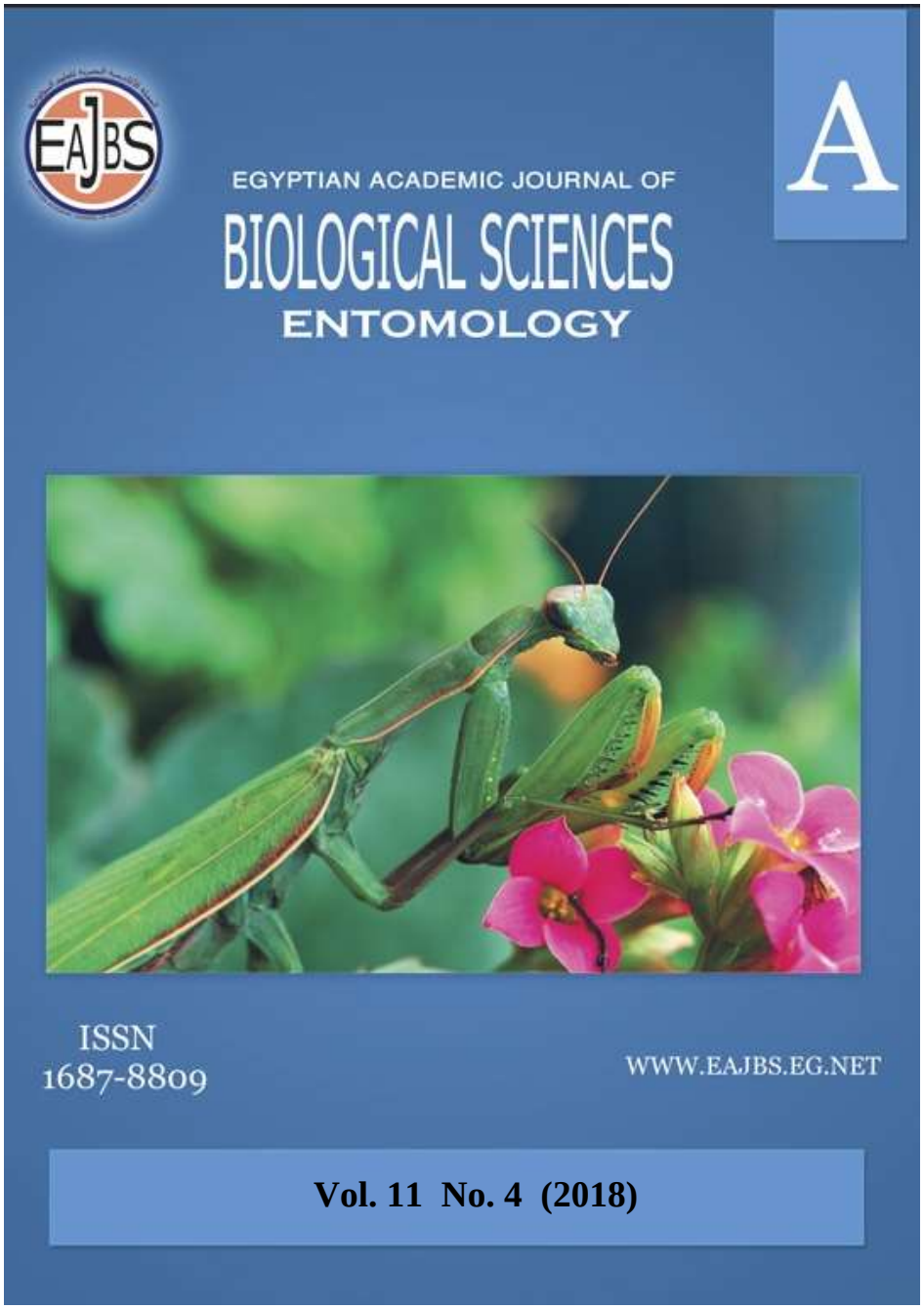

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Mites Inhabiting Some Fruit Trees in Ismailia Governorate

Neivin A.H. Hussian[1], Hamdy M. El-Sharabasy[2], Ahmed H. AboGhalia[3] and Maha F.M. Soliman[3]

1-Plant protection Research Institute, Agricultural Research Center, Dokki, Egypt.
2-Plant protection Department, Faculty of Agriculture, Suez Canal University, Ismailia, Egypt.
3-Zoology Department, Faculty of Science, Suez Canal University, Egypt
Corresponding Authors E-mail: ahaboghalia@yahoo.com - maha_soliman@hotmail.com.

