

Survey of eriophyid mites on some fruit trees, with re-descriptions of two newly recorded species and a checklist of eriophyid mites in Egypt (Acari: Eriophyoidea)

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ABSTRACT

In a field survey, 16 eriophyoid mite species were collected from eight species of fruit trees, among which two species were found to be new record to Egypt. They were *Tegolophus guavae* (Boczek, 1960) on *Psidium guajava* L. (Myrtaceae) which causes rust on leaves, and *Aceria ziziphi* Mohanasundaram, 1990, vagrant without damage on *Ziziphus spina-christi* Willd (Rhamnaceae). These species were redescribed and illustrated from local material. A total of 65 eriophyoid mite species in superfamily Eriophyoidea has been recorded in Egypt due to literature. These species belong to three families, seven sub families, seven tribes and 27 genera. A list of these species has been constructed and presented herein.

Key words: Survey, Eriophyidae, Phytoptidae, Diptilomiopidae, Checklist, Egypt.

INTRODUCTION

Eriophyid mites play an important role in Egyptian agro-ecosystem. The last collective work on eriophyid mites' taxonomy was occurred by Zaher (1984). About 30 papers on taxonomy of eriophyid mites in Egypt, from 1919 up to date, have been published by (Dębski, 1919; Hassan, 1934; Sayed, 1946a, 1946b; Attiah, 1955, 1967 & 1970; Osman & Zohdy, 1976; Soliman & Abou-Awad, 1977 & 1978; Rasmy & Abou-Awad, 1978; Abou-Awad, 1979a, 1979b, 1981 & 1984; Abou-Awad & Nasr, 1983a, 1983b & 1986; Zaher, 1984; Zaher & Abou-Awad, 1978, 1979, 1980a & 1980b; Zaher *et al.*, 1978; Osman & Abou-Taka, 1989; Abou-Awad & El-Sawi, 1993; Abou-Awad & El-Borolossy, 1995; El-Halawany *et al.*, 2001 and Abou Awad *et al.*, 2011. About 63 species were recorded. The presented work aimed to survey eriophyid mites on eight fruit trees and to collect the information in tables, related to their host plants. In addition, redescriptions of two species recorded for the first time in Egypt are presented. A checklist to the Egyptian eriophyoid mites are provided too.

MATERIAL AND METHODS

A survey was carried out in Qalubia Governorate included eight species of fruit trees, namely Guava (*Psidium guajava* L.), Christ thorn (*Ziziphus spina-christi* Willd), Date palm (*Phoenix dactylifera* L.), Apple (*Malus domestica* Borkh.), Sycamore fig (*Ficus sycomorus* L.), Olive (*Olea europaea* L.), Fig (*Ficus carica* L.) and Mulberry (*Morus alba* L.). Sampling was carried out irregularly from October 2011 to September 2012 including plant foliages, branches, flowers and buds. Samples were individually bagged in tightly-closed plastic bags and transported the same day to the Fruit Acarology Department, Plant Protection Research Institute

(PPRI), Agricultural Research Center (ARC) for mite extraction. A microscope with an attached drawing tube was used for examination and drawing the mite species *Tegolophus guavae* and *Aceria ziziphi* which were recorded for the first time in Egypt. The oil lens was used to examine the fetherclaw, microtubercles and male and female genitalia. The measurements are given in micrometer (μm) and GPS technique is used to identify located samples. The terminology and morphological characteristics used in this study are based on Lindquist (1996) and Amrine *et al.* (2003). All specimens were deposited in the Fruit Acarology Department, Plant Protection Research Institute collection, Agricultural Research Center.

More than 28 original scientific papers published on eriophyid mites from Egypt were collected from different libraries in Egyptian Universities and Research Centers. On the other side, the references collected from Egypt were confirmed by the Catalogue of the Eriophyoidea of the world (Version computer of Filemaker Pro 4.0. (De Lillo & Amrine, 2009) personal communication). All eriophyid species recorded in Egypt and their host plants are now up to date.

RESULTS AND DISCUSSION

Survey of eriophyid mites on eight fruit crops

Sixteen eriophyid mite species were collected from eight fruit trees species at Qalubia Governorate. The host plant and GPS are provided (Table 1).

Table 1: Results of survey of eriophyoid mites from Qalubia Governorate.

