OCCURRENCE OF SOME PREDACEOUS MITES ASSOCIATED WITH PLANTS FREE FROM CHEMICAL PESTICIDES

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(Manuscript received 25 February 2013)

Abstract

Occurrence of some predacious mites associated with plants free from chemical pesticides were conducted, Six mite species belong to the family Phytoseiidae and two mite species of the family Ascidae were recorded. The plants belong to 11 families most of which were weeds. *Amblyseius swirskii* Athias-Henriot was the most commonest and abundant mite species in this study followed by *Euseius scutalis* (Athias-Henriot). The family Poaceae was the gainful one of the 11 host plant families, followed by the family Solanaceae in herbouring predaceous mite species.

INTRODUCTION

Occurrence of bio-agents in specific regions are essential task, as it can show the status of the bio-agent/pests interactions, rising of new species or decline of dominant ones and the recovery of such fauna component after exposure to pesticides application. This action considers the first step to further studies about the use of bio-agents in biological control.

Phytoseiid mites (Phytoseiidae: Mesostigmata) are predators of phytophagous mites and insects. Some species also feed on pollen and exudates from plants, but rarely plant tissue. Several members of this family are of great importance in the biological control of spider mites and other insect pests annoying crop production.

Many researches dealt with the occurrence of phytoseiid mites in Egypt (El-Halawany *et. al.* (1990), Abo-Shnaf, (2005), Ali (2006) and Azouz *et. al.* (2011) {fruit trees}, Basha *et. al.* 2001 {vegetables} Hagrass *et. al.* (2008) {field crops}, Romeih *et. al.* (2010){ aromatic and medical plants} , Heikal and Fawzy, (1998), Abd El-Halim and Rahil (1999), El-Adawy *et. al.* (2001) and Metwally and Sanad (2005) {non-cultivated plants}.

The intensive use of chemical insecticides in the agriculture production (mainly in pests control) numbers and species of natural enemies has diminished in cultivated plants. This work aimed to through highlights the roll of plants free from pesticides as a natural source or alternative safe shelters of some predacious mites during the stiff conditions.

MATERIALS AND METHODS

Occurrence and taxonomical studies

Observations were conducted on 22 plants free from pesticides belonging to 11 families. These were mainly weeds, vegetables and fruit trees (Table 1). The area of study covered the indicated plants in Qalyobia, Beheira and Ismailia governorates. The study was conducted during the period 2008 to 2009. Random samples of leaves and flowers were collected. Leaf samples were examined in the laboratory directly under the stereomicroscope, while other samples were placed in modified Tullgren funnel. The collected mites were mounted in Hoyer's medium, and examined.

RESULTS AND DISCUSSION

Results presented in Table (1) included predaceous mite species existence at plant parts. Identified mites were six species belonging to the family Phytoseiidae and two species to the family Ascidae. Table (2) showed the distribution of the mite species and the number of plants. Results revealed that *Amblyseius swirskii* Athias-Henriot, was the most common and abundant species followed by *Euseius scutalis* (Athias-Henriot)*, Typhlodromus negevi* (Swirski and Amitai) and *T. athiasae* Porath and Swirski. Plants in relation to harbouring predatory mite species were arranged in Table (3). *Arundo donax* L. harboured four mite species followed by *Convolvulus arvensis* L. and *Vitis vinifera* L. which gained three mite species. The abundance among obtained predaceous mite genera was illustrated in Fig. (1). Maximum presence was genus *Amblyseius* followed by *Neoseiulus* and *Typhlodromus*. Sorting host plant families harboring predaceous mite species were illustrated in Fig. (2). Family Poaceae was the gainful one followed by Solanaceae and Amaranthaceae.

