

Phytoseiid Mites on Ornamental Plants in Tokat

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ABSTRACT: In this study was carried out Tokat province central and 11 districts in 2013-2014. Specimens were collected at weekly intervals from various areas and plants, including deciduous trees, conifers, parks, ornamental trees, home gardens, and shrubs in recreational areas of Tokat province. The samples were taken mainly from unsprayed areas during the growing seasons. Based on the survey results phytoseiid family mites belonging 6 species of 4 genus from 9 different plant species were identified. This mite species were *Typhlodromus pyri* Scheuten 1857, *Phytoseiulus finitimus* Ribaga 1904, *Typhlodromus cotoneastri* Wainstein 1961, *Typhlodromus athiasae* Porath and Swirski 1965, *Paraseiulus solieger* Ribaga 1902, *Euseius (Amblyseius) finlandicus* (Oudemans, 1915). *E. finlandicus* was the most abundant phytoseiid species.

As it is already well known phytoseiid mites (acari: phytoseiidae) were used as biological control agents of phytophagous mites, thrips and whiteflies. In this article will be given information and distribution of six phytoseiid species also.

Keywords: Mite, Phytoseiidae, predator, ornamental plants, Tokat, Turkey

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I. INTRODUCTION

Tokat province, located in the Central Black Sea basin of Yeşilirmak and it has been a total of twelve districts including the central district. The surface area of 998 242 km². Therefore, it is the fourth biggest province of Tokat Black Sea Coast. It were 00 445 000 m² of wooded areas and green lawn area 00 155 657 m² [1]. Phytoseiid mites are live primarily on plants and fast moving predators.

Phytoseiid mites have a considerable economic impact because they are predators of several phytophagous mites. They include approximately 2300 species, found throughout the world [2]. Phytoseiids have received a great deal of attention because of their potential use in the biological control of plant-parasitic mites [3-4-5-6]. The main objective of this study is to present observations and a quantitative assessment of phytoseiid mite species on ornamental plants in Tokat during 2013-2014.

II. METHODOLOGY AND DATA COLLECTION

In this study predator mites were collected from various plants and parks in Tokat, Turkey between 2013-14 at the following sampling sites: Artova, Erbaa, Niksar, Pazar, Reşadiye, Turhal and Zile. Specimens were collected at weekly intervals from various areas and plants, including deciduous trees, conifers, parks, ornamental trees, home gardens, and shrubs in recreational areas. The samples were taken mainly from unsprayed areas during the growing seasons. In total, 312 from the leaf samples under a stereomicroscope and extracted using Berlese funnels and 35 specimens were identified.

The predatory mites were preserved in 70% ethyl alcohol. After clearing the mite samples in lactophenol solutions, they were mounted in Hoyer's medium. The slides were dried (for 2-4 weeks) at 35°C. The identifications were based on Rowell et al. [7], Kolodochka [8], Arutunjan [9], Beglyarov [10] and Chant & Yoshida-Shaul [11].

III. RESULTS AND DISCUSSION

As a result of this study six predator species from nine different plant species were identified; , *Typhlodromus pyri* Scheuten 1857, *Phytoseiulus finitimus* Ribaga 1904, *Typhlodromus cotoneastri* Wainstein 1961, *Typhlodromus athiasae* Porath and Swirski 1965, *Paraseiulus solieger* Ribaga 1902, *Euseius (Amblyseius) finlandicus* (Oudemans, 1915). It was previously found except *T. cotoneastri* all phytoseiid species in Tokat (Table 3.1). And it is the first study on ornamental plants in Tokat province.

3.1. Table. Phytoseiid species on ornamental plants in Tokat

<i>Typhlodromus pyri</i>	<i>Platanus acerifolia</i> L	%2.6
<i>Phytoseiulus finitimus</i>	<i>Platanus acerifolia</i> L	%2.6
<i>Typhlodromus cotoneastri</i>	<i>Platycladus orientalis</i> (L.) Franco	%10.5
<i>Typhlodromus athiasae</i>	<i>Platycladus orientalis</i> (L.) Franco <i>Sorbus umbellata</i> (desf.) fritsch <i>Rosa spp.</i> <i>Pinus nigra</i> J.F.Arnold <i>Cedrus atlantica</i> (Endl.) Manetti exCarriere	%28.9
<i>Paraseiulus solieger</i>	<i>Prunus cerasifera</i> Ehrh	%2.6
<i>Euseius (Amblyseius) finlandicus</i>	<i>Platanus acerifolia</i> L. <i>Aesculus hippocastanum</i> L. <i>Alnus rubra</i> Bong <i>Platycladus orientalis</i> (L.) Franco <i>Rosa spp</i>	%52.8