Classification	Scientific name	Host plant	GPS
Family: Diptilomiopidae Sub family: Diptilomiopinae	<i>Diptilomiopus ficus</i> Attiah, 1967	<i>Ficus carica</i> L., (Moraceae)	30°20'18.67"N 31°15'15.12"E
Sub family: Rhyncaphytoptinae	<i>Rhyncaphytoptus ficifoliae</i> Keifer, 1939a	<i>Ficus carica</i> L., (Moraceae)	30°20'18.67"N 31°15'15.12"E
Family: Eriophyidae Sub family: Eriophyinae Tribe: Aceriini	<i>Aceria ficus</i> (Cotté, 1920)	<i>Ficus carica</i> L., (Moraceae)	30°20'18.67"N 31°15'15.12"E
	<i>Aceria mori</i> (Keifer, 1939a)	<i>Morus alba</i> L., (Moraceae)	30°16'10.30"N 31°14'37.88" E
	<i>Aceria oleae</i> (Nalepa, 1900)	<i>Olea europaea</i> L., (Oleaceae)	30°18.21"N 31°12'28.04"E
	<i>Aceria olivi</i> (Zaher & Abou-Awad, 1979)	<i>Olea europaea</i> L., (Oleaceae)	30°18.21"N 31°12'28.04"E
	<i>Aceria sycamori</i> (Soliman & Abou-Awad, 1977)	<i>Ficus sycomorus</i> L., (Moraceae)	30°18'37.17"N 31°15'49.27"E
	<i>Aceria ziziphi</i> Mohanasundaram, 1990; New record	<i>Ziziphus spina-christi</i> Willd (Rhamnaceae)	30°15'50.46"N 31°14'51.85"E
Tribe: Eriophyini	<i>Eriophyes pyri</i> (Pagenstecher, 1857)	<i>Malus domestica</i> Borkh., (Rosaceae)	30°10'59.89"N 31°7'39.52"E
Sub family: Phyllocoptinae Tribe: Anthocoptini	<i>Tegolophus hassani</i> (Keifer, 1959)	<i>Olea europaea</i> L., (Oleaceae)	30°18.21"N 31°12'28.04"E
	<i>Tegolophus guavae</i> (Boczek, 1960); New record	<i>Psidium guajava</i> L. (Myrtaceae)	30°14'51.85"N 31°17'07.89"E
	<i>Tegolophus niloticus</i> Abou-Awad, 1984	<i>Ficus sycomorus</i> L., (Moraceae)	30°18'37.17"N 31°15'49.27"E
Tribe: Phyllocoptini	<i>Calepitrimerus baileyi</i> Keifer (1938b)	<i>Malus domestica</i> Borkh., (Rosaceae)	30°10'59.89"N 31°7'39.52"E
	<i>Epitrimerus pyri</i> (Nalepa, 1891)	<i>Malus domestica</i> Borkh., (Rosaceae)	30°10'59.89"N 31°7'39.52"E
Tribe: Tegenotini	<i>Oxycenus maxwelli</i> (Keifer, 1939a)	<i>Olea europaea</i> L., (Oleaceae)	30°18.21"N 31°12'28.04"E
Subfamily: Sierraphytoptinae Tribe: Mackiellini	<i>Mackiella phoenicis</i> Keifer, 1939a	<i>Phoenix dactylifera</i> L., (Arecaceae)	30°17'20.02"N 31°14'51.85"E

Re-descriptions of two newly recorded species

Two species *Tegolophus guavae* (Boczek) and *Aceria ziziphi* Mohanasundram were recorded on *Psidium guajava* and *Ziziphus spina-christi* for the first time in Egypt. The following are re-descriptions of them.

Tegolophus guavae (Boczek, 1960) (Fig. 1)

Tegonotus guavae Boczek, 1960: 11.

Tegolophus guavae (Boczek, 1960) Amrine & Stasny, 1996: 300.

Material examined: Qalubia; 6.VIII.2012, (Ashraf El-Halawany), *Psidium guajava* L., (10 ♀♀, 6 ♂♂) (30°14'57.94"N; 31°17'07.89"E).

FEMALE: Body fusiform, light yellowish in colour, 204 (180-225) long, 72 (60-80) wide; Gnathosoma 16 (15-17), projecting obliquely downwards, pedipalp coxal setae (*ep*) 2 (2-3), dorsal pedipalp genual setae (*d*) 4 (4-5), chelicerae 14.5 (13.5-15.5), oral stylets 14 (12-16). Prodorsal shield rounded shape in rear with 39.5 (35-46) long, 55.5 (46-70) wide; median line split near center of shield into two lines which do not reach anterior margin, surface of shield punctuated. Frontal lobe broad 5.5 (4.5-7) long. Dorsal tubercles ahead of near rear margin, 33 (32-40) apart, scapular setae (*sc*) 12.5 (10-16), tubercles (*sc*) 2.5 (2.5-3) near rear margin directed (*sc*) divergently backwards. Coxal area with short lines; included 10 (10-11) annuli, coxal setae presented, coxae punctuated, anterolateral setae on coxisternum I(*Ib*) 9.5 (8-12) apart, 12 (11-14) long, proximal setae on coxisternum I(*Ia*) 14 (10-15) apart, 6 (4.5-7) long, proximal setae on coxisternum II(*2a*) 24 (21-30) apart, 28 μ (22-35) long. Prosternal apodeme present. Legs with usual series of setae. Legs I 38 (36-40), femur 9 (7-13), basiventral femoral setae (*bv*) 9 (8-13); genu 6 (4.5-7), antaxial genual setae (*l''*) 25 (19-26); tibia 8 (7.5-9), paraxial tibial setae (*l'*) 5 (4.5-6), setae located at center; tarsus 5.5 (5-7.5); tarsal empodia simple 6(5-7), 4-rayed, tarsal solenidion 5.5 (5-7.5) long knobbed, dorsal setae (*ft''*) 13 (10-20) long, lateral setae (*ft'*) 16.5 (12-25) long. Legs II 36 (30-40) long, femur 9 (8-10) long, basiventral femoral setae (*bv*) 13 (12-16) long; genu 6 (5-7), antaxial genual setae (*l''*) 4.5 (4-6); tibia 6.5 (6-7.5); tarsus 7.5 (5-9) long, solenidia 8.5 (7-10) long, knobbed, empodia 7 (5.5-8) long, (*ft''*) 5 (4-6) long, (*ft'*) 23 (20-28) long. Opisthosoma the dorsal with 27 (26-28) annuli, smooth, ventrally with 64 (61-71) annuli, with round microtubercles. Setae *c*2 17 (13-21) long, on ventral annulus 9 (8-10) posterior to coxae; setae *d* 50 (45-60) long, on ventral annulus 25 (22-28), 38 (30-40) apart; setae *e* 11 (9-13) long, on ventral annulus 41 (36-44), 17.5 (14-21) apart; setae *f* 25 (22-25) long, on 6th ventral annulus from rear. Setae *h*1 absent. Caudal setae (*h*2) 63 (54-70) long; Female genitalia 15.5 (14-20) long, 22 (20-27) wide, coverflap with 12 (10-12) longitudinal ridges, proximal setae on coxisternum III (*3a*) 8 (7-10) long, 15(13-20) apart.

