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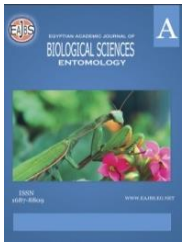

Occurrence of Different Acari Associated with Sugarbeet and Sugarcane In Kafr El-Sheikh and Qena Governortes, Egypt

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ABSTRACT

The study was done to investigate the occurrence of different mites associated with two sugar field crops in two different environmental regions in Egypt during 2018 and 2019. The first site cultivated with sugarbeet plants (Menshaat Salama, El-Riad district, Kafr El-Sheikh Governorate) and the second site cultivated with sugarcane plants (Koom Jaqoub village, Abou Tisht district, Qena Governorte) were chosen to conduct the study during 2018 and 2019 seasons. The obtained results showed that the occurrence of 53 different mite species belongs to 33 genera in 24 different families. The obtained results indicated that the Prostigmata (Actinedida) and Mesostigmata (Gamasida) mite species ranked the first as they included the highest numbers (24 and 17 species), respectively, followed by Astigmata (7 species) and Cyptostigmata (5 species). The feeding habitats of most collected species were also be discussed during the study. The current study should be taken into account in planning programs when conducting the Integrated Pest Management (IPM) in the two tested sugar field crops. Also, an exclusive survey must be performed for all mites on either the green leaves, debris, or soil beneath of those crops at these tested study regions.

INTRODUCTION

Sugar is a strategic commodity for daily consumption and many industries worldwide. In terms of strategic importance, it comes right after wheat or rice in all countries all over the world. Sugar cane is the main sugar crop in upper Egypt. About 90 percent of the yield is used for sugar extraction. Sugar beet also grows in large areas in the Nile delta and contributes to the sugar industry in Egypt. In Egypt, sugar beet *Beta vulgaris* L. is the second sugar crop after sugar cane, *Saccharum officinarum* L. So, the Egyptian government policy aims to encourage the farmers to increase its cultivation to conserve water and also for its high sugar concentration. In Egypt, sugar beet produces 48.1 % of sugar production (Annual Report of Sugar Crops Council, 2012). Ministry of Agriculture and Land Reclamation, in Egypt, encourages the growers to grow sugar beet over sugar cane as a water-saving measure. Accordingly, sugar beet has become, since 2013, the first source of sugar in Egypt, while the sugar cane ranks second. Sugar plants are attacked by numerous insect and mite species during the growing season. Traditionally, chemical pesticides were used for controlling all these pests in Egypt. It is necessary to minimize the quantities of chemical pesticides used for crop protection within the frame of the strategies in integrated

pest management (IPM), biological control, of insect pests that became necessary in such strategies as an effective alternative (El-Khouly, 1998; Mesbah *et al*., 2004). Sugarcane mite *O. sacchari* McGregor (Acari: Tetranychidae) is one of the most harmful arthropod pests associated with sugarcane during summer (Nikpay and Goebel 2016). The plant-inhabiting mite fauna associated with sugarcane crops in the state of Alagoas, Brazil determined by Duarte *et al.* (2015). A total of 2565 mite species were collected from sugarcane and classified into 7 families of Trombidiformes and Mesostigmata orders, with most individuals belong to Eriophyidae, Tetranychidae, and Tarsonemidae. Seven phytophagous mite species have been reported on sugarcane from 3 families: *Abacarus sacchari* Channabasavanna (Eriophyidae); *Steneotarsonemus bancrofti* Michael and *S. brasiliensis* Flechtmann (Tarsonemidae), *Monoceronychus linki* Pritchard and Baker, *Schizotetranychus sacharum* Flechtmann and Baker, *Oligonychus pratensis* (Banks), and *O. grypus* Baker and Pritchard (Tetranychidae); some of these mites have been reported to damage sugarcane (Moraes and Flechtmann 2008). Haddad Irani-Nejad *et al.* (2004) identified 14 species, 14 genera, and 12 families belonging to the oribatid mites, in sugarbeet fields in West Azarbaijan. *Brachychochthonius* near *immaculatus* Forssland, (Brachychthonidae); *Ceratozetes* sp., (Ceratozetidae); *Protoribates capucinus* Berlese (Haplozetidae); *Microppia minus* Paoli, *Multioppia wilsoni* Aoki (Oppiidae); *Hemileius* sp., (Scheloribatidae); *Aphelacarus acarinus* (Berlese), (Aphelacaridae); *Phyllozetes emmae* (Berlese), (Cosmochthonidae); *Epilohmannia cylindrica cylindrica*; (Epilohmaniidae); *Rhysotritia ardua penicillata* Perez-Inigo (Euphthiracaridae); *Galumna* sp. (Galumnidae); *Protoribates* sp. (Haplozetidae); *Lohmannia turcmenica* Bulanova-Zachvatkin, (Lohmanniidae); *Multioppia radiata* Hammer, (Oppiidae); *Zygoribatula connexa* (Berlese), *Z. hortobagyensis* Mahunka, *Z. undulata* (Berlese), (Oribatulidae); *Scheloribates fimbriatus* Thor (Scheloribatidae). Family Oribatulidae with 2 species of *Zygoribatula connexa* and *Z. hortobagyensis* had the highest density. Sugar field crop mites in the Egyptian fauna have received very little consideration and the groundwork for essential ecological and biological studies. So, this study was conducted to throw some light on the occurrence of different feeding habitats mites associated with sugarbeet and sugarcane in two different ecologically regions of Egypt.