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ABSTRACT

Field study was carried out on mite species inhabiting some fruit trees in Ismailia Governorate, during the period from October 2014 to September 2016. Survey of mites proved the occurrence of 44 mite species belonging to 36 genera and 21 families belong to 2 orders and 4 suborders. Order: Acariformes include three suborders; Prostigmata, Astigmata and Cryptostigmata. Suborder Prostigmata was represented by 14 families: Tetranychidae (7 species), Tenuipalpidae (8 species), Eriophyidae (one species), Stigmaeidae (2 species), Neophyllobiidae (2 species), Caligonellidae (one species), Raphignathidae (one species), Cheyletidae (3 species), Eupalopsellidae (one species), Bdellidae (one species), Cunaxidae (one species), Eupodidae (one species), Tydeidae (3 species) and Tarsonemidae (one species). Suborder: Astigmata was represented by two families: Acaridae (two species) and Glycyphagidae (one species). Suborder Cryptostigmata was represented by two families: Oppiidae (one species) and Oribatulidae (one species). On the other hand, order: Acariformes include one suborder: Mesostigmata, which represented by three families: Phytoseiidae (4 species), Ologamasidae (one species) and Ameroseiidae (one species).

INTRODUCTION

Fruit growing is one of old agricultural practices in Egypt. Fruits provide raw materials for various food industries. Many kinds of fruit trees are grown in Ismailia Governorate. The Egyptian agricultural strategy is, generally aiming to increase production the fruit trees by horizontal extension. On the other hand, there is the vertical extension (vertical strategy) that concerned with the production and acclaiming some varieties of high yield quality and quantity. Mites comprise a large group of arthropods that inhabiting all fruit trees orchards. They play an important role regarding crop production; some of them are plant feeders e.g. phytophagous mites. The phytophagous mites of agricultural importance belong to families Tetranychidae, Tenuipalpidae, Eriophyidae and Tuckerellidae. The species belong to these families feeding on plant leaves, buds and fruits by sucking the cell sap,

resulting leaf stippling and blotching and sometimes they modify developing plant tissues by forming galls. Species of family Eriophyidae are vectors for plant viruses causing viral diseases resulting reduction and heavy losses in plant productions (Hong *et al.*, 1999). Predaceous mites that belonging to families like, Phytoseiidae, Stigmaeidae and Cunaxidae. These mites are known that play an important role in biological control by feeding on phytophagous mites, scale insects, aphids and whiteflies (Evans, 1992). Predatory mites deserve special mention, where agriculture is always under the threat of pest attack. Predatory mites are now valued with growers worldwide as natural enemies that provide effective pest control on agricultural crops (Bjorson, 2008). The present work was performed to throw more lights on the incidence of mites associated with some fruit trees in Ismailia Governorate.

MATERIALS AND METHODS

Study area

Ismailia Governorate is located at the east of the Nile Delta covering an area of approximately 5067 km^2, an equivalent of 0.475% of total area of Egypt, along the west and east banks of the Suez Canal. It comprises five cities with Ismailia city as its capital. Ismailia Governorate (30° 58′ N and 32° 23′ E and elevation above sea level, 13 m) characterized by aridity with long hot rainless summer, mild winter and low amount of rainfall (50 mm). Seven localities; Abu-Suweir (1), El-Qantara Shark (2), El-Qantara Gharb (3), Fayed (4), El-Tell El Kebir (5), Serapeum (6) and Ismailia city (7) (Fig.1) were selected to undergo the survey of mites inhabiting some fruit orchards.

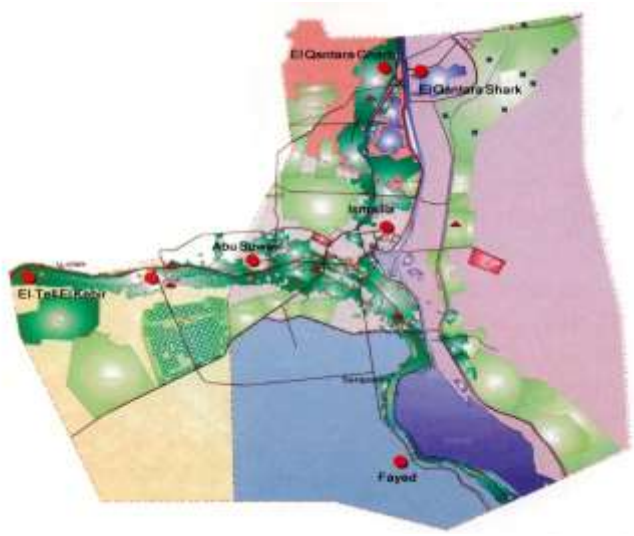

Fig. (1): A location map of the studied area in Ismailia Governorate.

