Behavioural responses of *Cydia succedana* to plant volatiles

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The gorse pod moth, *Cydia succedana*, was released in New Zealand from Europe in 1992 as a biological control for gorse (*Ulex europaeus*). In this study, the behavioural responses of the moth to lures containing different blends of plant volatiles identified from their host plants and through single-sensillum recordings were tested in a field trial at Chaney's Forest, Canterbury. Volatiles were placed on cotton wicks, with or without the female sex pheromone of *C. succedana*, on rubber septa in delta traps. Two different blends elicited behavioural responses, indicated by trap catches. *Cydia succedana* catches with the four-component "Blend 6"+pheromone lure were lower than with the pheromone alone. The 10-component "Blend 4" lure caught more *C. succedana* than any other blend when tested without the pheromone. These results indicate the behavioural significance of host- and non-host plant volatiles, and the relationship between the behaviourally active compounds and the profile of olfactory receptor neurons in *C. succedana*.

Determining the propagule size required for *Meloidogyne* species to establish in managed and native soil in New Zealand

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New Zealand, a geographically isolated country, has a unique ecosystem and economy mainly dependant on primary industries. Productive and native systems face the ongoing threat of invasive pests. The risk from potential pathways for new species, including nematodes, entering New Zealand is being investigated. However, there is little knowledge on the nematode inoculum size required for invasion of plant roots and thus establishment of a population in a new area or habitat. The present research focused on determining the minimum number of nematode eggs required for invasion into white clover (*Trifolium repens*) roots, commonly found in mixed pasture swards. The most economically damaging plant parasitic nematode group worldwide, root knot nematodes (*Meloidogyne* spp), was used for this study. Experiments were set up for three species of root knot nematodes already present in New Zealand, with five rates of eggs: 0, 5, 10, 50 or 100, inoculated into soil from managed or native grasslands. The study revealed that five eggs of root knot nematode of all three species are enough for root invasion. It was concluded that the invasion of one exotic mature female root knot nematode could be sufficient to establish a new population and pose a threat to the New Zealand ecosystem.