MALE: Body fusiform, light yellowish in colour 179 (165-200) long, 58 (50-68) wide; light yellow. Gnathosoma length 15 (15-17), projecting obliquely downwards, pedipalp coxal setae (*ep*) 2 (2-3), dorsal pedipalp genual setae (*d*) 4 (4-5), chelicerae 13 (13-14), oral stylets 12 (12-14). Prodorsal shield 41 (38-45), long, 52 (43-65) wide; frontal lobe broad 6.5 (5-8) long, scapular setae (*sc*) 12.5 (10-16), tubercles (*sc*) 2.5 (2.5-3) near rear margin directed (*sc*) divergently backwards. Coxal area with short lines; with 13 (12-14) annuli, and usual segments and setae present, coxae with irregular dashes. Legs with usual series of setae. Legs I 37 (30-40), femur 8 (7-11), setae (*bv*) 9 (8-10); genu 5 (5-6), setae (*l''*) 22 (19-23); tibia 8 (8-10), setae (*l'*) 5 (4-6); tarsus 6 (6-8); tarsal empodia 6 (5-7), 4-rayed, tarsal solenidion 6 (5-7) long knobbed, dorsal setae (*ft''*) 14(10-17) long, lateral setae (*ft'*) 14 (12-20) long. Legs II

33 (31–40) long, femur 8 (8–10) long, setae (*bv*) 13 (12–15) long; genu 5 (5–6), setae (*l''*) 4.5 (4–6); tibia 6.5 (6–7.5); tarsus 7 (5–8) long, solenidia 7 (7–9) long, knobbed, empodia 6.5 (6–7.5) long, (*ft''*) 5 (4–6) long, (*ft'*) 20 (18–23) long. Opisthosoma: dorsal side with 27 (26–31) annuli, ventrally with 58 (55–59) microtuberculate annuli. Setae *c2* 11 (10–13) long, on ventral annulus 10 (9–10); setae *d* 40 (38–45) long on ventral annulus 23 (22–27); setae *e* 13 (12–13) on ventral annulus 40 (39–46). Setae *f* 24 (23–26) on 6 (5–6) ventral annulus from rear. Caudal setae (*h2*) 60 (50–62) long. Male genitalia 12.5 (12–14) long, 14 (12–16) wide, proximal setae on coxisternum III (*3a*) 7.5 (7–8) long.