Results in Table (1) showed the importance of plants free from pesticides as a source or save shelters for bio-agents. The results agreed with those obtained by Heikal and Fawzy (1998) who stated that mulberry trees acts as a natural source of two native phytoseiid mites (*A. swirskii* and *E. scutalis*). Also Abdel Halim and Rahil (1999) represented 11 species of phytoseiid mites (*E. scutalis, Typhlodromus schusteri* Yousef and El-Brollosy*, T. athiasae, Phytoseius finitimus* Ribaga*, Paratyphlodromus reticulatus* Yousef and El-Brollosy, *Amblyseius mumae* Shehata and Zaher*, A. badryi* Yousef and El-Brollosy*, Amblyseius cucumeris* Oudemans, *Amblyseius zaheri* Yousef and El-Brollosy*, Amblyseius cydnodactylon* Shehata and Zaher and *Amblyseius longispinosus* Evans, inhabiting apricot trees and surrounding Bermuda grasses. El-Adway *et. al.* (2001) showed the role of the castor plants *Ricinus communis* L., as a source of the bio-agents *Stethorus gilvifrons*, *Scolothrips longicornis*, *Orius* spp. and *Amblyseius* spp.

The role of cover crops to enhance *Euseius tulearensis* (Blommers) on leguminous in citrus orchards was demonstrated by Grafton-Cardwell *et. al.* (1999). Papaioannou-Souliotis *et. al.* (2000) presented the role of weeds and hedges as ecological refuges and sources of the most abundant and most economically important phytoseiid species *Euseius finlandicus* (Oudemans), *Typhlodromus pyri* Scheuten and *Amblyseius andersoni* Chant, on apple in Central Greece. Kreiter *et. al.* (2005) surveyed the mites on some perennial crops and the surrounding wild vegetation, mainly in date palm production areas, twelve species, among them 4 were new for Tunisian fauna with one new genus *Africoseiulella* and one new species *A. flechtmanni*. In regular mite collections made on different host plant species in various localities of Hungary, Ripka *et. al.* (2005) reported that 113 mite species, out of them, *Neoseiulus setulus* Fox, *Typhlodromus* (*Anthoseius*) *cryptus* Athias-Henriot, *Typhlodromus* (*Anthoseius*) *georgicus* Wainstein, *Typhlodromus* (*Anthoseius*) *kazachstanicus* Wainstein were new for the Hungarian fauna.

Also, it can be concluded that such kind of periodical and steady regional surveys lead to enriching the taxonomic data. Such data contributes to expanding the knowledge base of the contents of the local environment. This progressing knowledge is the corner stone to prospective researches.

Table. 2. Relation between predatory mite species and number of plants

Mite species	No. hosts
A. swirskii	22
T. negevi	5
E. scutalis	4
N. barkeri	3
L. lindquisti	2
T. athiasae	2
N. arundonaxi	1
P. pygmaeus	1

Table. 3. Relation between plants and predaceous mite species numbers

Plant	No. mites	Plant	No. mites	Plant	No. mites
A. sylvesris	4	*L. aegyptiaca*	2	*C. dactyon*	1
A. donax	4	*M. nigra*	2	*C. longus*	1
C. arvensis	3	*P. guajava*	2	*D. sanguinalis*	1
C. alopecuroides	3	*S. glauca*	2	*E. crus-galli*	1
S. nigrum	3	*S. melongena*	2	*H. syriacus*	1
V. vinifera	3	*A. viridis*	1	*S. lycopersicum*	1
C. annuum	2	*C. pamilum*	1		
D. retroflexa	2	*C. dioscoridis*	1		