MATERIALS AND METHODS

Incidence and occurrence of different mite species associated with different sugar field crops in two different regions of Egypt differed in their ecological conditions were determined. Koom Jaqoub village, Abou Tesht district, (Qena Governorate), and Menhaat Salama (El-Reiad district), Kafr El-Sheikh Governorate were chosen to conduct the current study. Soil, debris, and leaf samples were collected monthly from the two study sites. Soil samples were collected by means of a rectangular metal frame (10×10×5 cm). Each sample was around 500 gm, collected from the topsoil layer (0-15 cm). In the laboratory, the soil mites were extracted using Modified Tullgren's funnel (Krantz and Walter, 2009). The extracted mites were received in an aquatic medium and transferred to a solution containing ethanol and acetic acid at 9:1 as sudden death solution, which quickly killed mites and stretched their bodies. After that, mites were transferred to lactic acid as a clearing solution for a period depending on mite species and its inflexible degree (El-Moghazy and Shawer 2013). Identification of the collected mites was carried out according to Hughes (1961 and 1976); Bregetova (1977); Zaher (1986); Fan and Zhang (2003) and Krantz and Walter (2009). The collected mite species were deposited as slide-mounted specimens in Plant Protection Research Institute (Dokki, Giza, Egypt). Kawemira cultivar (sugar beet) was sown during September. About one month after sowing of each plantation, 25 sugar beet leaves, soil, and some fallen debris were weekly examined for pests and predators. Also,

Giza-3 sugarcane variety was chosen as (new and old leaves, debris and soil) to estimate the different occurrence of mite species.

RESULTS AND DISCUSSION

Morphological characters of sugarcane leaves may affect degree of damage to varieties and can influence of mite performance on leaves. During the seasons of 2018 and 2019, sugarbeat and sugarcane had been chosen to estimate the existence of different mites on the plans, debris and under soil of these crops at two different locations in Egypt (Kafr El-Sheikh and Qena). The present study revealed occurrences of 53 mite species (Tables 1, 2 and 3) associated with different parts of sugarbeet and sugcane plants in the two study regions are different, belonging to 33 genera and 24 families under 4 suborders (Prostigmata, Mesostigmata, Astigmata and Cryptostigmata). The abundance of these mite species and feeding habits were recorded in Tables (1, 2 and 3). The actinedid mites (Prostigmata) are a large and complex acarine group of predators. As shown in Table (1), this suborder contains 24 species belonging to 14 genera in 11 families. The collected families were (Stigmaeidae, Bdellidae, Tetranychidae, Scuacridae, Tydeidae, Cunaxidae, Cheyletidae, Pyemotidae, Tarsonemeidae, Raphignathidae, and Eupodidae). The most common family was Cheyletidae and the most common species of this family were *Cheyletus eruditus* and *C. malaccensis*. Also, thee tydeid mites, *Tydeus californicus, Pronematus ryeki*, and *P. ubiquitus* were the dominant species in this study. Also, other species *Spinebdella bifurcate* from family Bdellidae, *Pyemotes herfesi* (Oud.) from family Pyemotidae, *Cunaxa capreolus* (Berlese) from family Cunaxidae, *Stigmaeus africanus* (Soliman and Gomaa) from family Stigmaeidae were dominant also. The feeding habit of the mite species of this suborder is presented also in the same mentioned table. The tabulated data in Table (2) show the presence of 17 gamasid (Mesostigmata) mite species belonging to 11 genera in 8 families of gamasid mites (Table 2). The recorded families were Parasitidae (one species); Laelapidae (3 species); Macrochelidae, Ameroseiidae, Bachylaelapidae, and Uropodidae (One species for each family), while the family Digamasellidae in these work harbored two mite species, Table (2). The feeding habits of the mite species of this suborder is presented also in the same mentioned table.