Survey

Incidence of mites from abandoned fruit trees orchards was studied in Ismailia Governorate, during two successive years; from October 2014 to September 2016. Samples were randomly collected from different localities in Ismailia Governorate; Abu-Suweir, El-Qantara Shark, El-Qantara Gharb, Fayed, El-Tell El Kebir, Serapeum and Ismailia city. Random samples (50 leaves / each orchard) were picked easily then kept in tightly closed paper bags marked by a label denoting host plant species, date of collection and sampling place, then transferred to the laboratory

for examination. The upper and lower surfaces of each leaf were examined carefully by using stereomicroscope (Olympus made in USA). To complete assuring mite extraction, the leaves were immediately put in the Tullgren funnel and illuminated with a 40-watt bulb for 24 hours at least to extract the mites. Extracted mites were trapped into a small jar containing 70% ethyl alcohol placed under each funnel. For more permanent mounts of specimens, Hoyer's medium is commonly used. The Hoyer's medium can be prepared according to Krantz (1978). A label including all necessary information concerning habitat, locality and date of collection was stuck on each slide, and then put for 4 days on electrical warm plate at 34 °C. Mite individuals were examined and identified to species level according to Krantz (1978) and Zaher (1986).

RESULTS AND DISCUSSIONS

During the present study, the inspection of the surveyed fruit trees in Ismailia Governorate showed the occurrence of 44 mite species belonging to 36 genera and 21 families belong to 2 orders and 4 suborders. Order: Acariformes include three suborders; Prostigmata, Astigmata and Cryptostigmata. Suborders Prostigmata represented by 14 families: Tetranychidae (7 species), Tenuipalpidae (8 species), Eriophyidae (one species), Stigmaeidae (2 species), Neophyllobiidae (2 species), Caligonellidae (one species), Raphignathidae (one species), Cheyletidae (3 species), Eupalopsellidae (one species), Bdellidae (one species), Cunaxidae (one species), Eupodidae (one species), Tydeidae (3 species) and Tarsonemidae (one species). Suborder: Astigmata was represented by two families: Acaridae (two species) and Glycyphagidae (one species). Suborder Cryptostigmata was represented by two families: Oppiidae (one species) and Oribatulidae (one species). On the other hand, Order: Acariformes include one suborder: Mesostigmata, which represented by three families: Phytoseiidae (4 species), Ologamasidae (one species) and Ameroseiidae (one species).

From the economical important, the collected mite species were classified according to their feeding habits into three major groups as follow:

Phytophagous species:

In this study, phytophagous mites were included 17 species representing 3 families (Tetranychidae, Tenuipalpidae and Eriophyidae) (Table 1).

Table 1: list of phytophagous mites inhabiting fruit trees from different localities in Ismailia Governorate.

Mite species		Locality	Host plant
1-	**Family : Tetranychidae Donnadieu**		
1.	*Tetranychus urticae* Koch	1,2,3,4,5,6,7	Mango, pear, guava, , grapes, peach and fig
2.	*T. curcurbitacearum* (Sayed)	1, 7	Pear, guava and peach
3.	*Eutetranychus orientalis* (Klein)	1,6,7	Citrus and olives
4.	*E. pyri* Attiah	1,7	Citrus, fig and olives
5.	*Panonychus ulmi* (Koch)	1,7	Pear, fig, guava, grapes, and peach
6.	*Oligonychus mangiferus* R. & S.	7	Mango
7.	*Bryobia* sp.	1	Pear , peach and fig
2-	**Family : Tenuipalpidae Berlese**		
1.	*Tenuipalpus granati* Sayed	1,4,5,6,7	Pear, grapes, peach, and apples
2.	*T. punicae* Pritchard & Baker	1,2,3,7	Apples and pomegranate
3.	*Brevipalpus obovatus* Donnadieu	1,2,3,7	Apples, fig and olives
4.	*B. californicus* (Banks)	1,6,7	Citrus
5.	*B. phoenicis* (Geijskes)	1,6,7	Fig, peach and pear
6.	*Cenopalpus pulcher* (C. & F.)	1,4,5,6,7	Apples, fig and grapes
7.	*C. lanceolatisetae* (Attiah)	1,4,6,7	Apples and grapes
8.	*Phyllotetranychus aegyptiacus* Sayed	1,7	Apples
3-	**Family : Eriophyidae Nalepa**		
1.	*Aceria mangiferae* (Sayed)	6,7	Mango

1= Abu-Suweir, 2=El-Qantara Shark, 3=El-Qantara Gharb, 4=Fayed, 5=El-Tell El-Kebir, 6=Serapeum, 7=Ismailia city

