

A checklist and key for the phytoseiid mites (Acari: Phytoseiidae) of citrus orchards in Iran, with a new record for Iranian phytoseiid mites

JALIL HAJIZADEH & MAEDEH NAZARI

Department of Plant Protection, Faculty of Agricultural Sciences, University of Guilan, P.O. Box – 41635-1314, Rasht, Iran
(hajizadeh@guilan.ac.ir)

Abstract

To identify potential predators of citrus trees pests we monitored phytoseiids in the canopy and on the ground of citrus orchards for two consecutive years in Guilan Province, Iran. The most abundant species, and therefore of greatest potential as a biocontrol agent, were *Amblyseius herbicolus* (Chant) (55.6%) and *Transeius wainsteini* (Gomelauri) (30.6%). *Graminaseius graminis* (Chant) is reported for the first time from Iran. A checklist and key are given for the 24 phytoseiid species found in citrus orchards in Iran.

Key words: citrus trees, Phytoseiidae, *Graminaseius*, acarine biological control agents, Iran

Introduction

Citrus is a major fruit crop in Iran, with the production of 3,739,000 tons annually from 243,500 hectares harvested (FAOSTAT, 2008; Vacante, 2010). The key mite pests of citrus in Iran are: *Eutetranychus orientalis* (Klein) or Oriental red mite (an important pest of citrus in Southern Provinces); *Panonychus citri* (McGregor) or citrus red mite; *Phyllocoptruta oleivora* (Ashmead), or citrus rust mite (both species are important pests of citrus in Northern Provinces) (Esmaili, 1983). Some minor pest mites in citrus orchards of Iran are the citrus bud mite (*Eriophyes sheldoni* Ewing), ornamental flat mite (*Brevipalpus obovatus* Donnadieu), citrus flat mite (*Brevipalpus lewisi* McGregor), citrus silver mite [*Polyphagotarsonemus latus* (Banks)] and two-spotted spider mite (*Tetranychus urticae* Koch) (Khalil-Manesh, 1973; Sepasgosarian, 1977; Esmaili, 1983; Gerson, 2003; Vacante, 2010).

Many predatory mite species in the family Phytoseiidae are effective natural enemies of various mites and insect pests on numerous plants (Kostiainen & Hoy, 1996; Gerson *et al.*, 2003; Zhang 2003) and are the most important natural enemies of phytophagous mites, e.g. spider and eriophyid mites in citrus orchards (McMurtry, 1982, 1985; Faraji, 1992; Palevsky *et al.*, 2003; Gerson, 2003; Childers *et al.*, 2007; Beaulieu & Weeks, 2007). Up to now, 22 phytoseiid mite species have been reported from citrus orchards in Iran (Table 1).

Here we present the results of a two-year survey of phytoseiid mites in citrus orchards, with the aim of identifying candidates for biocontrol of injurious mites. These results were originally presented at the *First Congress of Persian Acarology*, and are formally presented here (Nazari *et al.*, 2011). We also provide a tabulated checklist and a key for phytoseiid species found in citrus orchards in Iran and report on the presence of *Graminaseius graminis* (Chant) as a new record for the Iranian phytoseiid mite fauna.