The suborder Acaridida (Prostigmata) is represented as tabulated in Table (3) by 7 mite species belong to 5 genera in three different families and their feeding habit is recorded also in the same mentioned table. In this category of mites, the only mite species associated with different habitat (leaves, stem, debris, and soil) was the acarid mite *T. putrescentiae*. On the other hand, the cryptostigmatid mites inhabiting sugarbeet and sugarcane plants were 5 different species and 3 genera in 2 families. The feeding habits of this suborder might be fungivorous mites (Table 3). From the study also, it was noticed that there were 32 different soil mites included in the different mite suborders and these soil mites are considered good bio-indicators of habitat and soil conditions (Behan-Pelletier, 1999).

In harmony case with the current study, El-Kawas (2015) collected twenty-one soil mite species belonging to 16 genera of 14 families from soil planted with sugar beet, *Beta vulgaris* in Zagazig District, Sharkia Governorate Egypt. Also, Abd El-Halim and Rahil (2000) collected 56 mite species inhabiting sugar beet plants and soil at Fayoum and Beni-Suef Governorates, Egypt. Of these, 45 species were recorded underneath the sugar beet. Butani (1959) showed that under severe mite outbreak; there was no difference in the resistance of sugarcane to mite infestation.

Table 1. Incidence of different prostigmatid mites (Actinidida) associated with sugar-beet and sugarcane in Kafr El-Sheikh and Qena Governorates.

Mite family	Species	Fauna	Behavior	Place	Abun.	Ref.
Family Stigmaeidae Oudemans	*Agistemus exsertus* Gonzalez	Leaves	Predator	Kafr El-Sheikh	+	Zaher, 186
	Stigmaeus africanus Soliman and Gomaa	Leaves	Predator	Qena	+++	Zaher (1986)
Family Bdellidae Duges	*Spinibdella bifurcate* Atyeo	Soil	Predator	Qena	+++	Zaher (1986)
	Spinibdella cortices (Ewing)	Soil	predator	Qena	+	Zaher (1986)
`Family Tetranychidae Donnadieu	*Tetranychus urticae* Koch	New leaves	Phytophagus	Kafr El-Sheikh	++	Zaher (1986)
	Oligonychus pratensis (Banks)	Leaves		Qena	++	Zaher (1986)
Family Scutacaridae Oudemans	*Scutacarus* (*Variatipes*) *evansi* Soliman and Kandeel	Soil	??	Kafr El-Sheikh	+`	??
	S.aegypticus Yousef and Metwally	Soil	??	Qena and Kafr El-Sheikh	+	??
Family Tydeidae Kramer	*Tydeus californicus* (Banks)	Leaves	Phytophagus Miscellinious	Qena and Kafr El-Sheikh	+++	Zaher, 1986 Yassin 2004
	T. kochi (Oudemans)	Soil	Fungivorous	Qena and Kafr El-Sheikh	+++	El-Bagoury 1978
	Tydeus aegyyptiacus	Soil	Miscellinious	Qena and Kafr El-Sheikh	+++	Zaher (1986)
	Pronematus rykei Meyer and Rodrigues	leaves	Predator	Qena and Kafr El-Sheikh	+++	Zaher (1986)
	P. ubiquitus McGregor	leaves	Predator	Qena and Kafr El-Sheikh	+++	Zaher (1986)
Family Cunaxidae Thor	*Cunaxa sitirostris* (Hermann)	Soil	Predator	Qena and Kafr El-Sheikh	+	Zaher (1986)
	Cunaxa capreolus	Soil	Predator	Kafr El-Sheikh	+++	Zaher (1986)
Family Cheyletidae Leach	*Acaropsellina sollers* (Rohdendrof)	Soil	Predator	Qena	+	Zaher (1986)
	Cheyletus eruditus (Schrank)	Soil	Predator	Qena and Kafr El-Sheikh	+++	Zaher (1986)
	Cheyletus badryi Zaher and Hassan	Soil	Predator	Qena and Kafr El-Sheikh	++	Zaher (1986)
	C. malaccensis (Oudemans)	Soil	Predator	Kafr El-Sheikh	+++	Zaher (1986)
Family Pyemotidae Oudemans	*Pymotes herfesi* (Oud.)	Stem of sugarcane	Parasites on Lepidoptera larvae	Qena	+++	Tawfik and Awadallah, (1970)
	Pymotes tritici (Lagrez Forssote & Montene)	Stem of sugarcane	parasitic	Qena	+	Zaher (1986)
Family Tarsonemidae Kramer	*Tarsonmeus granaries* Lindquist	Stem of sugarcane	??	Qena	+	??
Family Caligonellidae Grandjean	*Neognathus oblongus* (Soliman)	Soil	Predator	Kafr El-Sheikh	+	Zaher (1986)
Family Eupodidae Koch	*Eupodes* sp.	Stem of sugarcane	??	Qena	+	??

