae of the pest live in the soil and are susceptible to strains of the fungus. The trial consisted of five randomised treated and untreated three-tree apple plots (10 m²). A granular formulation of the fungus was applied by hand (50 g/m²) in May 2012 and irrigated into the soil. Soil samples were collected in September 2012 and analysis showed the fungus had established in treated plots. In treated plots, average numbers of larvae were reduced by 70% and in four of the five plots, emerging adults were reduced by an average of 80%. These preliminary results indicate the potential for a granular formulation of *Beauveria bassiana* to be used as a broadcast application against FRW in orchards.

Natural dispersal of *Cotesia rubecula*, the recently introduced larval parasitoid of *Pieris rapae*, through the South Island

G.P. Walker and F.H. MacDonald

The New Zealand Institute for Plant & Food Research Limited, Private Bag 92169 Auckland 1142, New Zealand

Corresponding author: graham.walker@plantandfood.co.nz

The natural dispersal of *Cotesia rubecula*, the important larval parasitoid of *Pieris rapae* (small white butterfly), was assessed through the South Island over 2 years as part of an SFF project to improve management of foliage pests on forage, vegetable and seed brassicas grown in the South Island. This parasitoid has dispersed naturally from its initial release sites at Lincoln and Christchurch as far south as Dunedin airport, as far north as north Cheviot, and inland to Methven and Hanmer Springs. However, it has failed to establish in Southland and is not present in central Otago or Nelson/Marlborough. Seasonal surveys indicate that this parasitoid is well synchronised with its host, sometimes parasitising complete cohorts in a cropping area. There is also strong evidence that *C. rubecula* is displacing the earlier introduced and much less effective larval parasitoid, *Cotesia glomerata*. The hyperparasitoid *Baryscapus galactopus* is also affecting the new primary parasitoid. A new SFF project is supporting the introduction of *C. rubecula* into the Nelson/Marlborough region where its future interaction with *C. glomerata* and possibly its other host, *Pieris brassicae* (great white butterfly), a new incursion into New Zealand, will be an interesting study.