

Article

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First record of the genus *Acerimina* Keifer (Acari: Eriophyidae) from Iran with description of a new species

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Abstract

An eriophyoid species from Iran is described and illustrated. It is *Acerimina bajgahi* **sp. nov.** that has been found on hybrid of a *Rosa* species (Rosaceae) from south of Iran, Shiraz. This species is new to science and the genus is new record for Iranian mite fauna. It causes witches' broom of terminal twigs of the host plant. A key to the species of *Acerimina* of the world is provided. A key to world species of *Acerimina* is provided.

Key words: *Acerimina*, Iran, new species, Prostigmata, Rosaceae

Introduction

Eriophyoid mites are one of the most important plant pests concerning economical issues around the world. This pest status is due to their feeding damage and transmission of plant pathogens (Monfreda *et al.* 2010). Furthermore, these mites can be employed as biological control agents against weeds (Smith *et al.* 2010; Skoracka *et al.* 2010). The Eriophyoidea includes three families: Phytoptidae, Eriophyidae and Diptilomiopidae. Currently, about 4000 species of Eriophyoidea are known and each year several new genera and nearly 100 new species are described (Amrine *et al.* 2003). Their feeding on host plants causes growth reduction, gall formation, witches' broom, rosetting, russeting, silvering and leaf rolling (Royalty & Perring 1996). In the survey of eriophyoid mites of Shiraz township (Fars province, southern Iran) several species were collected, of which one species belongs to the unknown species of the genus *Acerimina*. The genus *Acerimina* was established by Keifer (1957) based on the type species *Acerimina cedrelae* and characterized it as follows: body vermiform, annuli subequal dorsoventrally, prodorsal shield typically lacking a frontal lobe, gnathosoma small, chelicerae slightly curved, short form oral stylet, scapular tubercles on rear shield margin, setae *sc* directed to rear, legs with usual segments, tibiae distinct from tarsi, empodia entire, female genitalia not appressed to coxal plates, coxal plates with anterolateral setae on coxisternum I (*Ib*) absent and opisthosoma evenly arched in cross section (Keifer 1957). Since 2014, the genus held seven species from Australia, China, New Zealand, Taiwan, Venezuela, Thailand, India, Europe and America (Amrine *et al.* 2003).

A species herein is described is new to science and the genus *Acerimina* is new record to the Iranian mite fauna. This species causes witches' broom of terminal twigs on hybrid of a *Rosa* species (Rosaceae). Former a species, *A. pyrrosiae* had been described from this genus which causes witches' broom symptoms on a fern (Manson 1984).

Materials & methods

During a faunistic survey of Eriophyoidea of Shiraz (capital of Fars Province) in 2010–2011, plant samples were randomly collected from different areas of this township. Slides were mounted and specimens were measured following de Lillo *et al.* (2010). Specimens were examined with an Olympus CH2 (Japan) research microscope with phase contrast and semi-schematic drawings were made. The morphological terminology and setal notation in the descriptions follow Lindquist (1996) and the generic classification is made according to Amrine *et al.* (2003). All measurements are given in micrometers (μm). Measurements are from the holotype, with the range from the paratypes in parentheses. Type specimens are deposited in the Acarological Collection, College of Agriculture, Shiraz University, Fars Province, Iran.

Results

Family Eriophyidae Nalepa
Genus *Acerimina* Keifer

Acerimina bajgahi sp. nov. (Figs. 1–7)

Description

Female (Holotype & 9 paratypes) - Body vermiform, elongate, whitish, 158 (148–161), 52 (49–53) thick, 50 (48–55) wide.

Gnathosoma - 19 (18–21), projecting obliquely downwards, chelicerae 15 (14–15), palpal seta *d* 6 (6–7).

Prodorsal shield - 35 (31–37), 48 (45–49) wide, semicircular, without frontal lobe over cheliceral base, median line present in posterior half, admedian lines complete and slightly curved, dorsal tubercles *sc* on rear shield margin with transverse basal axes, 27 (25–28) apart, setae *sc* 10 (8–11), projecting backward.