+ = rare (1-3 mites) ++ = moderate (4-8 mites) +++ = more than 8 mites ?? = unknown

Nuessly *et al*. (2015) In the USA, showed that among several cultivars the symptom of damage caused by sugarcane rust mite *Abacarus sacchari* Channabasavanna was different and varieties showed different damage level. The obtained data in this study differed Norton (1990) who mentioned that Oribatida is one of the most dominant arthropods in organic horizons of most soils. The current study also agrees with those obtained by Zaher (1986) and Romieh (2002) where the soil of some field crops harbored in most cases the Actinedida and Gamasida as common soil predaceous mites in Egyptian fauna. While Krantz and Walter (2009) found that Oribatida was the most abundant soil mites and its individual numbers may be based on the host plant. Zaher and Mohamed (1980) recorded nine predaceous species of nine families inhabiting sugar beet soil as follows: *Hypoaspis* sp. (Laelapidae), *Rhodacarus* sp. (Rhodacaridae), *Neognathus* sp. (Caligonellidae), *Grallacheles bakeri* (Cheyletidae), *C. capreolus* (Cunaxidae), *Saniosulus nudus* (Eupalopsellidae), *Rhagidia gelida* (Rhagidiidae), *A. exsertus* (Stigmaeidae) and *Eupodes* sp. (Eupodidae). The results obtained by Sharshir *et al.* (2003) indicated that Crypostigmata and Mesostigmata mites were the most frequent and

abundant followed by Prostigmata and Astigmata mites in the survey of soil samples under cucumber and tomato plants. Also, Abou El-Saad (2006) reported that the Mesostigmata and Cryptostigmata in the soil of cucumber and common bean were found to be predominated over other groups of mites such as Prostigmata and Astigmata.

Table 2. Incidence of different mesostigmatid mites (Gamsida) assocaited with sugar-beet and sugarcane in Kafr El-Sheikh and Qena Governorates

