Stigmaeus kermaniensis, a new species of the genus Stigmaeus Koch (Acari: Stigmaeidae) from Iran

Mohammad Changizi¹, Mohammad Bagheri¹* & Mahdieh Asadi²

¹ Department of Plant Protection, Faculty of Agriculture, University of Maragheh, Maragheh, Iran; E-mails: m.changizi55@yahoo.com; mbagheri20022002@yahoo.com
² Department of Plant Protection, College of Agriculture, Shahid Bahonar University of Kerman, Kerman, Iran; E-mail: asadi.mahd@yahoo.com

* Corresponding author

Abstract

A new species of the genus Stigmaeus Koch (Acari: Stigmaeidae), S. kermaniensis sp. nov, is described and illustrated. The new species was collected from soil under pistachio orchards, Pistacia vera (Linnaeus), in Kerman province of Iran.

Key words: Acari, Stigmaeidae, Stigmaeus, new species, Iran.

Introduction

Mites of the family Stigmaeidae (Acari: Stigmaeidae) are cosmopolitan and consist of predators, ectoparasites of dipterans and pollen feeders. These mites occur in many habitats and form an important component of soil, plant and litter acarofauna (Summers 1966; Ueckermann & Meyer 1987; Walter et al. 2009). The genus Stigmaeus Koch is one of the most important genera of this family and is represented by 13 species in Iran, namely: S. elongatus Berlese, 1886; S. longipilis (Canestrini, 1889); S. sphagneti (Hull, 1918); S. unicus Kuznetzov, 1977; S. pilatus Kuznetzov, 1978; S. candidus Fan & Li, 1993; S. aivandis Khanjani & Ueckermann, 2002; S. malekii Haddad et al., 2006; S. shabestariensis Haddad, Lotfollahi & Akbari, 2010; S. shendabadiensis Haddad, Akbari & Lotfollahi, 2010; S. boshroylehensis Khanjani et al., 2010; S. marandiensis Bagheri & Ueckermann, 2011; S. uckermanni Pahlavan Yali, Khanjani & Razmjou, 2011; (Khanjani & Ueckermann 2002; Faraji & Ueckermann 2006; Haddad Irani-Nejad et al. 2006, 2010a, b; Khanjani et al. 2010; Akbari et al. 2010; Bagheri et al. 2011; Pahlavan Yali et al. 2011). In this paper a new species is described as S. kermaniensis sp. nov.

Materials and methods

Mites were extracted from soil using a Berlese funnel. Collected specimens were cleared in Nesbitt’s fluid and mounted in Hoyer’s Medium. The gnathosoma was measured from the base of the chelicerae to the tip of palptibial claw, the length of idiosoma from the suture between gnathosoma and idiosoma to the posterior margin
of idiosoma, the width of idiosoma at the broadest part of the idiosoma and setae were measured from their insertion to their tips; distances between setae were measured between their insertion. Dorsal setal and leg setal designations follow Kethley (1990) and Grandjean (1944), respectively. All measurements are given in micrometers (μm).

Results

Family Stigaeidae Oudemans, 1931
Type genus: Stigmaeus Koch, 1836
Genus: Stigmaeus Koch, 1836
Type species: Stigmaeus cruentus Koch, 1836

Diagnosis

Body narrowly to broadly oval, members of the genus Stigmaeus are recognized by having free chelicerae and 10–16 dorsal idiosomal shields (5 in S. elangatus) mostly dimpled or reticulated, prodorsum bears 4 pairs of setae on single or a large median and a pair of lateral shields; eyes present or absent, post-ocular bodies (pob) present or absent. Dorsal hysterosomal area without distinct shields or with 1−2 shields surrounded by 3−5 pairs of platelets, median shield with 2−3 pairs of setae; humeral shields large or small in ventrolateral position. Suranal shield entire or divided medially, with two or three pairs of setae (h₁, h₂ and h₃), h₃ absent or present; coxisternal shields smooth or reticulate; opisthosomal venter with 3−5 pairs of aggenital setae (ag₁-ag₅); anogenital area with 1−3 pairs setae (g₁-g₃) and three pairs pseudanal setae (ps₁-ps₃). Palptibial claw subequal to or slightly shorter than palptarsus; accessory claw seta-like or spine-like; terminal eupathidia on palptarsus basally fused and split into three long prongs; counts of setae and solenidia from palptrochanter to palptarsus: 0, 3, 2, 2 + 1 claw + 1 accessory claw, 4 + 1ω + 1 subterminal spine-like eupathidium + 3 basally fused eupathidia.

Stigmaeus kermaniensis Changizi & Bagheri sp. nov. (Figs. 1−9)

Female (n= 2)

Dimensions of holotype (measurements of paratype in parenthesis): length of body (including gnathosoma) 513 (510), (excluding gnathosoma) 420 (417), width 181 (170).