Leg I - 32 (31–32), femur 12 (11–12), seta *bv* 9 (7–9); patella 5 (4–5), seta *l''* 18 (15–19); tibia 6 (5–6), seta *l'* 6 (6–7); tarsus 5 (5–6), setae *ft'* 28 (25–29), *ft''* 18 (15–19); unguinal seta *u'* 4 (4); claw 10 (9–10); solenidion 12 (11–12); empodium simple with 5 rayed.

Leg II - 31 (29–31), femur 11 (10–11), seta *bv* 6 (6–7); patella 5 (4–5), seta *l''* 9 (8–11); tibia 6 (6–7); tarsus 5 (5–6), setae *ft'* 25 (22–27), *ft''* 15 (14–16); unguinal seta *u'* 4 (4–5); claw 10 (9–10); solenidion 11 (11–12); empodium simple with 5 rayed.

Coxigenital region - smooth, first coxal setae *1b* absent; second coxal setae *1a* 19 (15–21), tubercles *1a* 9 (9–11) apart; third coxal setae *2a* 28 (24–28); tubercles *2a* 20 (19–21) apart; sternal line 6 (6–8).

Opisthosoma - evenly arched in cross section, with 45 (40–48) subequal dorsal and ventral semiannuli with small round microtubercles, 5 semiannuli between coxae and genital coverflap; lateral setae *c2* 8 (8–11) on ventral semiannulus 10 (9–11); 1st ventral setae *d* 34 (29–34) on ventral semiannulus 21 (20–23), tubercle *d* 44 (42–44) apart; 2nd

ventral setae *e* 10 (9–10), on ventral semiannulus 34 (32–34), tubercle *e* 23 (22–24) apart; 3rd ventral setae *f* 4 (4–5), on ventral semiannulus 5 (5) from rear, caudal setae *h* 2 41 (38–45), accessory setae *h* 1 6 (6–7).

Female genitalia - 12 (12–14) long, 24 (22–24) wide, female genital coverflap with 12 (10–12) longitudinal striae; setae 3a 15 (13–16), 12 (10–12) apart.

