MASS RELEASES OF THE PARASITOID *ENCARSIA CITRINA* AGAINST GREEDY SCALE (*HEMIBERLESIA RAPAX*) ON KIWIFRUIT

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The reduced use of broad-spectrum insecticides under the KiwiGreen IPM system, has created opportunities to make greater use of biological control. Greedy scale (*Hemiberlesia rapax*), a key pest of kiwifruit, already has some natural enemies present in New Zealand including the parasitoid wasp *Encarsia citrina*. However, this parasitoid is scarce during spring and is not present in some orchards. A trial was conducted in 1998–99 to determine the potential for using mass releases of *E. citrina* in kiwifruit orchards to increase parasitism of greedy scale, and thereby reduce crop infestation. Three mass releases of *E. citrina* were made into an organic kiwifruit block where the parasitoid was previously absent. Four replicated treatments were compared: mass releases of *E. citrina* with or without oil sprays, growers standard spray programme and an untreated control. The level of greedy scale infestation and parasitoid establishment were monitored by randomly sampling 100 leaves/plot at intervals throughout the growing season. In addition, 100 fruit/plot were randomly sampled at harvest and checked for greedy scale infestation. In the first season of releases, the parasitoid was successfully established but no reduction in crop infestation by greedy scale was apparent. Further releases of *E. citrina* will be made at the same trial site next season, and their cumulative effect on armoured scale populations determined.

BIODIVERSITY OF *TRICHODERMA* SPECIES IN AGRICULTURAL SOILS AND THEIR POTENTIAL USE AS SEED COAT AMENDMENTS FOR THE BIOCONTROL OF SOILBORNE PLANT PATHOGENS

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Trichoderma was isolated from agricultural soils and plant roots collected from a number of trial sites within the North Island. *Trichoderma harzianum* was the most common species isolated from soils and plant roots with species *T. koningii*, *T. hamatum*, *T. polysporum* and *T. viride* also being frequently recovered. Rarely seen were the species *T. pseudokoningii*, *T. aureoviride* and *T. piluliferum*. A rapid test to assess *in vitro* seedling establishment was used to screen for isolates with potential to antagonise ten root-rot pathogens of pasture legumes. A low percentage of isolates from each species were observed to protect or enhance seed germination and seedling survival. All isolates were also inoculated onto axenically grown legume seedlings to test potential pathogenicity to target hosts. Most isolates were non-pathogenic, however, a minority of *T. polysporum* (11%) and *T. hamatum* (14%) isolates were observed to be mildly pathogenic to hosts. Growth of each *Trichoderma* species was measured on a soil extract medium (SEM). On this medium, mycelial growth was sparse, sporulation poor and five-day colony diameters smaller than on standard mycological media. A small number of isolates which improved seedling establishment, were disease suppressive, non-pathogenic and had good growth on SEM, were selected as having biocontrol potential.