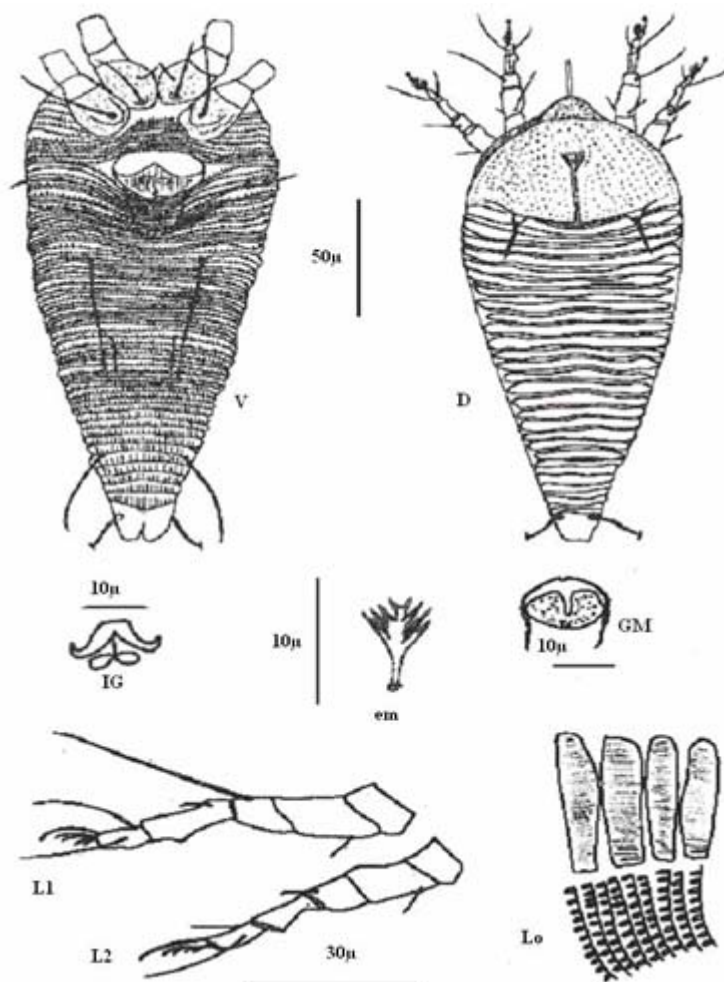


Fig. 1: *Tegolophus guavae* (Boczek, 1960) - D, dorsal view of mite; V, ventral view; IG, internal genitalia of female; em, empidium; GM, genital region male; L1, L2, legs I,II; Lo lateral opisthosoma.

Relation to host - Vagrant on lower and upper surface of leaves causing rust on leaves.

Aceria ziziphi (Mohanasundaram, 1990) (Fig. 2)

Aceria ziziphi Mohanasundaram, 1990

Material examined: Qalubia; 19.V.2012, (Ashraf EL-Halawany), *Ziziphus spinachristi* Willd., (7♀♀, 5♂♂) (30°15'50.46"N; 31°14'51.85"E).

FEMALE: Body worm-like, white to white yellowish in colour 215 (207–230) long, 50 (45–60) wide. Gnathosoma 22 (19–25), projecting evenly downwards, pedipalp

coxal setae (*ep*) 4 (3-5), dorsal pedipalp prodorsal shield rounded shape 25 (24-26) long, 34 (30-35) wide; median shield line present at curved and touching the admedians at the posterior end; the second submedians curved and genual setae (*d*) 3 (3-4), chelicerae 20 (17-22), oral stylets 10 (9-10). branched, basal half, admedians complete, sinuate, first submedian represented in anterior half of the shield, sides of shield with short lines and granular. Dorsal tubercles at shield margin, projecting setae backward; dorsal tubercles 23 (20-25) apart, scapular setae (*sc*) 26 (20-30), tubercles (*sc*) 2.5 (2-3). Coxal area with 6 annuli, usual segments and setae present, coxae punctuation, broadly joined first, anterolateral setae on coxisternum I (*Ib*) 8 (7-9) apart, 9 (8-10) long, proximal setae on coxisternum I (*Ia*) 8 (7-9) apart, 22 (19-25) long, proximal setae on coxisternum II (*2a*) 27 (25-28) apart, 30 μ (29-31) long. Legs with usual series of setae. Legs I 35 (33-40), femur 9 (7-10), basiventral femoral setae (*bv*) 11 (10-13); genu 6 (5-7), antaxial genual setae (*l''*) 27 (25-30); tibia 8 (7-8.5), paraxial tibial setae (*l'*) 5 (4-5), setae located at a basal one third; tarsus 6 (5-7); tarsal empodia simple 8 (7-9), 7-rayed, tarsal solenidion 9 (8-11) long slightly curved unknobbed, dorsal setae (*ft''*) 5 (4-5.5) long, lateral setae (*ft'*) 20 (19-23) long, tarsal seta (*u'*) 5 (4-5). Legs II 32 (27-35) long, femur 9 (7-10) long, basiventral femoral setae (*bv*) 10 (9-11) long; genu 5 (4.5-6), antaxial genual setae (*l''*) 9 (7-10); tibia 7 (6-7.5); tarsus 8 (7-8) long, solenidia 10 (9-12) long, unknobbed, empodia 8 (7-9) long, (*ft''*) 6 (5-7) long, (*ft'*) 24 (20-25) long. Opisthosoma with 65 (62-70) annuli, with round microtuberculate, microtubercles elongated in about 6 rings on tergites behind shield, rest of microtubercles dot-like last six sternites with microstriae. Setae *c2* 25 (22-28) long, 50 (47-60) apart, on ventral annulus 10 (10-11) posterior to coxae; setae *d* 70 (60-75) long, on ventral annulus 21 (21-23), 45 (40-50) apart; setae *e* 9 (8-10) long, on ventral annulus 37 (36-38), 25 (25-50) apart; setae *f* 27 (23-30) long, on 6th ventral annulus from rear. Accessory setae *h1* 4 (4-5), Caudal setae (*h2*) 95 (85-100) long; Female genitalia 15 (13-18) long, 19 (17-22) wide, coverflap with 12 (10-12) longitudinal ridges, proximal setae on coxisternum III (*3a*) 35 (32-40) long, 15 (11-17) apart.