Dorsum (Fig. 1): Prodorsum without shield; setae sce, d₂, e₂ and f₁ on small platelets and setae h₁, h₂ and h₃ on suranal shield. Eyes and postocular bodies absent; setae ve, sce, d₂, f₁, and c₂ longer than other dorsal body setae. Dimensions of dorsal setae as follows: vi 22(21); ve 66 (64); sci 28 (26); sce 68 (65); c₁ 28(27); c₂ (70); d₁ 26 (25); d₂ 40(38); e₁ 21 (25); e₂ 22 (21); f₁ 52 (51); h₁ 29 (28); h₂ 39 (38); h₃ 27 (26). Distances between dorsal setae: vi-vi 31 (34); ve-ve 43 (44); vi-ve 26 (30); ve-sci 46 (42); sci-sci 56 (52); sce-sce 128 (129); c₁-c₁ 51 (50); c₁-c₂ 51 (50); c₂-c₂ 163 (165); c₁-d₁ 70 (68); c₁-d₂ 48 (50); c₂-d₁ 40 (41); d₁-d₁ 45 (44); d₁-d₂ 5 1 (52); d₂-d₂ 117 (119); d₁-e₁ 48 (47); d₂-e₂ 100 (102); e₁-e₁ 50 (52); e₁-e₂ 27 (30); e₁-f₁ 32 (33); f₁-f₁ 67 (69); f₁-h₁ 45 (57); f₁-h₂ 42 (44); f₁-h₃ 43 (44); h₁-h₁ 30 (30); h₁-h₂ 16(15); h₂-
$h_2 \, 64 \, (63)$; $h_2-h_3 \, 11 \, (12)$; $h_3-h_3 \, 72 \, (73)$; ratios: $vi/vi \, 0.7$; $c_1/c_1 \, 0.54$; $d_1/d_1 \, 0.57$; $e_1/e_1 \, 0.42$; $f_1/f_1 \, 0.77$; $h_1/h_1 \, 1 \, 0.96$; $h_2/h_2 \, 0.6$; $h_3/h_3 \, 0.37$.

_Venter_ (Fig. 2): Coxisternal shields smooth and divided. Anogenital area (Fig. 3) with four pairs of aggenital setae ($ag_1-ag_4$), three pairs of genital setae ($g_1-g_3$) and three pairs of anal setae ($p_1-p_3$); length of ventral setae as follows: $1a \, 28(26); \, 3a \, 32(30); \, 4a \, 20(20); \, g_1 \, 10(10); \, g_2 \, 12(10); \, g_3 \, 24(25); \, ag_1 \, 22(18); \, ag_2 \, 20(21); \, ag_3 \, 22(22); \, ag_4 \, 34(32); \, p_1 \, 41(42); \, p_2 \, 34(35); \, p_3 \, 21(33)$.

**Figure 1.** *Stigmaeus kermaniensis* Changizi & Bagheri sp. nov. (Female). Dorsal view of idiosoma.
**Figures 2–3. Stigmaeus kermaniensis Changizi & Bagheri sp. nov.** (Female). 2. Ventral view of idiosoma; 3. Anogenital area.

**Gnathosoma** (Fig. 4): Subcapitulum with two pairs of subcapitular setae (*m* and *n*), *m* 20 (21), *n* 28 (29) and two pairs of adoral setae (*ro*1 and *ro*2), *ro*1 7 (7), *ro*2 10 (9); palpi five segmented (Fig. 5); tarsus with one terminal tridentate eupathidium + one solenidion (ω) and four simple setae, one simple eupathidion; tibia with one well-developed claw + one seta-like accessory claw and two setae; genu with two setae and femur with three setae.

**Legs** (Figs. 6–9): Length of legs I-IV (from base of coxae to tips of tarsal claws): 226 (210)-162 (153)-157 (156)-180 (182). Chaetotaxy of leg segments as follows: coxae (excluding 1a, 3a and 4a) 2-2-2-2, trochanters 1-1-2-1; femora 6-5-3-2; genua 5 (+1κ)-4-4-3; tibiae 5 (+1φ +1φρ)-5 (+1φρ)-5 (+1φρ)-5(+1φρ); tarsi 13 (+1ω)-8 (+1ω)-7 (+1ω)-7(+1ω).

**Male and immature stages:** Unknown.

**Etymology**

The specific epithet is derived from its type locality, Kerman.
Type material

Holotype female and one paratype female were collected from soil in pistachio orchards, 20 August 2010, Kerman, Iran, by Mohammad Changizi. The holotype female will be deposit in the Mite Collection of Plant Protection Research Institute, Pretoria, South Africa and paratype female in the Acarological Collection, Department of Plant Protection, Faculty of Agriculture, University of Maragheh, Iran.

Remarks

*Stigmaeus kermaniensis* Changizi & Bagheri sp. nov. resembles *S. elongatus* Berlese, 1886 and *S. candidus* Fan & Li, 1993 in shape of dorsal body and chaetotaxy of femora I-IV. However these three species distinguished from each other by the following features: (1) prodorsum without prodorsal shield in new species vs. with a small and reticulated prodorsal shield in two later species, (2) *S. elongatus* with five pairs of aggenital setae vs. with four pairs in the later species, (3) numbers of setae on genua II-IV differ in three species: [(*S. kermaniensis* 4-4-3), (*S. elongatus* 5-3-2) and (*S. candidus* 2-0-1)], (4) numbers of simple setae on tarsus I-IV differ in three species: [(*S. kermaniensis* 13-8-7-7), (*S. elongatus* 13-9-7-7) and (*S. candidus* 12-8-6-6)].

Figures 8–9. *Stigmaeus kermaniensis* Changizi & Bagheri sp. nov. (Female). 8. Leg II; 9. Leg III.
Acknowledgment

We greatly appreciated the support for this project provided by the Research Division of University of Maragheh, Maragheh, Iran.

References


Received: 8 January 2012
Accepted: 12 April 2012
S. kermaniensis sp. گونه جدیدی از جنس Stigmaeus Koch (Acari: Stigmaeidae) به نام Pistacia vera (Linnaeus) توصیف و ترسیم می‌شود. این گونه از خاک باگه‌های پسته، در استان کرمان جمع‌آوری شد.