1.Family Tetranychidae Donnadieu

Seven species representing the family Tetranychidae were recorded. These were: the two spotted spider mite, *Tetranychus urticae* Koch, is the most polyphagous species of spider mites reported from over 150 host plant species of some economic value throughout the world (Jeppson, *et al.,* 1975). This species was collected from leaves of mango, pear, guava, grapes, peach, fig and apples at Abu-Suweir, El-Qantara Shark, El-Qantara Gharb, Fayed, El-Tell El Kebir, Serapeum village and Ismailia city. The red spider mite, *T. curcurbitacearum* (Sayed), was collected from leaves of pear, guava, peach and apples at Abu-Suweir and Serapeum village. Two species of the brown citrus mite, *Eutetranychus orientalis* (Klein), and *E. pyri* Attiah; The first was collected from leaves of citrus and olive trees at Abu-Suweir, Serapeum village and Ismailia city, while the second species was collected from leaves of citrus, fig and olive trees at Abu- Suweir and Ismailia city. This species usually attacks citrus as a persistent pest in Upper Egypt. Individuals of this mite species found on upper surface of the leaf along the midrib (Kandeel, 1993). The European mite, *Panonychus ulmi* (Koch), was collected from leaves of pear, fig, guava, grapes and peach at Abu- Suweir and Ismailia city. The mango red mite, *Oligonychus mangiferus* Rahman & Sabra, was collected in high numbers from leaves of mango trees at Ismailia city. The brown mite, *Bryobia* sp. Koch was collected from leaves of pear, peach and fig at Abu- Suweir, Fayed, Serapeum village and Ismailia city. These results are in agreement with Zaher (1986), El-Halawany *et al.,* (1986), Hassan *et al.,* (1986), Ebrahim, (1987), El-Halawany *et al.,* (1989), Kandeel *et al.,* (1986), Heikal *et al.,* (1996), Shoukry *et al.,* (1999), El-Sharabasy (2000) and El-Moghazy (2013).

2.Family Tenuipalpidae Berlese

This family was represented by 8 species. *Tenuipalpus granati* Sayed, was collected from leaves of pear, grapes, peach, and apple trees at Abu- Suweir, Fayed, El-Tell El Kebir, Serapeum and Ismailia city. *T. punicae* Pritchard & Baker was collected from leaves of apples and pomegranate trees at Abu- Suweir, El-Qantara Shark, El-Qantara Gharb and Ismailia city. Three species of genus *Brevipalpus* sp were recorded in this study. *Brevipalpus obovatus* Donnadieu was recorded on leaves of apples, fig and olives at Abu- Suweir, El-Qantara Shark, El-Qantara Gharb and Ismailia city. *Brevipalpus californicus* (Banks) was collected from leaves of citrus trees at Abo-Swair, El-Tell El Kebir, Serapeum and Ismailia city. The third species was *Brevipalpus phoenicis* (Geijskes), it was collected from leaves of fig, peach and pear at Abu- Suweir, Serapeum and Ismailia city. The genus *Cenopalpus* sp was recorded by two species. *Cenopalpus pulcher* (Canestrini & Fanzago) was recorded on leaves of apples, fig and grapes at Abu- Suweir, Fayed, El-Tell El-Kebir, Serapeum and Ismailia city. *Cenopalpus lanceolatisetae* (Attiah) was collected from leaves of apples and grapes at the same localities of the previous species. *Phyllotetranychus aegyptiacus* Sayed was recorded on leaves of apple trees at Abu-Suweir and Ismailia city. Many authors surveyed the tenuipalpid mites in Egypt; (Zaher (1986), El-Halawany *et al.,* (1986), Hassan *et al.,* (1986), El-Halawany *et al.,* (1989) and El-Sharabasy (2000).

3.Family: Eriophyidae Nalepa

A single species, *Aceria mangiferae* (Sayed) was collected in low numbers from leaves of mango trees at Serapeum and Ismailia city. This species preferred new spur and terminal foliage. Severe infestations occur; the dorsal surface remains relatively green, while the ventral surface becomes silvery or brownish in color

which gives the tree the appearance of being affected by drought (Zaher, 1986 and Kandeel, 1993).

Predaceous mites:

A total of 18 predaceous mite species belonging to 16 genera and 11 families were collected on different fruit trees at different localities in Ismailia Governorate (Table 2).

Table 2: list of predaceous mites inhabiting fruit trees from different localities in Ismailia Governorate.