MALE: Body worm-like, 165 (145-173) long, 46 (43-50) thick, white. Gnathosoma 20 (17-23), evenly down, pedipalp coxal setae (*ep*) 4 (3-5), dorsal pedipalp genual setae (*d*) 3 (3-4), chelicerae 19 (17-22), oral stylets 10 (9-10). Prodorsal shield rounded 27 (25-32) long, 32 (30-33) wide; median shield line present at basal half, admedians complete, sinuate, first submedian represented in anterior half of the shield, curved and touching the admedians at the posterior end; the second submedians curved and branched. Sides of shield with short lines and granular. Dorsal tubercles at shield margin, projecting setae backwards; dorsal tubercles 22 (19-23) apart, scapular setae (*sc*) 27 (25-28), tubercles (*sc*) 2.5 (2-3). Coxal area with 6 annuli, and usual segments and setae present coxae punctuation, broadly joined first, anterolateral setae on coxisternum I (*Ib*) 9(7-10) apart, 8 (7-10) long, proximal setae on coxisternum I (*Ia*) 8(7-8) apart, 18 (17-20) long, proximal setae on coxisternum II (*2a*) 20 (17-22) apart, 32 (27-35) long. Legs with usual series of setae. Legs I 32 (27-35), femur 8 (7-9), basiventral femoral setae (*bv*) 10 (8-12); genu 5 (4-5), antaxial genual setae (*l''*) 19 (18-20); tibia 7 (6-7), paraxial tibial setae (*l'*) 9 (8-10), setae located at a basal one third; tarsus 5 (5-6); tarsal empodia simple 7 (7-8), 7-rayed, tarsal solenidion 10 (9-12) long slightly curved unknobbed, dorsal setae (*ft''*) 5 (4-5) long, lateral setae (*ft'*) 20 (18-25) long, tarsal setae (*u'*) 5 (4-5). Legs II 27 (25-30) long, femur 8 (8-10) long, basiventral femoral setae (*bv*) 10 (10-11) long; genu 5 (4.5-5.5), antaxial genual setae (*l''*) 11 (11-12); tibia 7 (6-8); tarsus 5 (5-6) long, solenidia 10 (9-12) long, empodia 7 (6-8) long, (*ft''*) 7 (7-8) long, (*ft'*) 16 (15-17) long.

Opisthosoma with 62 (60-66) annuli, with round microtuberculate, microtubercles elongated in about 6 rings on tergites behind shield. Setae *c*2 20 (16-21) long, 40 (38-46) apart, on ventral annulus 10 (10-11) posterior to coxae; setae *d* 38 (31-42) long, on ventral annulus 20 (20-21); setae *e* 5 (5-6) long, on ventral annulus 35 (34-36); setae *f* 20 (16-24) long, on 6th ventral annulus from rear. Accessory setae *h*1 6 (5-7), Caudal setae (*h*2) 68 (65-70) long; male genitalia 11 (10-11.5) long, 14 (13-15) wide, setae (*3a*) 10 (9-12) long, 9.5 (9-11) apart.

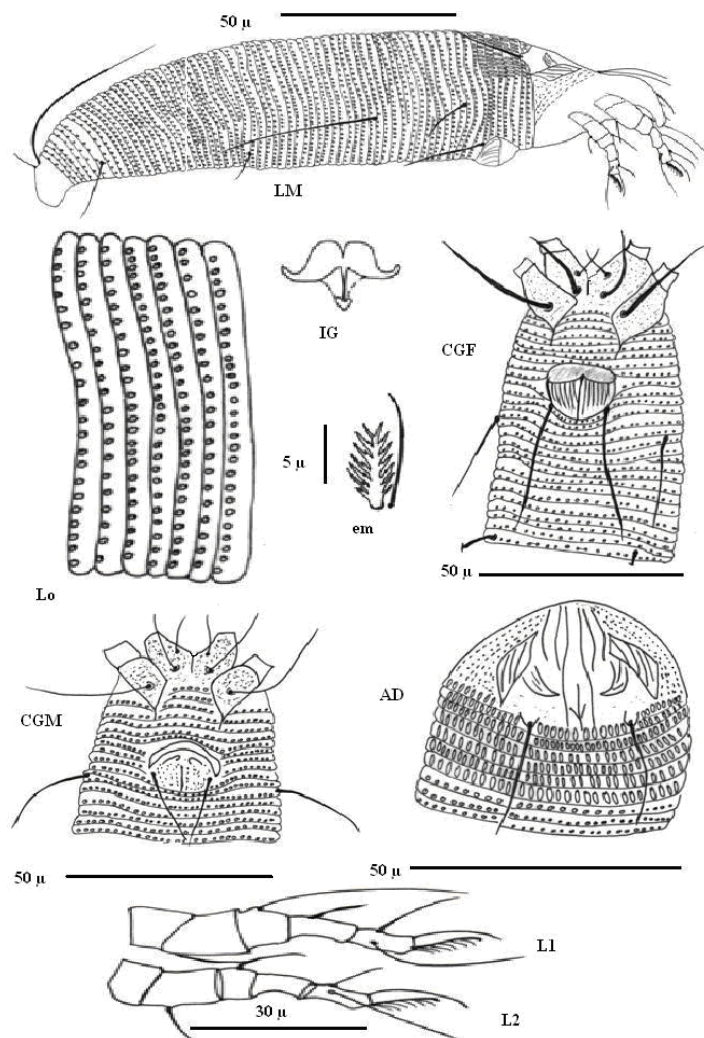


Fig. 2: *Aceria ziziphi* (Mohanasundaram, 1990) - LM, lateral view of mite; CGF, coxi-genital region of female; IG, internal genitalia of female; em, empidium; CGM, genital region of male; L1, L2, legs I,II; Lo lateral view of opisthosoma; AD, Anterior-dorsal view of mite.

Relation to host –This species was found in the tender apical shoots between hairs; causes no damage.