Mite family	Species	Fauna	behavior	Occurrence place	Abun.	Ref.
Family Parasitidae Oudemans	*Vulgarogamasus burchanensis* (Oudemans)	Soil	Predator	Kafr El-Sheikh)	+	Zaher ,1986
Family Laelapidae Berlese	*Ololaelaps bregetovae* Shereef and Soliman	Soil	Predator	Kafr El-Sheikh)	++	Zaher, 1986
	Androlaelaps reticulatus Hafez, El-Badry and Nasr	Debris	??	Kafr El-Sheikh)	++	??
	Androlaelaps aegypticus Hafez, Elbadry and Naser	Soil	Predator	Qena and Kafr El-Sheikh		Zaher, 1986
Faamily Macrochelidae Vitzthum	*Macrocheles merdarius* (Berlese)	Debris	Predator	Kafr El-Sheikh	+++	Zaher, 1986
Family Ameroseiidae Evans	*Kleemenia plumosus* Manson	Debris	Fungivorus	Qena	+	Zaher, 1986
Familly Bachylaelapidae Berlese	*Pachylaelaps reticulatus* (Berlese)	Debris	Predator	Qena and Kafr El-Sheikh	+	Zaher, 1986
Family Uropodidae Kramer	*Urobovella ovalis* Hirshmann	Soil and debris	Fungivorou	(Qena)	+	
Family Ascidae Voigts and Oudemans	*Proctolaelaps pygmaeus* (Müller)	Under old leaves	Fungivorous	Qena	++	Shereef *et al*., 1980
	P. orientalis Nasr	Soil	??	(Qena)	+	??
	P. aegyptiaca Nasr	Soil	??	(Qena)		??
	Protogamesellus aegyptica Nasr	Soil	??	Qena and Kafr El-Sheikh)	+++	??
	Blattisocius tarsalis (Berlese)	Soil	Predator	Qena and Kafr El-Sheikh)	+++	Zaher, 1986
	Blattisocius dentriticus (Berlese)	Soil	Predator	Qena and Kafr El-Sheikh)	+++	Zaher, 1986
	Blattisocius keegani (Fox)	Soil	Predator	Qena and Kafr El-Sheikh	++	Rizk, 2000
Family Digamasellidae Evans	*Dendrolaelaps rasmii* Nasr	Soil	??	Kafr El-Sheikh	+	??
	D. zaheri Metwally and Mersal	Soil	??	Qena	+	??

+ = rare (1-3 mites) ++ = moderate (4-8 mites) +++ = more than (8 mites) ?? = unknown

Table 3. Incidence of different astigmatid and crypttostigmatid mites assocaited with sugar-beet and sugarcane in Kafr El-Sheikh and Qena Governorates

Mite family	Species	Fauna	behavior	Place	Abundance	Reference
Suborder acaridida (Astigmata)						
Family Acaridae Leach	*Tyrophagus putresceentiae* (Schrank)	Leaves, stem, debris and soil	Fungivorous	Qena and Kafr El-Sheikh)	+++	Zaher, 1986
	Rhyzoglyphus robini Claparede	Leaves and sem	Tissue feeder	(Qena)	+++	Fan and Zhang, 2003
	R. echinopus Fumouze and Robin)	Leaves, debris and sem	Tissue feeder	Qena	+++	Fan and Zhang, 2003
Family Suidasidae Hughes	*Suidasia nesbitti* Hughes	Debris	Fungivorous	Qena	+	Chmielewski, 1991
Family Glycyphagidae Cunliffe	*Glycyphagus aegypticus* Attiah	Stem and debris	Fungivorous	Qena	+	Zaher, 1986
	Glycyphagus domesticus (Ddeegeer)	Soil	Granivorous	Kafr El-Sheikh	+	Chmielewski, 2002
	Blomia tropicalus (Blot)	Debris	??	Qena	+	??
Suborder Oribatida (Crypostigmata)						
Family Oppidae Grandjean	*Multioppia wilsoni* Akoi	soil	??	Qena	+	??
	O. sticta (Popp)	Soil	Fungivorus	Kafr El-Sheikh	+++	Zaher, 1986
	O. bayoumi Shereef and Zaher	Soil	??	Qena	+	??
	O. stinikovae (Shereef)	Soil	??	Qena	+	??
Family Oribatulidae Thor	*Schleoribatus zaheri* (Youssif and Nasr)	soil	Fungivorous	Qena and Kafr El-Sheik	+++	Zaher, 1986

+ = rare (1-3 mites) ++ = moderate (4-8 mites) +++ = more than (8 mites) ?? = unknown

REFERENCES

Abd El-Halim, S. M. and Rahil, A. A. R. 2000. Incidence of mites inhabiting leaves and soil of sugar beet at Fayoum and Beni-Suef governorates. *Egyptian Journal of Agricultural Science, Mansoura Univ.,* 25(11): 7159-7169.

Abou El-Saad, A.K. 2006. Studies on Phytophagus and predaceous mites associated with certain vegetable crops in Minia Governorate. Ph.D. Thesis, Fac. of Agric., Minia Univ., 158 pp.

Annual Report of Sugar Crops Council 2012. Sugar Crops Council, Ministry of Agriculture and Land Reclamation, Giza, Egypt.

Behan-Pelletier, V. M. 1999. Oribatid mite biodiversity in agro ecosystems role for bioindication. *Agriculture Ecosystems and Environment*, 74: 411-423.

