

RELATIVE ABUNDANCE OF THE PREDACEOUS MITES AND INSECTS COLLECTED FROM DIFFERENT LOCALITIES AT DAKAHLIA GOVERNORATE

Nassar, O. A.; A. H. Fouly and M. A. Osman

Agricultural Zoology Department, Faculty of Agriculture, Mansoura University, Mansoura 35516, Egypt.

ABSTRACT

Survey study of predaceous mites and insects inhabiting fruit trees and vegetable crops conducted through one year during successive seasons of 2001 / 2002 proved the occurrence of eight predaceous mites and five predaceous insects. The collected mites were mainly mesostigmatids and prostigmatides, Also, The collected insect were mainly from three families Coccinellidae, Chrysopidae and Cecidomyiidae.

INTRODUCTION

The predacious mites particularly Mesostigmatid mite (Phytoseidae) and postigmatid mite (Stigmaeidae, Cheyletidae – Cunaxidae) were commonly seen in association with different tetranychid, tenuipappid and eriophid mites as well as some scale insects and white fly (Atalla and El Atiozy 1971; Nasar 1975, Fouly 1982; Hanna *et al.* (1984) and Farrag *et al.* 198). The predacious insects were found in association with different stages of phytophagous mites and insects (Abo-Kora (1983), Gillespie *et al.* (1997). Therefore, the present study aims to study the relative abundance of predacious mites and insects related to spider mites at Dakahlia governorate.

MATERIALS AND METHODS

Occurrence of Predatory Mites and Insects Inhabiting Different Vegetations:

The experiments were conducted on vegetable crops and orchard fruit trees located at five districts , The farm of the Faculty of Agriculture , Mansoura University, Mansoura district, as well as, Talkha , Elsenbellawane , Sherbeen and MitGhamer districts during season 2001 / 2002.

Samples were collected monthly during one year of successive seasons of 2001 / 2002. Each sample consisted of 50 leaves and twigs collected in Polyethylene bags, with small pieces of cotton wool soaked in ether and appropriate labels and then brought to the laboratory for direct examination using a stereoscopic binocular microscope. For classification studies predatory mites were collected, then put in clearing agent for 24 hours, and mounted in Hoyer's medium on glass slides for microscopic examination. Mites were identified according to nomenclatures of Krantz (1978). On other hand, predatory insects were examined using a stereoscopic binocular microscope. Numbers of both predatory species were recorded and classified according to their abundance as follows:

High number :	more than 20 adults. (++++)
Moderate :	11 – 20 adults. (+++)
Few :	4 – 10 adults. (++)
Rare :	1 – 3 adults. (+)

RESULTS AND DISCUSSION

A- Relative Abundance of The Phytoseiid Mites:

The phytoseiid mites were commonly seen in association with different tetranychid, tenuipalpid and eriophyid mites as well as some scale insects and whitefly. During one year study, four phytoseiid mite species were found inhabiting various habitats at Dakahlia Governorate. These species were *Amblyseius swirskii* (A. – H.), *Euseius scutalis* (A. – H.), *Phytoseius plumifer* (C & F) and *Typhlodromus talbii* (A. – H.). As shown in table (1) and Fig. (2), it was noticed that *A. swirskii* was widely distributed in different localities where it was collected in high numbers from citrus, mango, guava, castor bean and grape trees mainly in association with *T. urticae*, *E. orientalis* and *B. tabaci*. This agreed with Atalla and El-Atrouzy(1971);Nassar (1975); Fouly (1982); Hanna *et al.* (1984) and Farrag *et al.* (1998). Its population reached the lowest density in April and began to increase from May when temperature increased and finally reached its peak in August. This species found in moderate numbers inhabiting Peach, Persimmon, Tomato, Eggplant, Pepper, Beans, squash, *Lantana camara*, Hibiscus and Cucumber. Low numbers of *A. swirskii* were found on Fig, Pear, Apricot, Annona.

Table (1): Relative Abundance of Phytoseiid Mites Collected From Different Localities at Dakahlia Governorate During Successive Seasons of 2001 / 2002.