3.1 *Typhlodromus pyri* Scheuten, 185720.04.2013 Park of Yunus Emre-Tokat *Platanus acerifolia* L 1♀**3.2 *Phytoseiulus finitimus* Ribaga, 1904**27.06.2013 Kids Park-Pazar *Platanus acerifolia* L. 1♀**3.3 *Typhlodromus cotoneastri* Wainstein 1961**03.05.2013 Park of Ayvaz-Niksar *Platycladus orientalis* (L.) Franco 1 ♀20.08.2013 Park of Alparsalan Türkeş-Reşadiye *Platycladus orientalis* (L.) Franco 2♀20.08.2013 Park of Alparsalan Türkeş-Reşadiye *Platycladus orientalis* (L.) Franco 1 ♀**3.4 *Typhlodromus athiasae* Porath and Swirski, 1965**03.05.2013 Park of Ayvaz-Niksar *Sorbus umbellata* (desf.) fritsch 2♀12.06.2013 Bedesten House Garden-Tokat *Rosa spp.* 1♀20.08.2013 Park of Alparsalan Türkeş-Reşadiye *Platycladus orientalis* (L.) Franco 3♀20.09.2013 Park of Kültür-Erbaa *Platycladus orientalis* (L.) Franco 1♀16.09.2013 Hospital Garden-Artova *Pinus nigra* J.F.Arnold 2♀16.09.2013 Hospital Garden-Artova *Cedrus atlantica* (Endl.) Manetti exCarriere) 1♀**3.5 *Paraseiulus solieger* Ribaga, 1902**02.04.2013 Kültür Palace Garden-Tokat *Prunus cerasifera* Ehrh 1♀**3.6 *Euseius (Amblyseius) finlandicus* Oudemans, 1915**20.04.2013 Park of Yunus Emre-Tokat *Platanus acerifolia* L. 2♀21.04.2013 Park of Şehitler-Tokat *Aesculus hippocastanum* L. 2♀28.04.2013 Campus of GOP University-Tokat *Alnus rubra* Bong 2♀03.05.2013 Park of Ayvaz-Niksar *Platycladus orientalis* (L.) Franco 1♀12.05.2013 Park of Milli Egemenlik-Turhal *Platanus acerifolia* L, 3♀;1♂12.06.2013 Bedesten House Garden-Tokat *Rosa spp.* 3♀20.08.2013 Park of Alparsalan Türkeş-Reşadiye *Rosa spp.* 1♀17.09.2013 Kümbet Mosque-Tokat *Aesculus hippocastanum* L. 1♀; 1♂20.09.2013 Park of Türk Kültürü-Zile *Rosa spp.* 1♀25.09.2013 Bahçelievler Garden-Zile *Aesculus hippocastanum* L. 2♀**IV. CONCLUSION**

During the this study 134 plant samples were collected in generally coniferous tree. Phytoseiid species were collected from nine of these plant species, from which were collected 38 specimens. It is also potentially significant to consider them in the context of a biological control system and preserving the natural balance. Mite fauna, and especially beneficial mite fauna, are rich in Tokat province.

Euseius (Amblyseius) finlandicus was the most common species (%52.8) (Figure 1). *Euseius finlandicus* was found on *Acer negundo* in Istanbul and on 19 deciduous trees and shrub trees in parks [12-13].

This species feeding on different preys; mites ,scale insects and whiteflies [14-15-16-17-18-19].

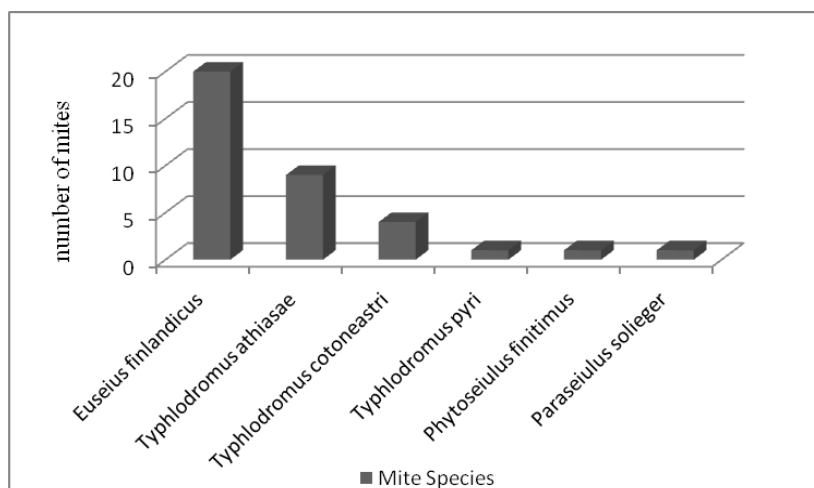


Figure 1. The distribution of predatory mite species (Acari: Phytoseiidae) on ornamental plants

The other phytoseiid species were; *T. athiasae* (28.9 %), *T. cotoneastri* (10.5%), *T. pyri* (2.6%), *P. finimus* (2.6%) and *P. soliger*(2.6%) (Figure 2).

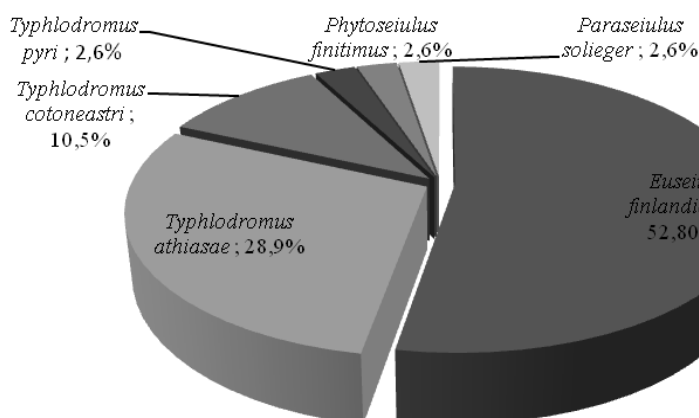


Figure 2. Number of individual as Phytoseiidae genus.

It is also potentially significant to consider them in the context of a biological control system and preserving the natural balance. Beneficial mite fauna, are rich in Tokat province.

Control of the pest species, in the context of ecological balance, is important for the recreational areas and urban ecosystems in Tokat.

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