Bregetova, N.G. 1977. Identification key of soil inhabiting mites Mesostigmata. Nauka, Leningrad: 717 pp.

Butani, D. 1959. Sugarcane mites—A review. *In*: Proceedings of the Indian Academy of Sciences, Section B., pp. 99–107.

Chmielewski, W. 1991. Biological observation of allergenic mite, Suidasia nesbitti (Acari: Saproglyphidae). *Wiadomoci-Parazytologiczne*, 37(1): 133-136.

Chmielewski, W. 2002. Bionomics of *Glycyphagus domesticus* (De-Geer) (Acari: Glycyphagidae) feeding on buckwheat seeds. *Fagopyrum*, 19: 105-108.

Duarte, M.E, Navia, D., Santos L.R., Rideiqui, P.J.S. and Silva, E.S. 2015. Mites associated with sugarcane crop and with native trees from adjacent Atlantic forest fragment in Brazil. *Experimental and Applied Acarology*, 66(4): 529–540.

El-Bagoury, M. E. 1978. Ecological and biological studies on mites of family Tydeidae. Ph.D. Thesis, Fac. Agric., Cairo Univ., 111pp.

El-Kawas, H. M. G. 2015. Faunistic soil dwelling mites of sugar beet fields in Sharkia Governorate, Egypt. *Acarines*, 9: 51-59.

El-Khouly, M. I. 1998. Ecological studies and control of the tortoise beetle, *Cassida vittata* de Villers in sugar beet ecosystem. Ph. D. Thesis, Fac. Agric., Al-Azhar Univ., 183 pp.

El-Moghazy, M.M.E. and Shawer, S. S. 2013. Relationship between soil diversity and inhabitant mites (Acari). *Acarines,* 7: 41-45.

Fan, Q. and Zhang, Z. 2003. *Rhizoglyphus echinopus* and *Rhizoglyphus robini* (Acari: Acaridae) from Australia and New Zealand: identification, host plants and geographical distribution. *Systematic and Applied Acarology, Special Publications,* 16, 1-16.

Haddad Irani-Nejad, K., Hajiqanbar, H.R. and Talebi Chaichi, P. 2004. Oribatid mites of the sugarbeet fields in Miandoab plain. *Agricultural Science* (University of Tabriz*),* 14(1), 55–67. [in Persian]

Hughes, A. M. 1961. The mites of stored food. *Ministry of Agriculture Fisher and Food Technolgy Bulletin*, 9: 278.

Hughes, A. M. 1976. The mites of stored food and houses. Technical Bulletin No.9, Ministry of Agriculture, Fisheries and Food, London. 399 pp.

Krantz, G.W. and Walter, D. E. 2009. A manual of Acarology, 3rd ed. Texas Tech University Press; Lubbock, Texas: 807 pp.

Lindquist E. E. and Moraza M. L. 2010. Revised diagnosis of the family Blattisociidae (Acari: Mesostigmata: Phytoseioidea), with a key to its genera and description of a new fungus-inhabiting genus from Costa Rica. *Zootaxa*, 2479: 1-21.

Mesbah, I., Abou-Attia, F. A., Metwally S.M., Bassyouni A.M. and Shalaby G. A. 2004. Utilization of biological control agents for controlling some sugar beet insect pests at Kafr El-Sheikh Region. *Egyptian Journal of Bilogical Pest Control*, 14(1): 78–82.

Moraes J.G. and Flechtmann C.H.W. 2008. Manual de acarologia—acarologia básica e ácaros de plantas cultivadas no Brasil. Holos, Ribeirão Preto.

Nikpay, A. and Goebel, F.R. 2016. Major sugarcane pests and their management in Iran. Proceedings of the International Society of Sugar Cane Technologists 29: 103–108.

Norton, R.A. 1990. Acrina: Oribatida. *In*: Dindal, D. L. (ed.), Soil Biology Guide. Wiley, New York, PP; 779-803.

Nuessly, G.S., Zhao, D. D., Davidson, R.W. and Asbani, N. 2015. Toward a sustainable management of the sugarcane rust mite in Florida. In: XI pathology and IX entomology workshops, Guayaquil, Ecuador, pp. 62.

