

## A New Genus and New Species of Acarid Mites (Acari: Acaridae) from Soil Under Pomegranate Trees, at Assiut, Upper Egypt

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### ABSTRACT

A new genus (*Egyptglyphus* gen. nov.) and new species (*Egyptglyphus oconnori* sp. nov.) is described from hypopial nymphs (heteromorphic deutonymphs), collected from soil under pomegranate trees, Assiut Governorate, Egypt. Holotype deutonymph and seven paratype deutonymphs are deposited in the Acari collection of Plant Protection Department, Faculty of Agriculture, Assiut University, Assiut Governorate, Egypt. The characterization and description of the new genus and species are given.

**Key words:** Acarina; *Egyptglyphus*; taxonomy; description; deutonymph; Egypt.

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### INTRODUCTION

The acaroids mites are economically and veterinary important mite pests exploiting a wide range of patchy habitats. They can be found in nests of vertebrates (mammals and birds) and invertebrates (ants, termites, beetles, wasps and bees), decomposing organic matter (animal manure and dung-hills, various plant materials), a few species are aquatic or parasitic on gills of fresh-water crabs. While, others are serious pests of stored products, or as a common component of house dust mites. Some species belonging to the genera *Acarus* Linnaeus; *Mycetoglyphus* Oudemans; *Tyrophagus* Oudemans; *Rhizoglyphus* Claparède and *Caloglyphus* Berlese (= *Sancassania* Oudemans) are pests on subterranean parts and young leaves of various crops and are serious agricultural pests causing injuries to plants directly by feeding or indirectly by transmitting various disease agents (Diaz *et al.*, 2000; Klimov and O'Connor, 2003; Fan and Zhang, 2004, 2007; Kasuga and Amano, 2006; Rojas and Klimov, 2007; Klimov and Tolstikov, 2011). Others are constantly present in soil environment, use soil, arthropods and small mammals to disperse to patchy habitats. Dispersal between habitat patches is also affected by phoretic association between the specialized deutonymphs or even adults. Some species of the genera *Tyrophagus*, *Rhizoglyphus*, *Schwiebea* and *Sancassania* are common in both soil and patchy habitats. Most non-parasitic species had been described from either adults or dispersing deutonymphs, but some others had been described from both adults and deutonymphs (Fashing, 1974; Fain and Philips, 1978; Klimov, 2000). Many species of the family Acaridae were recorded in Upper Egypt by Eraky (1993, 1994, 1997, 1998, 1999a&b, 2000); Eraky and Shoker (1993) and Eraky and Osman (2008). The study described a new genus and new species that showed sufficient dissimilarity with other described genera of the family Acaridae to be classified as a separate one.

### MATERIALS AND METHODS

Mites were collected from soil under pomegranate at Assiut governorate, Upper Egypt. More than ten similar individuals of acarid deutonymphs (heteromorphic deutonymphs) were chosen. The collected deutonymphs were cleared up in lactic acid, mounted in Hoyer's medium on glass slides, dried in an oven at 50-55°C, then examined under phase contrast (Optika-Vision-lite\_ENG-rev01, Italy) research microscope, provided with camera and system of calibration of micrometric slide, a drawing tube was also used when necessary. The examination of the collected deutonymphs showed some interesting morphological characteristics which did not appear in the described genera of the family Acaridae. Measurements are given in micrometers ( $\mu\text{m}$ ), each measurement shows the average for a number of individuals, followed (in parentheses) by a respective range. The deutonymph of the new genera and species was described and illustrated. Nomenclature by Giffiths *et al.*, 1990 was followed for idiosomal setae and Grandjean, 1939 for legs chaetotaxy. Holotype deutonymph and five paratype deutonymphs were measured for gnathosoma, idiosoma and idiosomal chaetotaxy; holotype deutonymph was measured for legs and legs chaetotaxy.

