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A new species of eriophyoid mite, *Aceria tripuraensis* sp. n. (Acari: Eriophyoidea), on *Hibiscus macrophyllus* from India

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Abstract

A new species of Eriophyidae (Acari: Prostigmata: E riophyoidea) mite, *Aceria tripuraensis* **n. sp.**, is described from the closed bud galls of *Hibiscus macrophyllus* Roxb. ex Hornem. (Malvaceae) in India. *Aceria tripuraensis* **n. sp.** is distinguished by having a prodorsal shield with distinct rounded lobes on the postero-lateral margins and two pairs of submedian lines. The tarsal solenidia with unusual transverse sculptures, are 2.5x longer than the empodia. Twenty *Aceria* species are now known to inhabit malvaceous plant hosts and those are listed here along with type localities and host plant details. A key to all known species of *Aceria* recorded from *Hibiscus* spp. is also provided.

Key words: Eriophyoidea, *Aceria*, *Hibiscus macrophyllus*, India, taxonomy, new species

Introduction

Eriophyoid mites are a specialized group of plant feeding arachnids with a high level of host specificity and adaptability (Lindquist & Oldfield 1996; Amrine 1996). Many are vagrant and cause no visible harm to their host plants. However, some eriophyoid species are known to be serious pests while others are recognised for transmitting plant viruses and pathogens. Often their infestation and feeding behaviour leads to plant injury that manifests in the form of russeting, gall formation, bronzing, browning, silvering or curling of leaves and deformed or stunted buds (Keifer *et al*. 1982).

A worldwide count of eriophyoid mites approximates to 4600 known species in about 420 genera, of which the genus *Aceria* contributes about 25%–30% of this biodiversity (Amrine & Stasny 1994; Amrine & de Lillo unpublished databases 2003 & 2010). More than 482 eriophyoids have been described from India with 127 species belonging to the genus *Aceria* (Amrine & de Lillo unpublished database 2010; Huang 2008).

So far, 47 eriophyoid species have been reported from India on malvaceous plant hosts, of which, 19 species belong to the genus *Aceria* and eight of those are reported from *Hibiscus* spp. (Amrine & Stasny 1994; Amrine & de Lillo unpublished database 2010).

The present paper describes a new species, *Aceria tripuraensis* **n. sp.**, and provides a list of *Aceria* spp. previously recorded on Malvaceae along with damage symptoms, type hosts and locality information (Table 1). A key to *Aceria* species known from *Hibiscus* spp. is also included.

Material and methods

During exploration surveys in the Tripura state of northeast India, a new species of eriophyoid mite belonging to the genus *Aceria* was collected from inside closed bud galls of *Hibiscus macrophyllus* Roxb. ex Hornem. (Malvaceae). The galls were found on the abaxial surface of leaves with their corresponding adaxial surface appearing to be bronzed.

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in its characteristic prodorsal shield design and legs I and II with very long solenidia with faint transverse sculptures.

Key species of the genus *Aceria* known from *Hibiscus* spp.

1. Prominent lobe-like structures absent on postero-lateral margins of prodorsal shield; coxal granulations may or may not be present on both coxal plates; empodium 4- or 5- rayed; solenidia on Legs I and II, more or less subequal to empodia of legs 2
- Prominent lobe-like structures present on postero-lateral margins of prodorsal shield; coxal granulations present on coxal plate; empodia 4-rayed, solenidia on Legs I and II at least 2.5× length of empodia . . . . . *Aceria tripuraensis* **n.sp.**
2. Empodia on Legs I and II, 4-rayed 3
- Empodia on Legs I and II, 5 rayed 5
3. Coxal granulations present only on fore-coxae; median line on prodorsal shield appears complete but anterior half is indistinct; admedian and submedian lines form a spear-shaped pattern . . . . . *Aceria hastatum* Ueckermann, 1990
- Shield design not as above; coxal granulations absent or unknown 4
4. Coxal granulations absent; coxal area with few lines;prodorsal shield with median line on basal half, and an arrow pointing posteriorly; admedian lines spaced widely apart with basal arch-like line connecting submedians bordering on either side of the shield . . . . . *Aceria vitifoliae* Mohanasundaram, 1990
- Coxal granulations present or absent, not clearly indicated; median lines on prodorsal shield complete; admedian lines, wavy; submedian lines placed laterally . . . . . *Aceria hibisci* (Nalepa, 1906)
5. Coxal granulations absent; prodorsal shield with complete median line; admedian and submedian lines incomplete . . . . . *Aceria liuzhouensis* Qin, Wei & Chen, 2003
- Prodorsal shield with complete admedian and submedian lines 6
6. Prodorsal shield with prominent median line visible on posterior two-thirds, fading anteriorly; admedian lines complete; first submedian lines complete, wavy; second submedian lines on anterior half of shield; sides of prodorsal shield, granular; coxal area, lightly granular . . . . . *Aceria hirsutivagrans* Mohanasundaram, 1984
- Prodorsal shield with median line present; admedian, first submedian and second submedian lines all arising from prodorsal shield apex, bending out and joining back while running parallel to median line and meeting at base; coxal granulation not clearly indicated . . . . . *Aceria punctulata* (Nalepa, 1914)

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References

Amrine, J.W. (1996) *Keys to the World Genera of the Eriophyoidea (Acari: Prostigmata).* Indira Publishing House, West Bloomfield, Michigan USA, 186 pp.