Family	Mite and insect species	Host plant	Locality	Remarks
Phytoseiidae	<i>Amblyseius swirskii</i> (A. – H.)	Citrus	Talkha, MeetGammer, Sherbeen, Mansoura, ELSenbellawane	++++
		Mango	Mansoura, MeetGammer	++++
		Guava	Talkha, MeetGammer, Sherbeen, Mansoura, ELSenbellawane	++++
		Apple	Mansoura, MeetGammer	++++
		Grape	Mansoura, MeetGammer	++++
		Peach	Talkha, MeetGammer, Sherbeen, Mansoura, ELSenbellawane	+++
		Persimmon	Mansoura, MeetGammer	+++
		Loquat	Mansoura, MeetGammer	+++
		Fig	Mansoura, MeetGammer	++
		Pear	Mansoura, MeetGammer	++
		Apricot	Mansoura, MeetGammer	++
		Annona	Mansoura, MeetGammer	++
		Tomato	Talkha, MeetGammer, Sherbeen, Mansoura, ELSenbellawane	+++

High number : +++++ more than 20 adult.
 Moderate : +++ 11 – 20 adult.
 Few : ++ 4 – 10 adult.
 Rare : + 1 – 3 adult.

Table (1): cont.

Family	Mite and insect species	Host plant	Locality	Remarks		
Phytoseiidae	<i>Amblyseius swirskii</i>	Eggplant	Talkha, MeetGammer, Sherbeen, Mansoura, ELSenbellawane	+++		
		Pepper	Talkha, MeetGammer, Sherbeen, Mansoura, ELSenbellawane	+++		
		Beans	Mansoura, Talkha, ELSenbellawane, Sherbeen	+++		
		Squash	Mansoura, ELSenbellawane	+++		
		Cucumber	Mansoura, ELSenbellawane	+++		
		Ricinus communis	Talkha, MeetGammer, Sherbeen, Mansoura, ELSenbellawane	++++		
		Lantana	Mansoura	+++		
		Hibiscus	Mansoura	+++		
	<i>Euseius scutalis</i> (A. – H.)	Citrus	Talkha, MeetGammer, Sherbeen, Mansoura, ELSenbellawane	++		
		Mango	Mansoura, MeetGammer	++		
		Guava	Talkha, MeetGammer, Sherbeen, Mansoura, ELSenbellawane	++++		
		Fig	Mansoura, MeetGammer	++		
		Apple	Mansoura, MeetGammer	+++		
		Grape	Mansoura, MeetGammer	+++		
		Phytoseiidae	<i>Euseius scutalis</i>	persimmon	Mansoura, MeetGammer	++
Loquat	Mansoura, MeetGammer			++		
Apricot	Mansoura, MeetGammer			++		
Annona	Mansoura, MeetGammer			++		
Tomato	Talkha, MeetGammer, Sherbeen, Mansoura, ELSenbellawane			++		
Eggplant	Talkha, MeetGammer, Sherbeen, Mansoura, ELSenbellawane			+++		
Pepper	Talkha, MeetGammer, Sherbeen, Mansoura, ELSenbellawane			+++		
Beans	Mansoura, Talkha, ELSenbellawane, Sherbeen			+++		
Squash	Mansoura, ELSenbellawane			+++		
Cucumber	Mansoura, ELSenbellawane			+++		
Ricinus communis	Talkha, MeetGammer, Sherbeen, Mansoura, ELSenbellawane			++++		
Lantana	Mansoura			+++		
Hibiscus	Mansoura			++++		
Phytoseiidae	<i>Phytoseius plumifer</i> (C. & F.)			Lantana	Mansoura	++++
				Fig	Mansoura	++++
	<i>Typhlodromus talbii</i> (A. – H.)	Guava	Mansoura, Talkha	++		
		Mango	Mansoura, MeetGammer	++		
		Hibiscus	Mansoura	++		
	Fig	Mansoura	++			

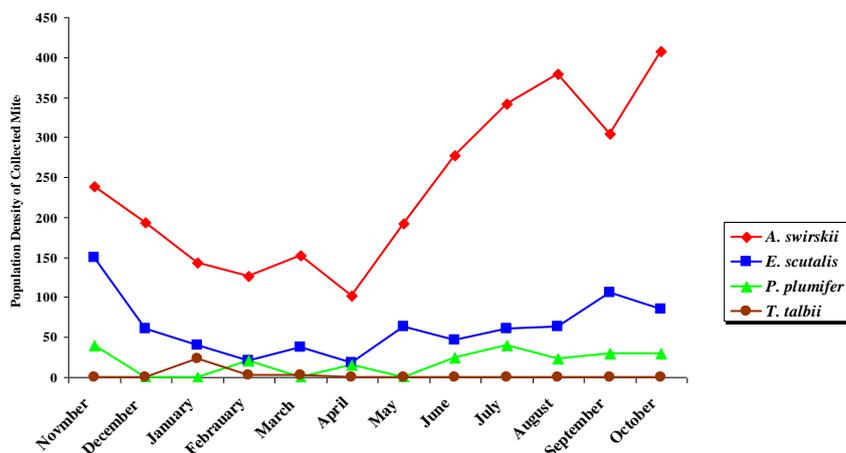


Fig. 2: Relative Abundance of Phytoseiid Mites Collected from Different Localities at Dakahlia Governorate During 2001 / 2002.