#### *Egyptglyphus* gen. nov.

**Diagnosis: (Hypopus).** Gnathosoma elongate peculiar in shape, palps long, divided medially, palpal setae situated in the middle of palps, also for infracapitular setae. Idiosomal setae short, simple, except *h2*, approximately long. Dorsum and internal parts of coxal fields I, II, III punctuate. Venter well-developed, but with unusual course of apodemes and ornamentation on coxal fields. Solenidia of legs I-IV have been modified or replaced by thin, whip-like setae (short or long), especially solenidia  $\omega$  and  $\varphi$  on both tarsi I and II.

**Type species:** *Egyptglyphus oconnori* sp. nov.

**Remarks:** the new genus is mostly closed to the genera: *Caloglyphus* Berlese; *Naiadacarus* Fashing and *Mycetosancassania* Klimov, but it differs from them by the shape of gnathosoma, propodosoma and the course of apodemes, in addition to the structure and chaetotaxy of legs I-IV, especially solenidia on tarsi of both legs I and II, distinguished the new genus also from other described taxa.

***Egyptglyphus oconnori* sp. nov. Description:**

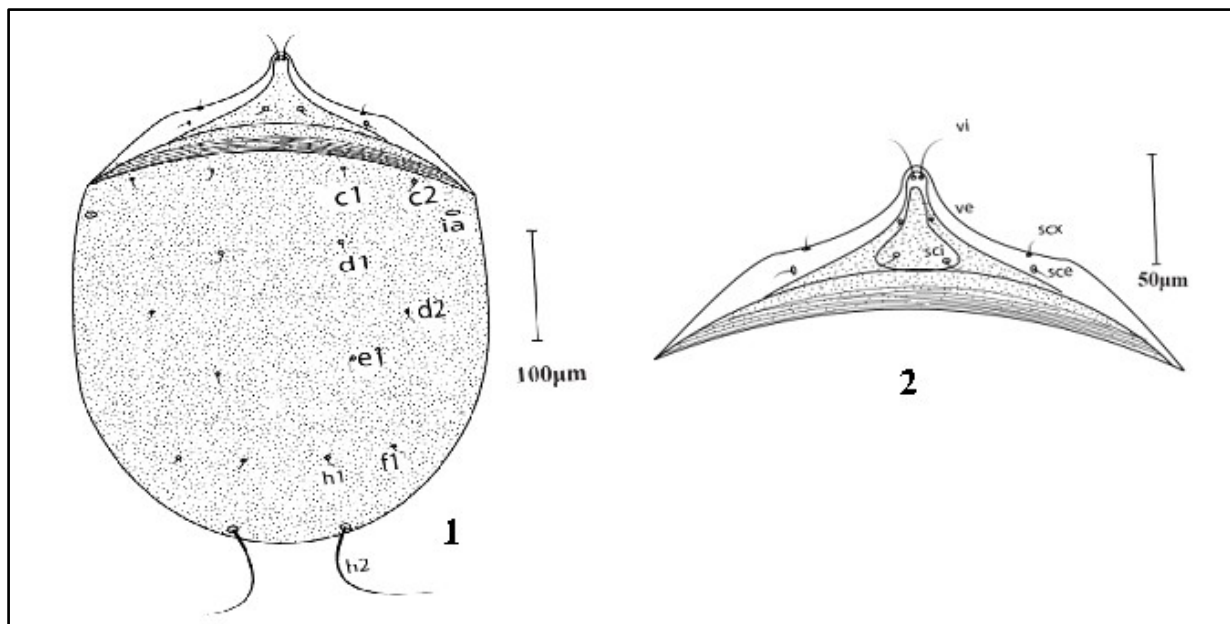
**(Deutonymph)**, Gnathosoma (Fig. 3).

Infracapitulum of gnathosoma oblong; 30 (28–32) long, and 16 (14–18) wide; palps 19 (18–20) long, and 6 (5–7) wide, well-separated off, palps divided in the middle into two equal portions; apical palpal solenidia ( $\omega$ ) 56 (55–57) setiform, stout; papal supracoxal setae (*elcp*) 17 (16–18), filiform; infracapitular setae (*m*) 11 (10–12).

