

Freezing and melting conditions affect the viability of *Neonectria ditissima* conidia

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Different freezing and melting conditions of conidial suspensions of *Neonectria ditissima* were examined to determine optimal long-term storage conditions. Four concentrations of glycerol, two freezing temperatures and three melting methods were compared, using two isolates, RS305p with single-celled conidia and RS324p with multi-celled conidia. After 10 months, conidia of RS305p had significantly higher germination rates than those of RS324p. Glycerol added to conidial suspensions before freezing reduced the germination rate significantly. Suspensions frozen at -80°C had significantly higher germination rates than those at -20°C. Defrosting in a 20°C water bath resulted in significantly higher germination rates than defrosting in ice water. However, freezing for 10 months at -80°C without glycerol reduced the conidial germination rate of RS324p from 65% before freezing, to 8%. In contrast, the conidial germination rate of RS305p frozen in the same conditions, increased from 15% to 74%. More research is needed to determine optimal storage conditions.

Establishment and dispersal of *Cotesia rubecula*, a larval parasitoid of *Pieris rapae*, in the Nelson district

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Cotesia rubecula is a solitary larval parasitoid of *Pieris rapae*, the small white butterfly (SWB), and has become an important biological control agent in regions where it has established since its release into New Zealand in 1993. It was first released in the Nelson region at three sites on 15 April 2013, after a survey in 2010 failed to find the parasitoid. The cocoons of *C. rubecula* for this release came from collections of SWB larvae at a trial site at Pukekohe and from unsprayed forage brassica plants growing near Burnham, mid-Canterbury. Monitoring of *C. rubecula* and the established parasitoid *C. glomerata* took place over two seasons 2014-15 and 2015-16, with all stages of SWB larvae collected at five properties across the Nelson region from Richmond to Motueka. *C. rubecula* were recovered from two of the original release sites for the next two years and appeared to spread to another site 9 km away from any release site. This parasitoid is considered to be established in the region, and should disperse naturally to become an important biological control agent of SWB in most habitats.