Mite species		Locality	Host plant
1-	**Family : Phytoseiidae Berlese**		
1.	*Amblyseius cucumeris* Oudemans	1,3,5,6,7	Mango, citrus and grapes
2.	*A.swirskii* Athias-Henriot	1,2,3,4,5,6,7	Mango and apples
3.	*Typhlodromus pyri* Scheuten	6,7	Apples and Mango
4.	*Phytoseiulus macropilis* (Banks)	1,6	Guava
2-	**Family : Stigmaeidae Oudemans**		
1.	*Agistemus exsertus* (Gonzalez)	1,6,7	Mango, pear, guava and peach
2.	*Apostigmaeus* sp.	6	Mango
3-	**Family : Neophyllobiidae Southcott**		
1.	*Neophyllobius mangiferus* Zaher & Gomaa	6	Mango and fig
2.	*N. gonzali* Zaher & Gomaa	1,6	Mango
4-	**Family : Caligonellidae Grandjean**		
1.	*Caligonella humilis* Koch	3,6	Apricot
5-	**Family : Raphignathidae Kramer**		
1.	*Raphignathus bakeri* Zaher & Gomaa	2,3	Citrus
6-	**Family : Cheyletidae Leach**		
1.	*Cheletogenus ornatus* (C.&F.)	1,2,3,4,5,6,7	Pear, grapes, peach, fig and apples
2.	*Hemicheyletia bakeri* (Ehara)	6,7	Apples and pomegranate
3.	*Eutogenes* sp	4,5	Apples
7-	**Family : Eupalopsellidae Willmann**		
1.	*Saniosulus nudus* Summers	1,7	Fig
8-	**Family : Bdellidae Duges**		
1.	*Spinibdella bifurcate* Atyeo	1,5	Grapes, fig and apples
9-	**Family : Cunaxidae Thor**		
1.	*Cunaxa setirostris* (Hermann)	2,3,4,5,6,7	Mango and fig
10	**Family : Eupodidae Koch**		
1.	*Eupodes momeni* Abou-Awad	5,7	Mango
11	**Family : Ologamsidae Ryke**		
1.	*Gamasiphis parpulchellus* Mersal	1,5,6	Fig

1= Abu-Suweir, 2=El-Qantara Shark, 3=El-Qantara Gharb, 4=Fayed, 5=El-Tell El-Kebir, 6=Serapeum, 7=Ismailia city

1.Family: Phytoseiidae Berleses

Phytoseiid mites are actively upon species of the plant feeding mites belonging to families Tetranychidae, Tenuipalpidae and Eriophyidae. Phytoseiid mite species are responsible of reducing the population of a numbers of serious pests of agricultural crops, such as aphids, scale insects, thrips and other agricultural pests. Therefore, phytoseiid mite species are generally playing a considered great role in the bio-control of phytophagous mites.

This family was represented by four species with high abundance. The mite species, *Amblyseius cucumeris* Oudemans was collected from leaves of mango, citrus and grape trees at Abu- Suweir, El-Qantara Gharb, Fayed, El-Tell El-Kebir and Serapeum village. *A.swirskii* Athias-Henriot was collected from leaves of mango and apples at Abu- Suweir, El-Qantara Shark, El-Qantara Gharb, Fayed, El-Tell El-Kebir, Serapeum and Ismailia city. *Typhlodromus pyri* Scheuten, was collected from leaves of apple trees at Abu- Suweir, Serapeum and Ismailia city. Kandeel (1993) recorded *T. pyri* on citrus leaves and pear trees in Sinai. Zaher and Shahata (1970) collected *Typhlodromus teramedius* Zaher & Shahata from citrus leaves in Fayoum, Dakahlia and Giza Governorates. *Phytoseiulus macropilis* (Banks) was collected from leaves of guava at Abo-Swair and Serapeum.

2.Family: Stigmaeidae Oudemans

The stigmaeid species, *Agistemus exsertus* Gonzales seemed to be the most important mite species recorded on leaves of mango, pear, guava and peach at Abu-Suweir, Serapeum and Ismailia city. Zaher (1986) and Hassan *et al.,* (1986), stated that *A. exsertus* is widespread species on fruit trees, field crops, ornamental plants and grasses in different parts of Egypt. The genus *Apostigmaeus* sp was collected from the leaves of mango at only one site; Ismailia city. El-Sharabasy (2000) collected *A. exsertus* from apple trees in Ismailia Governorate.

3.Family: Neophyllobiidae Southcott

In 1966, Summers stated *Neophyllobius* includes 21 species and is considered as the only Genus of Family Neophyllobiidae, which belongs to the Super-family Raphignathioda. This family was represented by two species, *Neophyllobius mangiferus* Zaher & Gomaa and *N. gonzali* Zaher & Gomaa. The first species was collected from the leaves of mango and fig trees at Serapeum village, while the second species was recorded only on leaves of mango trees at Serapeum and Ismailia city. Shoukry *et al.,* (1999) collected *Neophyllobius gonzali* on apple and grape leaves in Sinai.

4.Family: Caligonellidae Grandjean

A single species, *Caligonella humilis* Koch was collected in low numbers from leaves of apricot trees at El-Qantara Gharb and Serapeum. This mite species was recorded before in Ismailia by El-Sharabasy (2000), in Sinai by Hassan *et al.,* (1986), in Middle Egypt by Rakha (1977) and in Dakahlia Governorate by Zaher (1986).