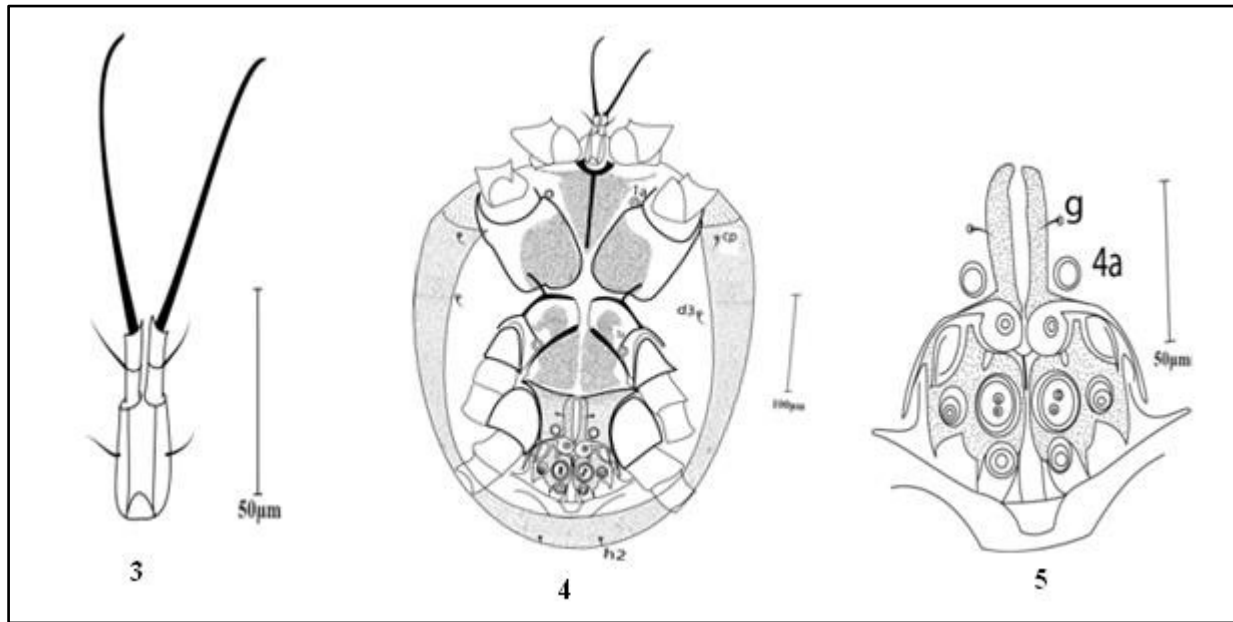
**Dorsum:** (Figs. 1, 2). Body broadly ovoid, propodosoma and hysterosoma each covered with heavily punctuate sclerite. Idiosoma 413 (409–417) long, and 310 (305–315) wide. Propodosoma elongated medially, with lateral sides gradually narrowed to apex; posterior and lateral margins of propodosoma slightly concaved, however, remained triangular in outline; obtuse bell-like structure with narrowed apex located posterior to propodosomal apex. Propodosomal length: 63 (60–66) long, and 242 (239–245) wide. Internal vertical setae *vi* 23 (20–26), filiform, situated on propodosomal apex; external vertical setae *ve* 3 (2–4), filiform; internal scapular setae, *sci* 9 (8–10), and external scapular setae *sce* 15 (14–16), both filiform, internal scapular setae situated in the middle, anterior to external ones; supracoxal setae of legs I *scx* 6 (5–7), filiform. Dorsosejugal

region well-developed, broad, ornamented with transversal lines on posterior portion and punctuate on anterior one. Hysterosoma with 11 pairs of simple, filiform setae, approximately at the same length, ranged for 10–12, except *h2* 118 (116–120). A pair of small ovoid cupules *ia* situated laterally between setae *c2* and *cp*.