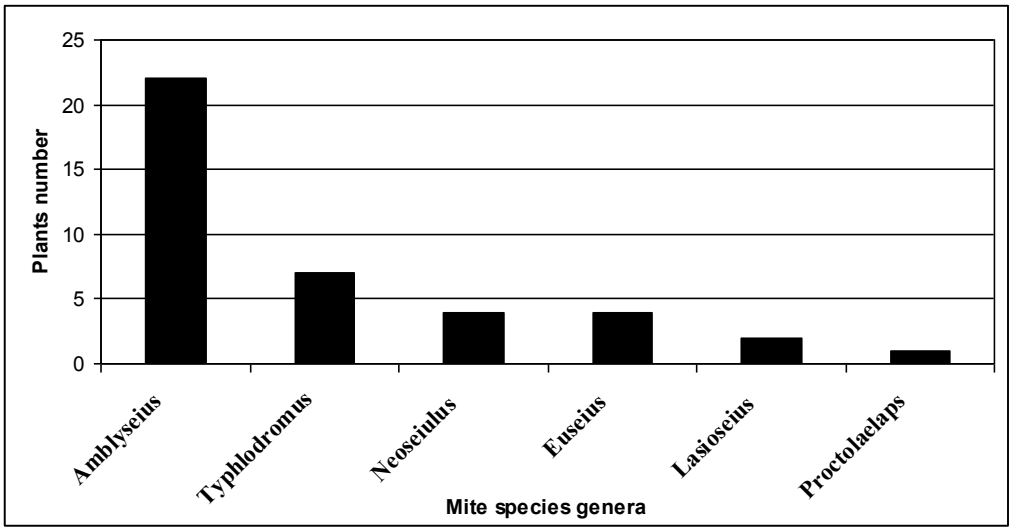

Fig. 1. Relation between predaceous genera and plants number.

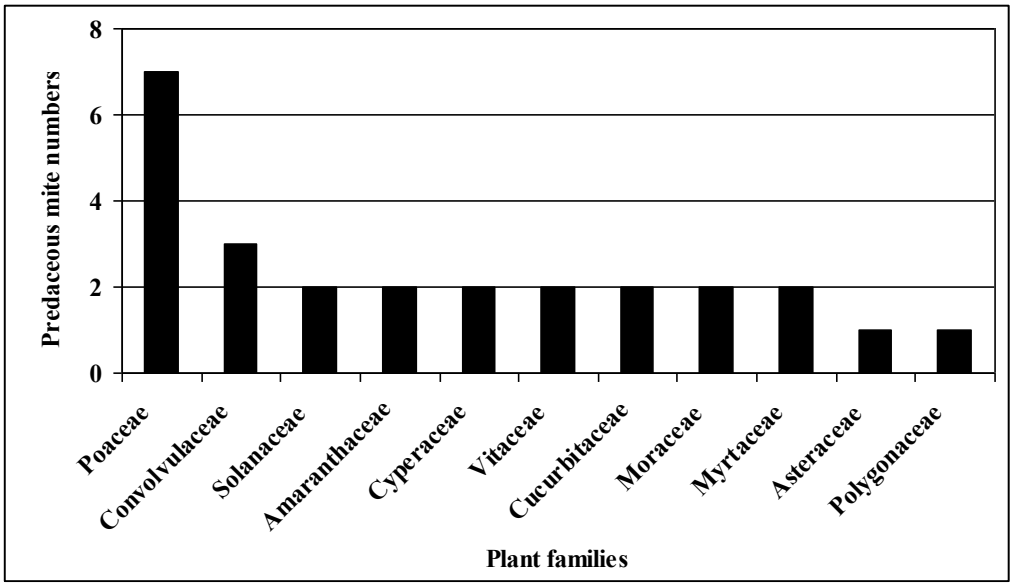

Fig. 2. Relation between plant family and predaceous mite species numbers.

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تواجد بعض الأكاروسات المفترسة علي النباتات غير المعاملة بالمبيدات الكيماوية

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تمت دراسة تواجد بعض المفترسات الأكاروسية علي بعض النباتات غير المعاملة بالمبيدات. حيث تم تسجيل ستة انواع تابعة لفصيلة Phytoseiidae ونوعين تابعين لفصيلة Ascidae. تنتمي النباتات (اغلبها حشائش) الي ١١ فصيلة نباتية. وكان المفترس الأكاروسي Athias-Henriot *Amblyseius swirskii* هو الاكثر تواجدا بين الانواع التي تم دراستها، يليه النوع (Athias-Henriot) *Euseius scutalis* . الفصيلة النجيلية كانت هي اكثر العوائل النباتية احتواءا للمفترسات يليها الفصيلة الباذنجانية.