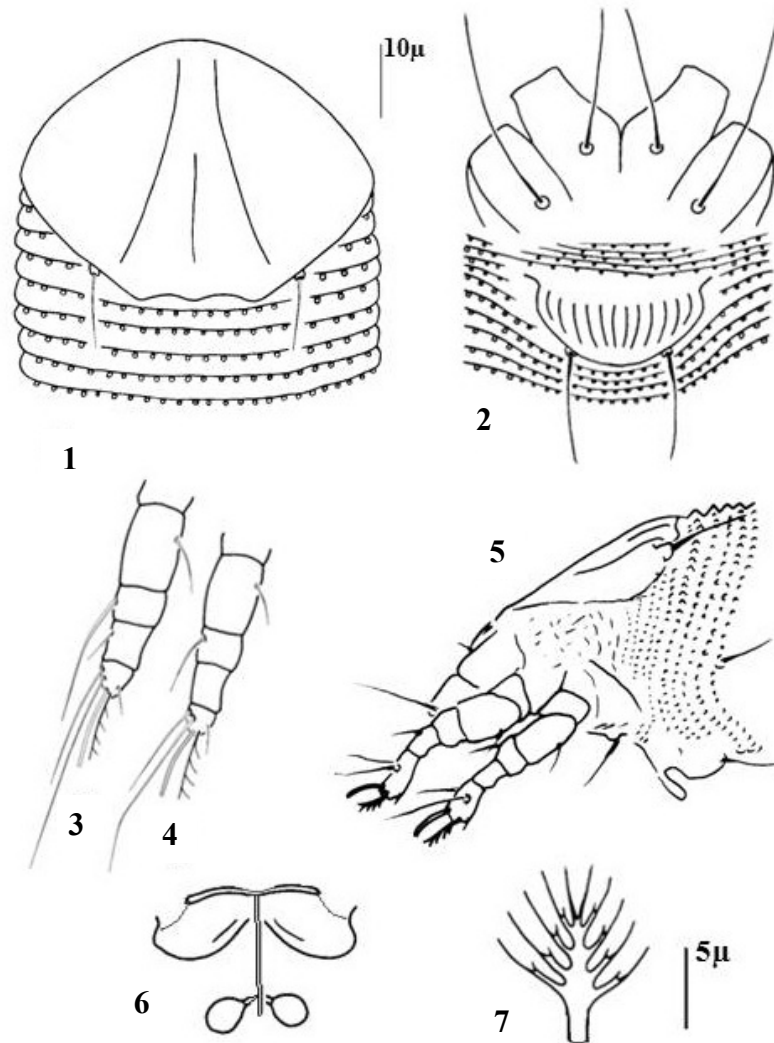


Figure 1. *Acerimina bajgahi* sp. nov. (female) - 1. Dorsal anterior end of prodorsum; 2. Female genitalia; 3. Leg I; 4. Leg II; 5. Antero-lateral view, 6. Female internal genitalia, 7. Empodium.

Male (n = 4) - Similar to female, 137 (133–139). Prodorsal shield 31 (28–32); setae *sc* 8 (7–10), 25 (22–25) apart; opisthosoma with 41 (40–44) semiannuli; genitalia 23 (21–23) wide, setae 3a 12 (9–12), 11(10–12) apart.

Host plant - hybrid of a *Rosa* species (Rosaceae)

Relation to the host - The mites produce witches' broom symptom in terminal twigs of host plant (Fig. 2).

Type locality - Bajgah, Shiraz, southern Iran; 1794 m a.s.l.; 29° 43' N, 52° 35' E.

Etymology

The specific epithet is derived from the type locality, Bajgah, Shiraz, Iran.



Figure 2. Damage of *Acerimina bajgahi* sp. nov. on hybrid of a *Rosa* species - A) Mild damage; B) Sever damage.

Type material

Holotype female (1390-HO- Er1-1), 6 July 2011, Coll. N. Doryanizadeh, on hybrid of a *Rosa* species; paratypes (1390-PA- Er1-2-9) and allotypes (1390-AL- Eri1-11-44): 9 females and 4 males with the same data as holotype.

Differential diagnosis

This new species resembles to *A. shuishensis* Huang, 1991 and *A. pyrrosiae* Manson, 1984 in lack of anterior lobe and the base of prodorsal shield pattern, but it differs from both by body shape (*A. shuishensis* and *A. pyrrosiae* fusiform, new species vermiform), body size (*A. shuishensis* 127, *A. pyrrosiae* 173, new species 158), female genital coverflap (*A. shuishensis* 10 longitudinal markings, *A. pyrrosiae* faint longitudinal markings, new species 12 longitudinal striae), length of setae 3a (*A. shuishensis* 3, *A. pyrrosiae* 3, new species 15), coxigenital ornamentation (*A. shuishensis* granulated, *A. pyrrosiae* and new species smooth) and symptom on host (*A. shuishensis* vagrant, *A. pyrrosiae* and new species witches' broom).

Key to the species of *Acerimina* of the world

1. Median, admedian and submedian lines presented on dorsal shield.....2
 - Dorsal shield smooth.....5
2. Median line presented in the rear half.....3
 - Median line complete.....4
3. Coxigenitalia plates granular.....*A. tiliaceae* Mohanasundaram
 - Coxigenitalia plates smooth.....*A. cedrelae* Keifer
4. Median line granules, femora and genu granulated.....*A. terminaliae* Keifer
 - Median line not granules, femora and genu smooth.....*A. cinnamomi* Kuang
5. Coxigenitalia plates smooth6

