SUSCEPTIBILITY OF RED-HEADED COCKCHAFER, 
*ADORYPHORUS COULONI*, IN NEW ZEALAND TO 
*METARHIZIUM ANISOPLIAE* STRAIN DAT-F001 
(CHAFERGUARD™)

M. BROWNBRIDGE1, R.J. TOWNSEND1, T.L. NELSON1, 
B. GICQUEL1 and M. GENGOS2

1AgResearch Ltd, Private Bag 4749, Christchurch 8140, New Zealand 
2Becker-Underwood Australia, RMB 1084 Pacific Hwy, Somersby, NSW, Australia

Corresponding author: michael.brownbridge@agresearch.co.nz

The Australian pasture pest *Adoryphorus couloni* (red-headed cockchafer, RHCC) continues to slowly spread from the Port Hills and Banks Peninsula through Christchurch towards productive agricultural land on the Canterbury Plains. There are currently no products, chemical or biological, registered in New Zealand to control this pest. In Christchurch, several parks used extensively for human recreation were badly damaged by RHCC grubs in the autumn/early winter of 2008 and had to be treated with chemical insecticides (diazinon). Laboratory trials were thus carried out to assess the susceptibility of New Zealand populations of RHCC to a microbial biocontrol agent, *Metarhizium anisopliae* DAT-F001 (ChaferGuard™), registered in Australia. Fungal activity was directly influenced by temperature and mode of application. Infection and mortality occurred faster at 20°C than 15°C. High mortality levels (90-100% after 7 weeks) were obtained when larvae were treated by topical application (10⁵ conidia/grub) or exposure to the dry ChaferGuard™ formulation in soil; >80% of the cadavers in these treatments were mycosed. Direct incorporation of conidia into soil was the least effective treatment. Grass grub (*Costelytra zealandica*) was unaffected by the fungus. This trial confirmed the efficacy of DAT-F001 and its potential for use against New Zealand populations of RHCC.

TOWARDS BETTER MITIGATION TECHNOLOGIES FOR INVASIVE WASPS, *VESPULA* SPP.

M. BROWNBRIDGE¹, R. TOFT², J. REES², T.L. NELSON¹ and C. BUNT¹

¹AgResearch Ltd, Private Bag 4749, Christchurch 8140, New Zealand 
²Landcare Research New Zealand Ltd, Private Bag 6, Nelson 7042, New Zealand

Corresponding author: michael.brownbridge@agresearch.co.nz

Exotic social insects are a major threat to New Zealand’s natural and agro-ecosystems. Social wasps (*Vespula vulgaris, V. germanica*) in particular have had devastating effects in native forests and have displaced indigenous fauna through their predatory and polyphagous feeding habits. High nest densities also limit access to and use of wilderness areas. Insecticidal baits can reduce wasp populations for the short term on a local scale but contain potent toxins that pose environmental risks. Novel baiting technologies are urgently needed by DOC and Regional Councils for use in conservation areas. Baits must be palatable to *Vespula* spp. and enable prolonged delivery of an efficacious yet selective control agent to the nest. Using appropriate preservatives and humectants, the field life of a protein bait was extended to 4 days without compromising its acceptance by foraging wasps. Incorporation of wasp-active isolates of *Metarhizium anisopliae* and *Beauveria bassiana* into the baits did not affect their attractiveness to wasps; nest traffic rates were significantly reduced by the *Metarhizium* treatment and infected larvae were recovered from nests exposed to each fungal treatment, demonstrating the potential utility of this approach in a wasp mitigation strategy.