



INTRAGUILD INTERACTIONS AMONG PHYTOSEIID SPECIALIZED POLLEN-FEEDERS AND GENERALISTS AND THEIR EFFECT ON PEST SUPPRESSION

E. Palevsky¹, S. Warburg^{1,2}, M. Inbar², S. Gal¹, M. Salomon³ & A. Sadeh⁴

¹Dept. of Entomology, Newe-Ya'ar Research Center, Agricultural Research Organization (ARO), Israel; ²Department of Environmental and Evolutionary Biology, University of Haifa, Israel; ³Israel Cohen Institute for Biological Control, Plant Production and Marketing Board, Israel; ⁴Department of Natural Resources, Institute of Plant Sciences, ARO, Volcani Center, Israel.

Phytoseiid species can potentially control the citrus rust mite (CRM) *Phyllocoptruta oleivora*. Their effectiveness varies, however, as do their intraguild interactions. Under laboratory conditions, the specialized pollen feeders *Euseius stipulatus*, *Euseius scutalis* and *Iphiseius degenerans* preyed effectively on CRM, whereas the generalists *Amblyseius swirskii* and *Typhlodromus athiasae* had no effect. In combination with *A. swirskii*, *Euseius* numbers were reduced due to intraguild predation, and consequently CRM suppression was less effective. In the field, predatory mite species can be variably provisioned by windborne pollen released from cover crops such as Rhodes Grass (RG). We aimed to determine the effects of RG on the phytoseiid community in two field experiments, on different cultivars (pomelo and Shamouti orange). We also tested these communities for negative interspecific abundance relationships that are expected if their respective laboratory-observed intraguild interactions are manifested in the field. Additionally, on seedlings provisioned twice a week with pollen, under semi-field conditions, we evaluated the effects of cultivar in spring, summer and fall on predator establishment, following releases of *E. stipulatus* and *E. scutalis*. Overall, in the pomelo orchard, we observed a dominance of *A. swirskii*, relatively low *E. stipulatus* and high CRM abundances. *Amblyseius swirskii* and *E. stipulatus* population levels were both elevated near RG, despite apparent intraguild predation by *A. swirskii*. Conversely, *T. athiasae* abundances were lower near RG, likely due to predation by *A. swirskii*. In the Shamouti orchard, *E. stipulatus* abundances were much higher than on pomelo and were not negatively related to *A. swirskii* abundances. There, RG increased *E. stipulatus* abundance, and CRM was reduced. In the seedling trial in spring, *E. stipulatus* successfully established on the release seedlings and did not spread to the other treatments. Naturally occurring *I. degenerans* colonized all seedlings except for those that received releases of *E. stipulatus*. The abundance of *A. swirskii* was very low and non of the species were affected by cultivar. In contrast in summer *A. swirskii* and *T. athiasae* were the dominant species. In autumn, *A. swirskii* coexisted with *E. stipulatus*, but only the former was affected by cultivar. *Euseius scutalis* did establish in the field or semi field trials. In conclusion, pollen provisioning can enhance establishment of efficient CRM predators, depending on variation in intraguild interactions among phytoseiids, particularly between *A. swirskii* and *E. stipulatus*. These may be modulated by climatic and/or cultivar effects.

Keywords: Windborne pollen provisioning, *Euseius stipulatus*, *Euseius scutalis*, *Iphiseius degenerans*, *Typhlodromus athiasae*, *Amblyseius swirskii*, *Phyllocoptruta oleivora*.