Checklist of Eriophyid mites

Although the diversity of Egyptian agro-ecosystem, the total number of eriophyid mites in Egypt does not exceed 1.5% of the recorded number in the world. The collected references on the eriophyid mites in Egypt recorded 65 species during the period from 1919 up to date. The collective work on eriophyid mites in Egypt was conducted in 1984 and 47 species have been recorded in this work. These species included all eriophyid mite species which recorded before 1984 except four species,

namely: *Aceria alfierii* Sayed, *Aceria arabicae* Meyer, *Cecidophyes violae* (Nalepa) and *Oxycenus maxwelli* (Keifer). On the other hand, 12 species have been recorded during the period after 1984 up to date. Table (1) includes 65 eriophyoid mite species in super family Eriophyoidea reported from Egypt. These species belong to three families, seven sub families, seven tribes and 27 genera. Eriophyidae is the largest family represented by 24 genera and 63 species. Family Phytoptidae contains two genera and two species. Diptilomiopidae contains one genus and one species.

The recorded species belong to the genera: *Abacarus* (2), *Aceria* (25), *Aculops* (3), *Aculus* (4), *Calepitrimerus* (1), *Cecidophyes* (1), *Colomerus* (2), *Dicruvasates* (1), *Diptilomiopus* (1), *Epitrimerus* (1), *Eriophyes* (3), *Heterotergum* (1), *Mackiella* (1), *Metaculus* (1), *Neooxycenus* (1), *Neotegonotus* (1), *Oxycenus* (2), *Oziella* (1), *Phyllocoptes* (2), *Phyllocopruta* (2), *Retracrus* (1), *Rhyncaphytoptus* (1), *Tegolophus* (3), *Tegonotus* (1), *Tetra* (1), *Vasates* (1) and *Vittacus* (1).

The eriophyid mite species, their host plant and references in Egypt were listed in table (2).

Table 2: List of eriophyoid mites recorded from Egypt up to date.

Classification	Scientific name	Host plant	Reference
Family: Diptilomiopidae Subfamily: Diptilomiopinae	<i>Diptilomiopus ficus</i> Attiah, 1967	<i>Ficus carica</i> L., (Moraceae)	Attiah, 1967
Subfamily: Rhyncaphytoptinae	<i>Rhyncaphytoptus ficifoliae</i> Keifer, 1939a	<i>Ficus carica</i> L., (Moraceae)	Zaher <i>et al.</i> , 1978
Family: Eriophyidae Subfamily: Cecidophyinae Tribe: Cecidophyini	<i>Cecidophyes violae</i> (Nalepa, 1902)	<i>Viola riviniana</i> Eichenb., (Violaceae)	Osman & Zohdy, 1976
	<i>Colomerus oculivitis</i> (Attiah, 1970)	<i>Vitis vinifera</i> L., (Vitaceae)	Attiah, 1970
	<i>Colomerus vitis</i> (Pagenstecher, 1857)	<i>Vitis vinifera</i> L., (Vitaceae)	Zaher <i>et al.</i> , 1978
Subfamily: Eriophyinae Tribe: Aceriini	<i>Aceria aegyptiacus</i> (Soliman & Abou-Awad, 1977)	<i>Allium sativum</i> , (Liliaceae, Alliaceae)	Soliman & Abou-Awad, 1977
	<i>Aceria aegypticus</i> (Rasmy & Abou-Awad, 1978)	<i>Marrubium alysson</i> L., (Lamiaceae)	Rasmy & Abou-Awad, 1978
	<i>Aceria alfierii</i> Sayed, 1946	<i>Pluchea dioscoridis</i> (L.), (Asteraceae)	Sayed, 1946b
	<i>Aceria arabicae</i> Meyer, 1990	<i>Acacia nilotica</i> (L.), (Fabaceae)	Sayed, 1946b
	<i>Aceria benghalensis</i> (Soliman & Abou-Awad, 1977)	<i>Ficus benghalensis</i> L., (Moraceae)	Soliman & Abou-Awad, 1977
	<i>Aceria cynodoniensis</i> (Sayed, 1946)	<i>Cynodon dactylon</i> (L.) Pers., (Poaceae)	Sayed, 1946a
	<i>Aceria daturae</i> (Soliman & Abou-Awad, 1977)	<i>Datura stramonium</i> L., (Solanaceae)	Soliman & Abou-Awad, 1977
	<i>Aceria dioicae</i> (Keifer, 1979)	<i>Tamarix dioica</i> Roxb., (Tamaricaceae)	Abou-Awad and El- Borolossy, 1995
	<i>Aceria dioscoridis</i> (Soliman & Abou-Awad, 1977)	<i>Pluchea dioscoridis</i> L., (Asteraceae)	Soliman & Abou-Awad, 1977
	<i>Aceria eriobotryae</i> (Keifer, 1938a)	<i>Eriobotrya japonica</i> (Thunb.) Lindl., (Rosaceae)	Zaher <i>et al.</i> , 1978
	<i>Aceria ficus</i> (Cotté, 1920)	<i>Ficus carica</i> L., (Moraceae)	Hassan, 1934
	<i>Aceria imperata</i> (Zaher & Abou-Awad, 1978)	<i>Imperata cylindrica</i> (L.) Beauv., (Poaceae)	Zaher & Abou-Awad, 1978
	<i>Aceria kenya</i> (Keifer, 1966)	<i>Mangifera indica</i> L., (Anacardiaceae)	Zaher, 1984
	<i>Aceria lycopersici</i> (Wolffenstein, 1879)	<i>Solanum lycopersicum</i> L. (Solanaceae)	Hassan, 1934