5.Family: Raphignathidae Kramer

A single species, *Raphignathus bakeri* Zaher & Gomaa was collected in low numbers from leaves of citrus trees at Abu- Suweir and Ismailia city. This mite species was recorded inhabiting different fruit trees in Egypt by Zaher (1986), Hassan *et al.,* (1986).

6.Family: Cheyletidae Leach

Family Cheyletidae plays a considerable role in biological control. They prey on acarid, eriophyid, tenuipalpid and tetranychid mites and scale insects (Zaher & Soliman 1967). Three species of the family Cheyletidae were collected. *Cheletogenus ornatus* (C.&F.) was collected from the leaves from pear, grapes, peach, fig and apples at Abu- Suweir, El-Qantara Shark, El-Qantara Gharb, Fayed, El-Tell El-Kebir, Serapeum and Ismailia city. *Hemicheyletia bakeri* (Ehara), was recorded on leaves of apple and pomegranate trees at Serapeum and Ismailia city. The genus, *Eutogenes* sp was collected from leaves of apple trees at Fayed and El-Tell El-Kebir. Zaher and El-Badry (1962) recorded the occurrence of the two species *Cheletogenus ornatus* and *Eutogenes frater* on some fruit trees in different locations in Egypt.

7.Family: Eupalopsellidae Willman

A single species, *Saniosulus nudus* Summers was collected from leaves of fig trees at Abu- Suweir and Ismailia city. *S. nudus* was recorded in Ismailia Governorate in the year 2000 by El-Sharabasy (2000). On the other hand, Zaher (1986) found *S. nudus* widespread on leaves of some plants in association with scale insects.

8.Family: Bdellidae Duges

A single species, *Spinibdella bifurcate* Atyeo was collected from leaves of grapes fig and apple trees at Abu- Suweir and El-Tell El-Kebir.

9.Family: Cunaxidae Thor

A single species, *Cunaxa setirostris* (Hermann), was collected from leaves of mango and fig at Abu- Suweir, El-Qantara Shark, El-Qantara Gharb, Fayed, El-Tell El-Kebir, Serapeum and Ismailia city.

10.Family: Eupodidae Koch

A single species, *Eupodes momeni* Abou-Awad, was collected from leaves of mango at El-Tell El-Kebir and Ismailia city.

11.Family: Ologamasidae Ryke

A single species, *Gamasiphis parpulchellus* Mersal, was collected from leaves of fig and apple trees at Abu- Suweir, El-Tell El-Kebir and Serapeum.

Mites whose food is uncertain

This group of mites is miscellaneous feeding habits, fed on fungi or organic matters. However, more research on this mite species are needed, especially biological studies to confirm their feeding behavior. During this study 10 species belonging to 10 genera and 7 families were recorded (Table 3).

Table 3: list of fungivorous and uncertain feeding mites inhabiting fruit trees from different localities in Ismailia Governorate

Mite species		Locality	Host plant
1-	**Family : Acaridae Leach**		
1.	*Tyrophagous putrescentia* (Scrank)	1,2,3,4,5,6,7	Mango, guava, peach and fig
2.	*Rhizoglyphus robini* Claparede	2,6	Mango
2-	**Family : Glycyphagidae Berlese**		
1.	*Gylycyphagus orizae* Kramer	1,2,3,6	Mango and fig
3-	**Family : Tydeidae Kramer**		
1.	*Tydeus californicus* (Banks)	2,3,4,5,6,7	Grapes, mango, guava, peach, apples
2.	*Paralorria zaheri* Baker	1,5	Citrus, apple, guava
3.	*Pronemaulus vandus* Baker	1,2,3,7	Guava
4-	**Family :Tarsonemidae Kramer**		
1.	*Tarsonemus setifer* Ewing	2,3,4,5,6,7	Citrus, pomegranate, peach, grape
5-	**Family : Oppiidae Grandjean**		
1.	*Oppia sticta* Popp	1,5	Mango
6-	**Family : Oribatulidae Thor**		
1.	*Zygoribatula sayedi* El-Badry&Nasr	1,5	Mango
7-	**Family : Ameroseidae Evans**		
1.	*Kleemania plumosus* (Oudemans)	1,6	Mango, fig and grapes

1=Abu-Sewair, 2=El-Qantara Shark, 3=El-Qantara Gharbt, 4=Fayed, 5=El-Tell El-Kebir, 6=Serapeum, 7=Ismailia city

1.Family: Acaridae Leach

This family was represented by two species; *Tyrophagous putrescentia* (Scrank) and *Rhizoglyphus robini* Claparede. The first species was recorded on leaves of Mango, guava, peach, fig and apples at Abu- Suweir, El-Qantara Shark, El-Qantara Gharb, Fayed, El-Tell El-Kebir, Serapeum and Ismailia city. The second species was recorded on leaves of mango trees at Serapeum and Ismailia city.