Euseius scutalis occupied the second rank in phytoseiid mites where its population was at its highest level on Guava, Hibiscus and Castor bean (Table 1). Moderate numbers of *E. scutalis* were found on Apple, Grape, Eggplant, Pepper, Bean, Squash, Cucumber, and Lantana. On the other hand few numbers of *E. scutalis* were found on Citrus, Mango, Fig, Persimmon, Loquat, Apricot, Annona and Tomato as shown in (Table 1).

Moreover, its population was very low during the period extending from January till April and then steadily increased in May and reached its peak in November. After that, mite population began to decrease again in December as shown in Fig. (2) .

The phytoseiid mite *P. plumifer* was found in high numbers on lantana and fig trees while *T. talbii* was at low density on guava, mango, hibiscus and fig as shown as in (Table 1).

From the previous results it can be noticed that *A. swirskii* was the highest phytoseiid species in its occurrence, followed by *Euseius scutalis*, *P. plumifer* and *T. talbii* discendly. Moreover, phyoseiid mites occurred in large number in the period of Agust, September and October Fig. (2).

B- Relative Abundance of The Stigmaeid, Cheyletid, Anystid and Cunaxid Mites:

The prostigmatide mites, included one Stigmaeid, one of Cheyletid, one of Anystid and one of Cunaxid mites. Data showed in the Table (2) that the Stigmaeid mite *Agistemus exertus* Gonzalez was found on Lantana in high number; on *Ricinus communis* and Fig in moderate numbers but was found on Guava, Grape, Apple, Pear, Squash, Beans, Pepper, Eggplant, Hibiscus in few numbers while found on Annona, Apricot in rare number. It was also noticed, *A. exertus* was found in all localities, this agreed with that of

Atalla and El-Atrouzy(1971); Zaher *et al.* (1971); Nassar (1976); Rizk *et al.* (1983); El-Halawany *et al.* (1990) Abou – Awad *et al.* (2000) and Momen, 2001.

Its population was on its lowest density in April but increased from May when the temperature increased to reach its peak in August (Fig. 3).

The family Cheyletid was represented by one species *Cheletogenes ornatus* (C. & F.) which was only found in three localities Table (2). It inhabited apple in few numbers while found on Loquat, Citrus and Lantana in rare numbers. The Anystid mite *Anystus* sp. was observed in rare numbers on Potato, Citrus and Persimmon in two localities Table (2). On the other hand the family Cunaxidae was represented by one species *Neocunaxoides anderi* (Baker & Hoffman) which was observed in rare numbers on Annona in two localities Table (2).

Table (2): Relative Abundance of The Stigmaeid, Cheyletid, Anystid and Cunaxid Mites Collected From Different Localities at Dakahlia Governorate During Successive Seasons of 2001 / 2002

Family	Mite species	Host plant	Locality	Remarks
Stigmaidae	<i>Agistemus exsertus</i> Gonzalez	Guava	Mansoura, Talkha	++
		Grape	Mansoura	++
		Fig	Mansoura	+++
		persimmon	Mansoura	++
		Annona	MeetGammer	+
		Apricot	Mansoura, MeetGammer	+
		Apple	Mansoura	++
		Pear	Mansoura, MeetGammer	++
		Squash	Mansoura, Talkha	++
		Beans	Mansoura, Talkha	++
		Pepper	Sherbeen	++
		Eggplant	Talkha, Mansoura, ELSenbellawane	++
		Ricinus communis	Talkha, MeetGammer, Sherbeen, Mansoura, ELSenbellawane	+++
		Lantana	Mansoura	++++
		Hibiscus	Mansoura	++
Cheyletidae	<i>Cheletogenes ornatus</i> (C. & F.)	Apple	MeetGammer	++
		Loquat	Mansoura	+
		Citrus	Sherbeen	+
		Lantana	Mansoura	+
Anystidae	<i>Anystus</i> sp.	Potato	Mansoura	+
		Citrus	MeetGammer	+
		Persimmon	Mansoura	+
Cunaxidae	<i>Neocunaxoides anderi</i> (B & H)	Annona	MeetGammer, Mansoura	+