Table (2) (continued)

Classification	Scientific name	Host plant	Reference
	<i>Aceria mangiferae</i> (Sayed, 1946)	<i>Mangifera indica</i> L., (Anacardiaceae)	Sayed, 1946a
	<i>Aceria melongena</i> (Zaher & Abou-Awad, 1978)	<i>Solanum melongena</i> L., (Solanaceae)	Zaher & Abou-Awad, 1978
	<i>Aceria mori</i> (Keifer, 1939a)	<i>Morus alba</i> L., (Moraceae)	Zaher & Abou-Awad, 1980a.
	<i>Aceria neocynarae</i> (Keifer, 1939b)	<i>Cynara scolymus</i> L., (Asteraceae)	Zaher & Abou-Awad, 1980a
	<i>Aceria nilotica</i> (Abou-Awad & Nasr, 1983a)	<i>Cynodon dactylon</i> (L.) Pers., (Poaceae)	Abou-Awad & Nasr, 1983a
	<i>Aceria oleae</i> (Nalepa, 1900)	<i>Olea europaea</i> L., (Oleaceae)	Zaher & Abou-Awad, 1980b
	<i>Aceria olivi</i> (Zaher & Abou-Awad, 1979)	<i>Olea europaea</i> L., (Oleaceae)	Zaher & Abou-Awad, 1979
	<i>Aceria sheldoni</i> (Ewing, 1937)	<i>Citrus</i> spp., (Rutaceae)	Zaher <i>et al.</i> , 1978
	<i>Aceria sycamori</i> (Soliman & Abou-Awad, 1977)	<i>Ficus sycomorus</i> L., (Moraceae)	Soliman & Abou-Awad, 1977
	<i>Aceria tulipae</i> (Keifer, 1938a)	<i>Allium sativum</i> L., (Liliaceae, Alliaceae)	Zaher <i>et al.</i> , 1978
	<i>Aceria ziziphi</i> Mohanasundaram, 1990	<i>Ziziphus spina-christi</i> Willd (Rhamnaceae)	New record
Tribe: Eriophyini	<i>Eriophyes acanthus</i> Osman & Abo-Taka, 1989	<i>Eranthemum pulchellum</i> Andr., (Acanthaceae)	Osman & Abo-Taka, 1989
	<i>Eriophyes nalepi</i> (Zaher & Abou-Awad, 1978)	<i>Pyrus communis</i> L., (Rosaceae)	Zaher & Abou-Awad, 1978
	<i>Eriophyes pyri</i> (Pagenstecher, 1857)	<i>Pyrus communis</i> L., (Rosaceae)	Hassan, 1934
Subfamily: Phyllocoptinae Tribe: Anthocoptini	<i>Abacarus cynodonsis</i> Abou-Awad & Nasr, 1983a	<i>Elymus repens</i> (L.) (Poaceae, Cyperaceae)	Abou-Awad & Nasr, 1983a
	<i>Abacarus hystrix</i> (Nalepa, 1896)	<i>Elymus repens</i> (L.) (Poaceae, Cyperaceae)	Zaher, 1984
	<i>Aculops acaciae</i> Abou-Awad & Elsawi, 1993	<i>Acacia nilotica</i> (L.), (Fabaceae)	Abou-Awad & Elsawi, 1993
	<i>Aculops lycopersici</i> (Tryon, 1917)	<i>Solanum lycopersicum</i> L. (Solanaceae)	Zaher <i>et al.</i> , 1978
	<i>Aculops nilotica</i> Abou-Awad, 1979a	<i>Mentha spicata</i> L., (Lamiaceae)	Abou-Awad, 1979a
	<i>Aculus fockeui</i> (Nalepa & Trouessart, 1891)	<i>Prunus domestica</i> L., (Rosaceae)	Zaher <i>et al.</i> , 1978
	<i>Aculus malus</i> (Zaher & Abou-Awad, 1979)	<i>Malus domestica</i> Borkh., (Rosaceae)	Zaher & Abou-Awad, 1979
	<i>Aculus schlehtendali</i> (Nalepa, 1890)	<i>Malus domestica</i> Borkh., (Rosaceae)	Zaher & Abou-Awad, 1980a

Table (2) (continued)