2.Family: Glycyphagidae Berlese

A single species, *Gylycyphagus orizae* Kramer, was collected from leaves of mango and fig trees at Abu- Suweir, El-Qantara Shark, El-Qantara Gharb and Serapeum.

3.Family: Tydeidae Kramer

Tydeidae was represented by three species. *Tydeus californicus* (Banks) was collected from leaves of Grapes, mango, guava, peach, and apples trees at Abu-Suweir, El-Qantara Shark, El-Qantara Gharb and Serapeum and Ismailia city. *Paralorria zaheri* Baker, was collected from leaves of citrus, apples and guava at El-Qantara Shark and El-Qantara Gharb. *Pronemaulus vandus* Baker, was collected from leaves of guava at Abu- Suweir, El-Qantara Shark, El-Qantara Gharb and Ismailia city.

4.Family: Tarsonemidae Kramer

A single species, *Tarsonemus setifer* Ewing, was collected from leaves of citrus, pomegranate, peach and grapes at Abu- Suweir, El-Qantara Shark, El-Qantara Gharb, Fayed, El-Tell El-Kebir, Serapeum and Ismailia city. El-Halawany (2001) recorded three species in association with pear and fig trees; *T. setifer* was recorded with moderate numbers on fig and pear trees at governorates of Lower Egypt, *T. smithi* Ewing was found on fig and pear trees in moderate numbers in lower Egypt governorates and *T. fusari* Cooreman was collected from fig trees in few numbers at Damietta Governorate. He mentioned that individual of tarsonemid species were usually found in association with fungal growth.

5.Family: Oppiidae Grandjean

A single species, *Oppia sticta* Popp, was collected from leaves of mango trees at Ismailia city.

6.Family: Oribatulidae Thor

A single species, *Zygoribatula sayedi* El-Badry&Nasr, was collected from leaves of mango trees at Ismailia city.

7.Family: Ameroseiidae Evans

A single species, *Kleemania plumosus* (Oudemans), was collected from leaves of mango, fig and grapes at Abu-Suweir, Serapeum and Ismailia city.

REFERENCES

Bjorson, S. (2008): Natural enemies of mass reared predatory mites (Family: Phytoseiidae) used for biological pest control. Exper. and Appl. Acarol., 46: (1-4), 299-306.

Ebrahim, H.M. (1987): Ecological and biological studies on mites associated with some deciduous fruit trees. M.Sc.Thesis, Fac., Agric., Cairo Univ. 111 pp.

El-Halawany, A. S. (2001): Studies on some mite species infesting some fruit trees. (Doctoral dissertation, Zagazig University), 194 pp.

El-Halawany, M. E.; Kandeel, M. H. and Ismail, H.M. (1989): Incidence of mites inhabiting apple and apricot orchards. Agric., Res. Rev., 67(1): 103- 110.

El-Halawany, M. E.; Kandeel, M. H. and Rakha, M.A. (1986): Mites inhabiting deciduous fruit trees. Agric. Res. Rev., 64 (1): 115 –122.

El-Moghazy, M. M. (2013): Survey and taxonomy of mites associated with fruit Orchards trees from Sakaka Governorate, Kingdom of Saudi Arabia. International J. of Agric., and Bioscience. 5(6): 341-346.

El-Sharabasy, H.M. (2000): Ecological studies on phytophagous and predaceous mites at newly reclaimed lands in Ismailia Governorate. MSc. Thesis, Agric., Suez Canal Univ., 166 pp.

Evans, G.O. (1992): Principles of Acarology. CAB International, Wallingford, UK. 563 pp.

Hassan, M.F.; Afifi, A.A. and Nawar, M.S. (1986): Mites inhabiting plants and soil in Sinai and newly reclaimed lands. Bull. Soc. Ent., Egypt, 66:211-225.

Heikal, I. H.; Ibrahim, S. M. and Iskander, N. G. (1996): Ecological and Biological studies on mite occurring on Fig trees at Barrage District (Qalyobia Governorate), Egypt. J. Agric. Res., 74 (4): 919- 927.

Hong, X.; Ninghui, C. and Cheng, N.H. (1999): Review of virus diseases transmitted by eriophyid mites. Acta-Phtophylactica Sinica, 36: 177-184.

Jeppson, L.R., Baker, E.W. and Keifer, H.H. (1975): Mites Injurious to Economic Plants. University of California Press, Berkeley, California. 614 pp.

Kandeel, M.H. (1993): Annotated list and keys to mites occurring in North Sinai, Egypt. Egypt J. Product, & Dev., 64(1): 123-127.