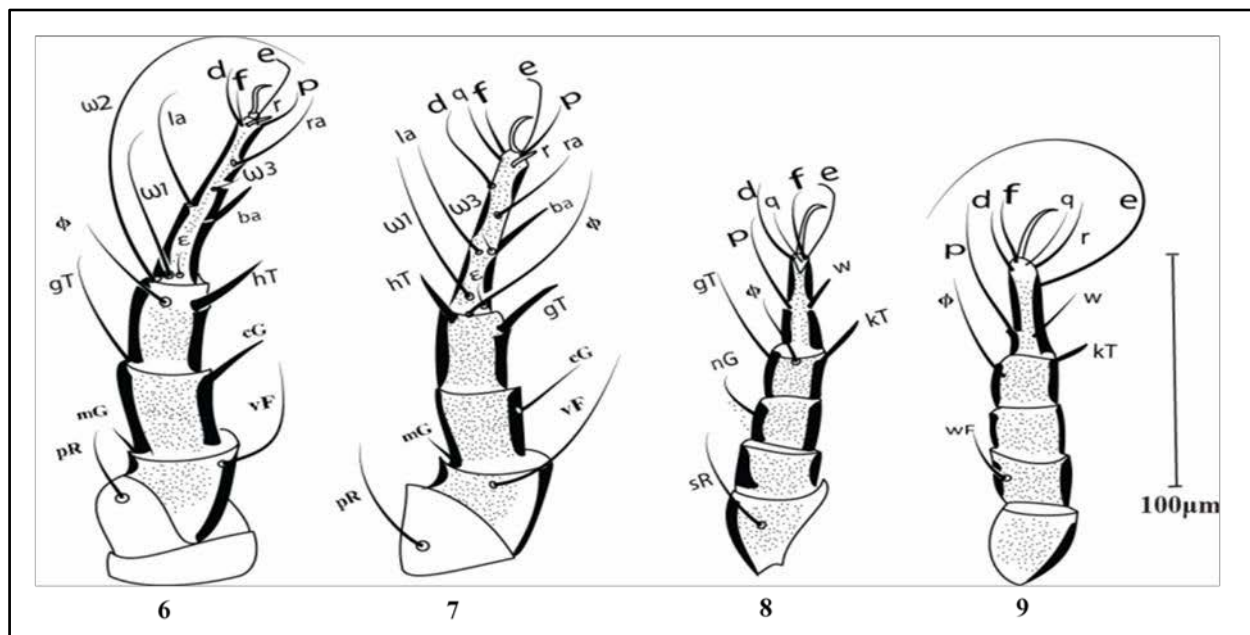
**Venter:** (Fig. 4). Internal portions of coxal fields I, II, III punctuate, coxal fields IV completely punctuate. Apodemes thin, but well-developed. Anterior apodemes of coxal field I broad, fused medially forming sternum, the later short, ending free. Anterior and posterior apodemes of coxal fields II long, fused medially. Anterior and posterior apodemes of coxal fields III broad, fused with each other in the middle; well-developed lines, connected between middle of anterior apodemes III to posterior portions of coxal fields II. Anterior and posterior apodemes of coxal fields IV thin, but well-determined. Posterior sternal apodeme missing, however coxal fields II, III, IV closed, and coxal fields I open. Dorsal of hysterosomal sclerite separated from venter by a distinct suture on each side. Lateral and posterior margins of venter punctuate. Coxal fields I, III and IV with discs each (*1a*, *3a* and *4a*) slightly larger on coxal fields IV; genital setae (*g*) filiform, situated laterally of genital opening, above *4a*. Adhering plate (Fig. 5), approximately large 58 (54–62) long, and 84 (80–88) wide, entirely filling a space between legs IV, removed from the posterior margin of the body. Anterior suckers well-developed, comparatively large, and larger than lateral and posterior ones. Median suckers rounded, large; consisting of large sclerotized margins surrounded a pair of well-developed small disks. Adhering plate punctuated in internal areas between suckers.