Rizk H.A. 2000. Mites associated with stored dried-dates in Egypt and the role of *Blattisocius keegani* Fox as a biological control agent. *Alexandria Journal of Agriculturral Research*, 45: 179-191.

Romeih, Amal H. M. 2002. Biological, morphological and genetical studies on some predaceous mites and their prey. Ph. D. Thesis, Fac. Agric. Cairo Univ., 208 pp.

Sharshir, F.A., Abo Attia, F.A., Tadros, M.S. and El-Shafei, G.M.A. 2003. Soil inhabiting mites and collembolan under cucumber and tomato grown under plastic tunnels at

Kafr El-Sheikh. *Journal of Agricultural Research, Tanta University*, 29 (40): 707-724.

Shereef, G.M., M.A. Zaher and Afifi, A.M. 1980. Biological studies and feeding habits of *Proctolaelaps pygmaeus* (Muller) (Mesostigmata: Ascidae) in Egypt. Proc. of 1st Conf., Plant Protection Research Institute, Cairo, Egypt.

Tawfik, M.F.S. and Awadallah, K.T. 1970. The biology of *Pyemotes herfesi* Oudemans and its efficiency in the control of the resting larvae of the pink bollworm, *Pectinophora gossypiella* Saunders in U.A.R. (Acarina: Pyemotidae). *Bulletin de la Societe Entomologique d'Egypte,* 54 : 49-71.

Yassin, E. M. A. 2004. Studies on some tydeid mites in Egypt. Ph. D. Thesis, Fac. Sci., Cairo Univ., 321 pp.

Zaher, M. A. 1986. Predaceous and Non-phytophagous Mites (Nile Valley and Delta). Text. Survey and Ecological Studies on Phytophagous, Predaceous and Soil Mites in Egypt. Egypt, PL 480 Programme USA, Project EG-ARS-30, Grant No. FG-EG-139. 567pp.

Zaher, M.A. and Mohamed, M.I. 1980. Mites associated with sugar beet in Egypt. *Annals of Agricultural Science, Moshtohor,* 13: 205-207.

ARABIC SUMMARY

تواجد الاكاروسات المحتلفة والمرتبطة بمحصولى بنجر السكر وقصب السكر فى منطقتين من مصر

عصام محمد عبد السلام ياسين – ايناس مصطفى قطب قاسم
معهد بحوث وقاية النباتات – مركز البحوث الزراعية – الدقى - جيزة – مصر

اجريت هذه الدراسة فى موسمى 2018 و2019 فى منطقتين مختلفتين (احداهما قرية كوم يعقوب التابعة لمركز ابوتشت – محافظة قنا) والمنزرعة بنباتات قصب السكر ومنطقة منشاة سلامة التابعة لمركز الرياض بمحافظة كفر الشيخ المنزرعة بنباتات بنجر السكر لدراسة تواجد الاكاروسات المرتبطة بهذين المحصولين. ولقد دلت الدراسة على وجود 53 نوع اكاروسى مختلف ينتموا الى 33 جنسا داخل 24 عائلة اكاروسية مختلفة فى تحت أربع رتب اكاروسية وهي ذات الثغر الامامى Prostigmata وذات الثغر المتوسط Mesostigmata وعديمة الثغر Astigmata والحلم الخنفسى Cryptostigmata. وتم الحصول على 24 نوع اكاروسى فى تحت رتبة امامية الثغر و17 نوع اكاروسى داخل تحت رتبة ذات الثغر المتوسط يليها تحت رتبة عديمة الثغر بعدد 7 انواع اكارسية ثم تحت رتبة الحلم الخنفسى بعدد 5 انواع اكاروسية. ولقد اختلفت الاكاروسات المتحصل عليها فى طبيعتها الغذائية ما بين اكاروسات نباتية التغذية واخرى فطرية التغذية والبعض منها مفترس عل الفرائس المختلفة ومنها ما هو غيرمعروف طبيعة تغذيته ومن الدراسة يجب الاخذ فى الاعتبار طبيعة التغذية لهذه الانواع عند وضع خطة برنامج مكافحة متكاملة للافات فى حقول بنجر السكر وقصب السكر لما لهذه الانواع من اهمية اقتصادية ويجب ايضا متابعة رداسة مواضيع متشابهة للتعضيد والاستفادة من هذه الدراسة.