Kandeel, M.H., Rakah, M.A. and El-Halawany M.E. (1986): Citrus mites in Egypt. Egypt J. Product, & Dev., 1(1): 55-80.

Krantz, G.W. (1978): A Manual of Acarology. Oregan State University Book Stores, Corvallis, USA, 509 pp.

Rakha, M.A. (1977): Studies on some predaceous Raphignathid mites inhabiting fruit trees. MSc. Theses, Fac. Agric., Cairo Univ., 99 pp.

Shoukry, A.; El-Kady, G.; El-Sharabasy, H. and Tawfic, M. (1999): Incidence of mites inhabiting plants and soil at newly reclaimed lands in Ismailia Governorate. 8th Nat. Conf. of Pests & Dis. of Vef. & Fruits in Ismailia, Egypt. 175-187.

Zaher, M. A. (1986): Survey and ecological studies of phytophagous, predaceous and soil mites in Egypt. Final report PL 480, Programme USA Project No. EG. ARS-30, grant No.FG-139. Faculty of Agriculture, Cairo University.

Zaher, M. A. and EL-Badry, A. (1962): Abundance of mites and insects predacious on tetranychid and tenuipalpid mites in Giza. Bull. Soc. Entom. Egypt, pp.429-441.

Zaher, M.A. and Shehata, K.K. (1970) A new typhlodromid mite *Typhlodromus tetramedius*. Bull. de la Société Entomologique d'Egypte, 54, 117–121.

Zaher, M. A. and Soliman, Z. R. (1967): The family Cheyletidae in the UAR with a description of four new species. Bull. Soc. Ent. Egypt, 51: 21-26.

ARABIC SUMMERY

الأكاروسات القاطنه لبعض أشجارالفاكهه بمحافظة الأسماعيلية

نيفين عبدالله حامد[١]، حمدى محمود الشرباصى[٢]، أحمد حسن أبوغالية[٣]، مها فريد سليمان[٣]

١- معهد بحوث وقاية نباتات، مركز البحوث الزراعية، الدقى، الجيزه.

٢- قسم وقاية النبات، كلية الزراعة، جامعة قناة السويس، الأسماعيلية.

٣- قسم علم حيوان، كلية العلوم، جامعة قناة السويس، الأسماعيلية.

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قد تمت الدراسه الحقليه على الفونا الأكاروسيه القاطنه لبعض أشجار الفاكهة فى محافظة الأسماعيليه خلال الفترة من أكتوبر ٢٠١٤م وحتي سبتمبر ٢٠١٦م. أثبتت دراسات الحصر للأكاروسات عن وجود ٤٤ نوع ينتمون إلي ٣٦ جنس و ٢١ فصيلة تنتمي إلي ٢ رتبة و ٤ تحت رتبة من الأكاروسات وهي كالآتي ؛ رتبة Acariformes ويتبعها ٣ تحت رتبة هي تحت رتبة أمامية الثغر التنفسي ، تحت رتبة عديمة الثغر التنفسي ، تحت رتبة خافية الثغر التنفسي . وتحت رتبة أمامية الثغر التنفسي : أمكن حصر ١٤ فصيلة تابعة لها وهي: فصيلة العناكب الحمراء Tetranychidae (يتبعها ٧ أنواع) – فصيلة العناكب الحمراء الكاذبة Tenuipalpidae (٨ أنواع) – فصيلة الحلم الدودي Eriophyidae (١ نوع) – فصيلة Stigmaeidae (٢ نوع) – فصيلة Neophyllobiidae (٢ نوع) – فصيلة Caligonellidae (١ نوع) – فصيلة Raphignathidae (١ نوع) – فصيلة Cheyletidae (٣ أنواع) – فصيلة Eupalopsellidae (١ نوع) – فصيلة Bdellidae (١ نوع) – فصيلة Cunaxidae (١ نوع) – فصيلة Eupodidae (١ نوع) – فصيلة Tydeidae (٣ أنواع) – فصيلة Tarsonemidae (١ نوع).

٥- ١.تحت رتبة عديمة الثغر التنفسي Suborder Astigmata : أمكن حصر فصيلتين فقط هما فصيلة Acaridae (٢ نوع) – فصيلة Glycyphagidae (١ نوع).

٦- ٢.تحت رتبة خافية الثغر التنفسي Suborder Cryptostigmata : أمكن حصر فصيلتين فقط هما فصيلة Oppiidae (١ نوع) – فصيلة Oribatulidae (١ نوع).رتبة Parasitiformes ويتبعها تحت رتبة واحدة فقط هي متوسطة الثغر التنفسى حيث أمكن حصر ٣ فصائل اكاروسية تابعة لها وهي فصيلة Phytoseiidae (٤ أنواع) – فصيلة Ologamasidae (١ نوع) – فصيلة Ameroseiidae (١ نوع).