- Coxigenitalia plates granular.....*A. shuishensis* Huang
- 6. Feather claw 4 rayed.....*A. pyrosiae* Manson
- Feather claw 5 rayed.....*A. bajgahi* **sp. nov.**

References

- Amrine Jr., J.W., Stasny, T.A. & Flechtmann, C.H.W. (2003) *Revised keys to world genera of Eriophyoidea (Acari: Prostigmata)*. Indira Publishing House, Michigan, USA, 244 pp.
- de Lillo, E., Craemer, C., Amrine Jr. J.W. & Nuzzaci, G. (2010) Recommended procedures and techniques for morphological studies of Eriophyoidea (Acari: Prostigmata). *Experimental and Applied Acarology*, 51(1–3): 283–307
- Huang, K. (1991) Three new eriophyid mites records from ferns in Taiwan (Acarina: Eriophyoidea). *Chinese Journal of Entomology*, 11 (4): 324–329.
- Keifer, H.H. (1957) Eriophyid Studies 25. *Bulletin of California Department of Agriculture*, CA, USA, pp. 242–248.
- Keifer, H.H. (1974) *Eriophyid Studies, C-9*. Agricultural Research Services, US. Department of Agriculture, 24 pp.
- Kuang, H. (1992) Two new species of the family Eriophyidae from China (Acari: Eriophyoidea). *Acta Zootaxonomica Sinica*, 17(2):179–182.
- Lindquist, E.E. (1996) External anatomy and systematics. In: Lindquist, E.E., Sabelis, M.W. & Bruin, J. (Eds.), Eriophyid mites: Their biology, natural enemies and control. Vol. 6. Elsevier, Amsterdam, The Netherlands, pp. 383–396.
- Manson, D.C.M. (1984) *Eriophyinae (Arachnida: Acari: Eriophyoidea)*. Fauna of New Zealand, No 5, 128 pp.
- Mohanasundaram, M. (1984) New species and records of Eriophyids (Acari: Eriophyidae) from Andamans. *Indian Journal of Acarology*, 9(1 & 2): 17–22.
- Monfreda, R., Lekveishvili, M., Petanovice, R. & Amrine Jr, J.W. (2010) Collection and Detection of eriophyid mites. *Experimental and Applied Acarology*, 51: 273–282.
- Royalty, R.N. & Perring, T.M. (1996) Nature of damage and its assessment. In: Lindquist, E.E., Sabelis, M.W. & Bruin, J. (Eds.), Eriophyid mites: Their biology, natural enemies and control. Vol. 6. Elsevier, Amsterdam, The Netherlands, pp. 493–512.
- Skoracka, A., Smith, L., Oldfield, G., Cristofaro, M. and Amrine Jr., J.W. (2010) Host-plant specificity and specialization in eriophyid mites and their importance for the use of eriophyid mites as a biocontrol agents of weeds. *Experimental and Applied Acarology*, 51: 93–113.
- Smith, L., de Lillo, E. & Amrine Jr., J.W. (2010) Effectiveness of eriophyid mites for biological control of weedy plants and challenges for future research. *Experimental and Applied Acarology*, 51: 115–149.

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گزارش جنس جدید *Acerimina* Keifer (Acari: Eriophyoidea) از ایران همراه با توصیف یک گونه جدید

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چکیده

در این مقاله گونه جدیدی از کنه‌های اریوفید از ایران توصیف و شکل آن ترسیم شده است. این گونه *Acerimina bajgahi* sp. nov. نامگذاری شد که از جنوب ایران، شهرستان شیراز، از روی گیاه *Rosa* sp. (Rosaceae) جمع‌آوری شد. تغذیه این گونه باعث جارویی شدن شاخه‌های انتهایی گیاه میزبان می‌شود.

واژگان کلیدی: پیش‌استیگمایان، *Acerimina*، Eriophyoidea، گونه جدید، Rosaceae، ایران.

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