Figs. (1-2): *Egyptglyphus oconnori* sp. nov. (Deutonymph): 1. Dorsum of idiosoma; 2. Propodosoma.



Figs. (3-5): *Egyptglyphus oconnori* sp. nov. (Deutonymph): 3. Gnathosoma; 4. Venter of idiosoma; 5. Adhering plate.



Figs. (6-9): *Egyptglyphus oconnori* sp. nov. (Deutonymph): 6. Leg I; 7. Leg II; 8. Leg III; 9. Leg IV.

**Legs:** (Figs. 6–9). Legs elongate segments free; all leg segments punctuate. Length of legs: I, 220; II, 182; III, 157; IV 77; tarsi: I, 88; II, 71; III, 43; IV 47. All legs with hooked empodial claws arising from tarsal apices, longer on legs IV. Trochanter I and II with setae *pR* 32 and 47, respectively, setae *sR* on legs III 52, filiform. Leg chaetotaxy—femora: 1-1-0-1; setae *vF* I 60, II 107; *wF* IV 32, filiform. Genua: 2-2-1-0; setae *cG* I 28, spiniform, II 33, filiform; setae *mG* I 21, II 17; setae *nG* IV 17, filiform. Tibiae: 2-2-2-1; setae *gTI* 61, filiform, II 36, spine-like; III 44, filiform; *hT* I 34, II 31, spine-like; *kT* III 33, IV 11, both spine-like. All setae on tarsi I-IV filiform, except *r* on legs I, II, bacilliform; setae *ba* and *w* on legs III, spine-like. Length of tarsal setae:

tarsus I, *la* 56, *d* 26, *f* 20, *e* 34, *r* 9, *p* 17, *ra* 48, *ba* 31; tarsus II, *la* 54, *d* 27, *f* 24, *e* 33, *r* 5, *ra* 45, *q* 34, *ba* 34; tarsus III, *p* 62, *d* 36, *q* 29, *f* 14, *e* 27, *w* 8. tarsus IV, *p* 38, *f* 18, *q* 27, *r* 30, *w* 31, *e* 100, *d* 39. Tibiotarsal group of solenidia have been modified or replaced by a thin whip-like setae (short or long) instead of normal solenidia, especially solenidia  $\omega$  and  $\phi$  on legs I and II. Solenidia on legs: I,  $\omega$ 1 58,  $\omega$ 2 142,  $\omega$ 3 12,  $\varepsilon$  8 on tarsi,  $\phi$  37 on tibiae,  $\sigma$  on genua absent; II,  $\omega$ 1 51,  $\omega$ 3 8,  $\varepsilon$  8,  $\phi$  63;  $\omega$ 2 located more basal and posterior to  $\omega$ 1,  $\varepsilon$  situated adjacent to  $\omega$ 1,  $\omega$ 3 approximately in middle of tarsus I; on tarsi II,  $\omega$ 1 situated more lateral and anterior to  $\varepsilon$ ,  $\omega$ 3 situated between setae *ra* and *ba*, adjacent to setae *la*; on leg III,  $\phi$  26; on leg IV,  $\phi$  48

**Type specimens:** Holotype deutonymph and seven paratype deutonymphs collected from soil under pomegranate trees, Abou-Tig city (27°02'38.3" N, 31°19'23.7" E), Assiut Governorate, Egypt, November 01, 2019, collected by A. S. Abdelgayed, are deposited in the Acari collection of Plant Protection Department, Faculty of Agriculture, Assiut University, Assiut governorate, Egypt.

**Etymology:** the name "*oconnori*" is given in honor of B. M. O'Connor, Professor of Acarology, University of Michigan, USA, for his contribution in such group of mites.

**Remarks:** According to the generic description, the new species cannot be similar to any known species. By the shape of its gnathosoma, propodosoma, the course of apodemes and the ornamentation on coxal fields I-IV, in addition to the structure and chaetotaxy of legs I-IV, especially solenidia on tarsi I and II, distinguished the new genus also from other described taxa.

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