Classification	Scientific name	Host plant	Reference
	<i>Aculus zaheri</i> (Abou-Awad, 1979a)	<i>Solanum lycopersicum</i> L., (Solanaceae)	Abou-Awad, 1979a
	<i>Heterotergum flacourtiiae</i> Abou-Awad & Nasr, 1983b	<i>Flacourtia indica</i> Merr., (Flacourtiaceae)	Abou-Awad & Nasr, 1983b
	<i>Metaculus mangiferae</i> (Attiah, 1955)	<i>Mangifera indica</i> L., (Anacardiaceae)	Attiah, 1955
	<i>Neoxyencus plucheae</i> Abou-Awad, 1981	<i>Pluchea dioscoridis</i> L., (Asteraceae)	Abou-Awad, 1981
	<i>Tegolophus hassani</i> (Keifer, 1959)	<i>Olea europaea</i> L., (Oleaceae)	Hassan, 1934
	<i>Tegolophus guavae</i> (Boczek, 1960)	<i>Psidium guajava</i> L., (Myrtaceae)	New record.
	<i>Tegolophus niloticus</i> Abou-Awad, 1984	<i>Ficus sycomorus</i> L., (Moraceae)	Abou-Awad, 1984
	<i>Tetra acaciae</i> Abou-Awad & Elsawi, 1993	<i>Acacia nilotica</i> (L.), (Fabaceae)	Abou-Awad & Elsawi, 1993
	<i>Vittacus plucheae</i> Abou-Awad & Nasr, 1986	<i>Pluchea dioscoridis</i> L., (Asteraceae)	Abou-Awad & Nasr, 1986
Tribe: Phyllocoptini	<i>Calepitrimerus baileyi</i> Keifer (1938b)	<i>Malus domestica</i> Borkh., (Rosaceae)	Abou-Awad <i>et al.</i> , 2011
	<i>Dicruvasates tamaricis</i> Abou-Awad & El-Borolossy, 1995	<i>Tamarix nilotica</i> (Ehrenb.) Bung., (Tamaricaceae)	Abou-Awad & El-Borolossy, 1995
	<i>Epitrimerus pyri</i> (Nalepa, 1891)	<i>Pyrus communis</i> L., (Rosaceae)	Zaher, 1984
	<i>Phyllocoptes balanites</i> Soliman & Abou-Awad, 1978	<i>Balanites aegyptiaca</i> (L.), (Balanitaceae)	Soliman & Abou-Awad, 1978
	<i>Phyllocoptes pruni</i> Soliman & Abou-Awad, 1978	<i>Prunus domestica</i> L., (Rosaceae)	Soliman & Abou-Awad, 1978
	<i>Phyllocoptruta citri</i> Soliman & Abou-Awad, 1978	<i>Citrus</i> sp., (Rutaceae)	Soliman & Abou-Awad, 1978
	<i>Phyllocoptruta oleivora</i> (Ashmead, 1879)	<i>Citrus limon</i> (L.) Burm., (Rutaceae)	Zaher, 1984
	<i>Vasates aegyptiacus</i> Abou-Awad, 1979b	<i>Mangifera indica</i> L., (Anacardiaceae)	Abou-Awad, 1979b
Tribe: Tegenotini	<i>Oxyencus maxwelli</i> (Keifer, 1939a)	<i>Olea europaea</i> L., (Oleaceae)	Attiah, 1970
	<i>Oxyencus niloticus</i> Zaher & Abou-Awad, 1979	<i>Olea europaea</i> L., (Oleaceae)	Zaher & Abou-Awad, 1979
	<i>Neotegenotus sycamori</i> Abou-Awad, 1984	<i>Ficus sycamorus</i> L., (Moraceae)	Abou-Awad, 1984
	<i>Tegenotus mangiferae</i> (Keifer, 1946)	<i>Mangifera indica</i> L., (Anacardiaceae)	Zaher, 1984
Family: Phytoptidae Subfamily: Phytoptinae	<i>Oziella niloticus</i> (Abou-Awad, 1981)	<i>Imperata cylindrica</i> (L.), (Poaceae)	Abou-Awad, 1981
Subfamily: Sierraphytoptinae Tribe: Mackiellini	<i>Mackiella phoenicis</i> Keifer, 1939a	<i>Phoenix dactylifera</i> L., (Arecaceae)	El-Halawany <i>et al.</i> , 2001
	<i>Retracrus johnstoni</i> Keifer, 1965	<i>Phoenix dactylifera</i> L., (Arecaceae)	El-Halawany <i>et al.</i> , 2001

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ARABIC SUMMARY

حصر الأكاروسات الدودية على بعض أشجار الفاكهة ، مع إعادة وصف نوعين تم تسجيلهما لأول مرة وقائمة الأكاروسات الدودية المسجلة في مصر (Acari: Eriophyoidea)

أشرف سعيد حجاج الحلواني

قسم بحوث أكاروس الفاكهة- معهد بحوث وقاية النباتات- مركز البحوث الزراعية- الدقي - الجيزة- مصر

تم جمع 16 نوعاً من الحلم الدودي تعيش على ثمانية أنواع من أشجار الفاكهة من بينها نوعان تم تسجيلهما لأول مرة في مصر وهما (*Tegolophus guavae* (Boczek, 1960) الذي يسبب الصدأ على أوراق الجوافة ، والنوع *Aceria ziziphi* Mohanasundaram, 1990 المنتشر على أزهار أشجار السدر. تم إعادة وصف ورسم عينات محلية من هذين النوعين. وبناءً على المراجع المنشورة سابقاً تم حصر 65 نوعاً من الحلم الدودي التابعة لفرقة Eriophyoidea ، وهذه الأنواع تنتمي إلى ثلاث فصائل وسبع تحت فصائل يتبعها 27 جنساً ، وتم عمل قائمة مرجعية لهذه الأنواع.