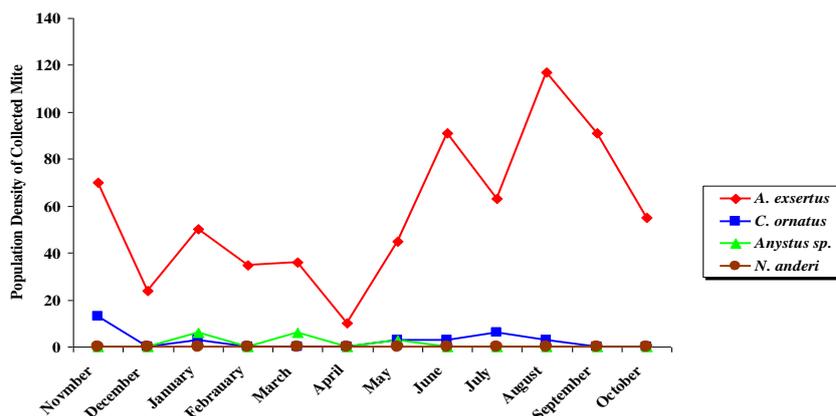


Fig. 3: Relative Abundance of the Stigmeid, Cheyletid, Anystid and Cunaxid Mites Collected from Different Localities at Dakahlia Governorate during 2001/ 2002.

C- Relative Abundance of The Predaceous Insects

The collected insects belong to the three families Coccinellidae, Chrysopidae and Cecidomyiidae. The family Coccinellidae was represented by three species *Stethorus gilvifrons* (Mulsant), *Cydonia vicina isis* Cr. and *Chilocorus bibustulatus* L.. *Stethorus gilvifrons* (Mulsant) was collected from Castor Bean in high numbers in all localities while from Cucumber in moderate numbers and in one locality Table (3).

Table (3): Relative Abundance The Predaceous Insects Collected From Different Localities at Dakahlia Governorate During Successive Seasons of 2001 / 2002.

Family	insect species	Host plant	Locality	Remarks
Coccinellidae	<i>Stethorus gilvifrons</i> (Mulsant)	<i>Ricinus communis</i>	Talkha, MeetGammer, Sherbeen, Mansoura, ELSenbellawane	++++
		Guava	MeetGammer	++
		Peach	Mansoura, Talkha	++
		Eggplant	ELSenbellawane	++
		Squash	ELSenbellawane	++
		Beans	ELSenbellawane	++
	Cucumber	MeetGammer	+++	
	<i>Cydonia vicina isis</i> Cr.	Citrus	Talkha	+
	<i>Chilocorus bibustulatus</i> L.	Guava	Talkha	+
Chrysopidae	<i>Chrysoperla carnea</i> (Steph.)	Eggplant	MeetGammer	++
		Apple	MeetGammer	++
		Loquat	MeetGammer	+
		Persimmon	Mansoura, MeetGammer	++
		Pear	Mansoura	++
		Lantana	Mansoura	++
Cecidomyiidae	<i>Flattiola</i> sp.	<i>Ricinus communis</i>	Talkha, MeetGammer, Sherbeen, Mansoura, ELSenbellawane	++++
		Cucumber	MeetGammer	+++
		Squash	Talkha	++
		Eggplant	Sherbeen	+++

On the other hand, it was found on Peach, Guava, Eggplant, Squash and Bean in rare numbers. Its population was on its lowest density in January than increased from March when the temperature began to increase to reach its peak in April (Fig. 4).

Studying the population fluctuation of predators on Castor (*Ricinus communis*) El-Adawy *et al.* (2001) stated that *S. gilvifrons* was the most abundant predator on Castor. On other hand in, Algeria Saharaoui (1994) showed that most coccinellid insects were active from the 2nd half of May until the end of July, but some species, including *Coccinella algerica*, *Pullus subvillosus* [*Scymnus subvillosus*], *Clitostethus arcuatus*, *Chilocorus bipunctatus* [*Nephus bipunctatus*] and *Rodolia cardinalis*, became active during the 2nd half of April. *Scymnus* spp., *Nephus* spp., *Platynaspis luteorubra* and *Hyperaspis algerica* were active later, with a peak in June.

Moreover, the other two species *Cydonia vicina isis* Cr. and *Chilocorus bibustulatus* L. were found on citrus and Guava respectively in rare numbers and in one locality Table (3).

F4

The family Chrysopidae was represented only by one species *Chrysoperla carnea* (Steph.) which was observed in few numbers on Eggplant, Apple, Persimmon, Pear and lantana in two localities while on Loquat in rare number in one locality Table (3).

The family Cecidomyiidae was represented by one species *Flattiola* sp. it was observed on *Ricinus communis* in high numbers in all localities Table (3), but on Cucumber, Eggplant were found in moderate numbers. On the other hand, it was observed in few numbers on Squash. Its population was on its lowest densities in November and increased from March when the temperature increased and finally reached its peak in April Fig.(4).

