Determining optimal strategies for the establishment of *Pareuchaetes insulata* (Lepidoptera: Arctiidae) on *Chromolaena odorata* (Asteraceae) in South Africa

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The release of *Pareuchaetes insulata* on *Chromolaena odorata* in South Africa in 2001 marks the first release of this agent worldwide. Since 1970, the congeneric *P. pseudoinsulata* has been released on *chromolaena* in many countries, with results ranging from non-establishment to widespread, longterm defoliation and suppression of *C. odorata*. These discrepancies are not well understood. In South Africa, *P. pseudoinsulata* was released in 1989 and 1998–9, but did not establish, and another species, *P. aurata aurata*, was released in 1993–4 with the same result. The reasons for non-establishment are unknown, but may include predation, climatic incompatibility, dispersal of the founder population, biotype incompatibility, and/or culturing diseases. These factors are now under investigation in determining optimal strategies for the establishment of *P. insulata*. *Pareuchaetes insulata* was collected in Florida, USA, which closely matches the climate of KwaZulu-Natal province, South Africa, where it was destined for release. The moth is being mass-reared under high standards of hygiene and expertise in a professional insectary. Climate tolerance has been measured in the laboratory and through modelling, and the effects of various predator groups by means of multiple-exclusion field trials. Biotype preference studies have been conducted, as have measurements of adult dispersal. Following poor establishment at several sites, the release strategy has been modified to include larger, long-term releases at fewer sites, with improved initial results. The implications of findings are discussed and strategies recommended for the release and establishment of *P. insulata*.

The post-release larval mortality of the *Chrysanthemoides* leaf roller *Tortrix* sp. in Australia

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The *Chrysanthemoides* leaf roller *Tortrix* sp. was approved for release into Australia in 2001. A release project focused on engaging community participation in the release and redistribution of *Tortrix* sp was commenced in April 2001. Between April 2001 and March 2002, releases of eggs, larvae, pupae and adults were made at 25 sites. Post-release monitoring indicated that *Tortrix* sp. larvae markedly declined in number during the weeks immediately following release, to the point where larvae were undetectable after two months. An experiment to quantify larval mortality and attempt to pinpoint the mechanisms involved in mortality found a significant difference in the survivorship of *Tortrix* sp. released as eggs at the point of hatch onto caged and uncaged plants ((caged low density CLD) 53%, uncaged low density (ULD) 2% survival \( p < 0.001 \)), caged high density (CHD), 32.5%, uncaged high density (UHD), 0.86% survival \( p < 0.001 \)). In all treatments, there was a dramatic decline in neonate survivors by week 3 of the experiment (CLD – 49%, CHD – 37%, ULD – 16%, UHD – 17.5%), with a significant difference in larval survivorship between caged and uncaged treatments, \( p < 0.0001 \). Survivorship then remained constant in the caged treatments for the weeks five and eight samples, while a significant decline was measured in the uncaged treatments, \( p < 0.003 \). The high initial decline...