

Article

Prey stage preference by different stages of *Phytoseiulus persimilis* (Acari: Phytoseiidae) to *Tetranychus urticae* (Acari: Tetranychidae) on rose

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Abstract

Phytoseiulus persimilis Athias-Henriot is a commercialized predatory mite that is commonly used in ornamental greenhouses to control spider mites. In this research, prey stage preference of this predator on rose leaf disc was studied in laboratory conditions ($25 \pm 1^\circ\text{C}$, $75 \pm 5\%$ RH and 16L: 8D hour photoperiod). The preference index for each predator stage was calculated by Manly's β index. Comparison of the mean preference index for protonymphs, deutonymphs and females of *P. persimilis* showed that all stages of this predator showed a significant preference for eggs of *T. urticae*. The predator protonymphs and deutonymphs preferred prey eggs, followed by prey larvae and protonymphs, and the female predators preferred prey eggs, followed by prey protonymphs and deutonymphs.

Key words: Acari, prey, predator, *Rosa hybrida* L. cv. blarodje, Rosaceae

Introduction

Tetranychus urticae Koch is the most destructive pest on roses in greenhouses (Field & Hoy 1984; van de Vrie 1985; Zhang & Sanderson 1995; van der Linden 2004; Pizzol *et al.* 2006). By retail sales, rose ranks among the top three cut flowers in the world (Mercurio 2007). Due to the importance of aesthetic quality, ornamental crops generally have an extremely low economic threshold level and even very small damage symptoms on leaves or flowers are regarded as a reduction in quality (Field & Hoy 1984; van de Vrie 1985; Landeros *et al.* 2004). Pesticide application is the main method for the control of this pest, with harmful impact on the workers, the environment, the crop (phytotoxic) and the greenhouse cover (van de Vrie 1985). To address these problems, an appropriate strategy is biological control with natural agents (Field & Hoy 1984; Sabelis 1985; McMurtry & Croft 1997; Badii *et al.* 2004).

Several species of natural enemies have been reported on spider mites such as phytoseiid mites, which are one of the most important ones (Sabelis 1985; McMurtry & Croft 1997; Furuichi *et al.* 2005; Collier *et al.* 2007; Kasap 2010). *Phytoseiulus persimilis* Athias-Henriot is a commercialized predatory mite that is commonly used in ornamental greenhouses to control spider mites (Field & Hoy 1984; van de Vrie 1985; Gough 1991; Sanderson & Zhang 1995; Nicetic *et al.* 2001; Blumel & Wlazer 2002; Landeros *et al.* 2004; Pizzol *et al.* 2006). This predatory mite has a short developmental time along with high fecundity, and its post-larval stages are able to attack all stages of *T. urticae* (McMurtry & Croft 1997). Although phytoseiid mites feed on all stages of tetranychid