Gillespie *et al.* (1997) showed that *Feltiella acarisuga* (Cecidomyiidae) was the most promising candidate as a biological control agent of *T. urticae* mites on tomatoes.

REFERENCES

- Abou-Awad, B. A. El-Sawaf, B. M. Reda, A. S. Abdel-Khalek, A. A. (2000). Environmental management and biological aspects of the two eriophyoid fig mites *Aceria ficus* (Cotte) and *Rhyncaphytoptus ficifoliae* Keifer in Egypt. *Anzeiger für Schadlingskunde*. 73: 1, 5-12. 45 ref.
- Atalla, E. A. R. and El-Atrouzy, N. (1971). Survey of mites associated with vegetable crops in U.A.R. *Agricultural Research Review*. 49: 1, 116-117.
- El-Adawy, A. M.; Abdel-Gawad, N. M. and El-Sharkawy, T. A. (2001). Castor bean, *Ricinus communis*, a promising source of mite's predators. *Egyptian Journal of Agricultural Research*. 79: 1, 149-160.
- El-Halawany, M. E. ; Abou-El-Ela, R. G. and Esmail, H. M. (1990). Population dynamics of mites and their natural enemies on apple and apricot trees. *Agricultural Research Review*. 68: 1, 59-66. 7 ref.
- Farrag, A. M. I.; Magda, K. M. and Nadia, H. H. (1998). Survey of mites inhabiting cucurbitaceous and leguminous vegetables in Kaliobia and Giza governorates. *Egyptian Journal of Agricultural Research*. 76: 1, 63-68.
- Fouly, A. H. (1982). Studies on Phytoseiid mites. M. Sc. Thesis, Fac. Agric., Mansoura Univ., Egypt.
- Gillespie, D. R. ; Quiring, D. J. M. ; Greenwood, M. (1997). Collection and selection of natural enemies of twospotted spider mites for biological control. *Journal of the Entomological Society of British Columbia*. 94: 7-11.
- Hanna, M. A.; Shereef, G. M. and Megali, M. K. (1984). Mites associated with ornamental and medicinal plants in Egypt. *Bulletin de la Societe Entomologique D'Egypte*. 1980-1981, publ. 1984. No. 63, 43-47.
- Krantz, G. W. (1978). A manual of Acarology. Oregon State univ., Book Stores, Inc. Corvallis, Oregon.
- Momen, F. M. (2001). Effects of diet on the biology and life tables of the predacious mite *Agistemus exsertus* (Acari: Stigmaeidae). *Acta Phytopathologica et Entomologica Hungarica*. 36: 1/2, 173-178.

- Nassar, O. A. (1976). Incidence of predacious mites on fruit trees in north east of delta with emphasis on *Cunaxa Setirostris* (Hermann). M. Sc. Thesis, Fac. Agric., Cairo Univ., Egypt.
- Rizk, G. A. ; Soliman, Z. R. and Ali, M. A. (1983). Survey on mites associated with citrus and grape-vine in Minia region, Egypt. Bulletin de la Societe Entomologique D'Egypte. 1978/1979, publ. 1983. No. 62, 105-110.
- Saharaoui, L. (1994). Survey and study of some bioecological aspects of entomophagous coccinellids (Coleoptera, Coccinellidae) in Algeria. Journal of African Zoology. 108: 6, 537-546.
- Zaher, M. A. ; Afify, A. M. and Gomaa, E. A. (1971). Survey and biology of *Agistemus exsertus* Gonzalez in U.A.R., with description of the immature stages (Stigmaeidae: Acarina). Zeitschrift fur Angewandte Entomologie. 67: 3, 272-279.

التواجد النسبي للاكاروسات والحشرات المفترسة في مناطق مختلفة من محافظة الدقهلية
عمر عبدالحميد السيد نصار، احمد حسن فولى و محمد على احمد عثمان
قسم الحيوان الزراعى- كلية الزراعة - جامعة المنصورة

تم عمل حصر للاكاروسات والحشرات المفترسة على اشجار الفاكهة ومحاصيل الخضر خلال عامى ٢٠٠٢/٢٠٠١ وظهرت النتائج وجود ٨ انواع من الاكاروسات المفترسة و ٥ انواع من الحشرات المفترسة. وقد كانت الاكاروسات المفترسة تتبع مجموعة ذات الثغر المتوسط ومجموعة امامية الثغر , وكانت الحشرات المفترسة تتبع ثلاث عائلات هي Coccinellidae, Chrysopidae and Cecidomyidae