Amrine, J.W. Jr. & Stasny, T.A. (1994) *Catalog of the Eriophyoidea (Acarina: Prostigmata) of the World.* Indira Publishing Houses, West Bloomfield, Michigan, 798 pp.

Amrine, J.W. Jr., Stasny, T.A. & Flechtmann, C.H.W. (2003) *Revised Keys to World Genera of Eriophyoidea (Acari: Prostigmata)*. Indira Publishing Houses, West Bloomfield, Michigan, USA, pp 244.

Boczek, J. & Davis, R. (1984) New species of eriophyid mites (Acari: Eriophyoidea). *Florida Entomologist*, 67 (2), 198–213. http://dx.doi.org/10.2307/3493939

Canestrini, G. (1891) Intorno a due nuove specie di Phytoptus (4a Serie). Atti del Reale Istituto Veneto. *di Scienze, Lettere ed Arti. Serie* VII, 2, 983–985.

ChannaBasavanna, G.P. (1966) *A Contribution to the Knowledge of Indian Eriophyid Mites (Eriophyoidea: Trombidiformes: Acarina).* University of Agricultural Sciences, Hebbal, Bangalore, India, 1–154 pp.

Denizhan, E., Monfreda, R., Cobanoglu, S., de Lillo, E. (2006) Three new *Aceria* species (Acari: Eriophyoidea) from Turkey.

International Journal of Acarology, 32 (2), 179–184.
http://dx.doi.org/10.1080/01647950608684458
Huang, K.W. (2008) *Aceria* (Acarina: Eriophyoidea) in Taiwan: five new species and plant abnormalities caused by sixteen species. *Zootaxa* 1829, 1–30.
Keifer, H.H. (1938) Eriophyid Studies I. *Bulletin California Department of Agriculture*, 27, 181–206.
Keifer, H.H. (1944) Eriophyid Studies XIV. *Bulletin California Department of Agriculture*, 33, 18–38.
Keifer, H.H. (1965) Eriophyid Studies B–14. *Bureau of Entomology, California Department of Agriculture*, 1–20.
Keifer, H.H. (1966) Eriophyid Studies B–20. *Bureau of Entomology, California Department of Agriculture*, 1–20.
Keifer, H.H. (1970) *Eriophyid Studies C–4*. ARS–USDA, 1–24.
Krantz, G.W. (1970) *A Manual of Acarology.* Oregon State University, Publisher, 335pp.
Keifer, H.H., Baker, E.W., Kono, T., Delfinado, M. & Styer, W.E. (1982) *An Illustrated Guide to Plant Abnormalities caused by Eriophyid Mites in North America.* USDA, ARS, Agriculture, Handbook No. 573, Washington D.C., USA, 178 pp.
Lindquist, E.E. & Oldfield, G.N. (1996) Evolution of eriophyoid mites in relation to their host plants. *In*: Lindquist, E.E., Sabelis, M.W. & Bruin, J. (Eds.), *Eriophyoid Mites: their Biology, Natural Enemies and Control. Vol. 6. World Crop Pests*. Elsevier Science Publishers, Amsterdam, The Netherlands, pp. 277–300.
Manson, D.C.M. (1984) Eriophyinae (Arachnida: Acari: Eriophyoidea). *Fauna of New Zealand*, 5, 1–123.
Mohanasundaram, M. (1984) New eriophyid mites from India (Acarina: Eriophyoidea). *Oriental Insects*, 18, 251–283.
http://dx.doi.org/10.1080/00305316.1984.10432206
Mohanasundaram, M. (1990) Studies on the genus *Aceria* (Acari: Eriophyidae) from south India. *Indian Journal of Acarology*, 12 (1 & 2), 15–88.
Nalepa, A. (1898) Zur Kenntniss der Gattung *Trimerus* Nal. *Zoologische Jahrbuecher*, 11 (5), 405–411.
Nalepa, A. (1902) Neue Gallmilben. (21 Fort.) *Anzeiger der kaiserlichen Akademie der Wissenschaften, Mathematisch–Naturwissenschaftliche Klasse, Wien*, 39 (17), 221–223.
Nalepa, A. (1906) Über zwei neue Eriophyiden von den Fidschiinseln. *The Journal of Economic Biology*, *Birmingham*, 1 (4), 147–151 + 10 pls.
Nalepa, A. (1909) Ch. VI. Eriophyiden. *In*: Rechinger K., Botanische und Zoologische Ergebnisse einer wissenschaftlichen Forschungsreise nach den Samoa-inseln, dem Neuguinea-Archipel und den Salomos-inseln, von Maerz bis Dezember 1905. *Verhandllungen der kaiserlich-kongiglichen zoologish-botanischen Gesellschaft*, 84, 523–536.
Nalepa, A. (1914) Eriophyiden aus Java. (I. Beitrag) *Marcellia,* 13 (2–3), 51–87.
Qin, A.Z., Wei, Y.L. & Chen, X.R. (2003) Four new species of the genus *Aceria* (Acari: Eriophyoidea) from China. *Entomotaxonomia*, 25 (4), 307–312.
Ueckermann, E. (1990) South African *Aceria* (Acari: Eriophyidae): On species associated with plants of the families Acanthaceae and Malvaceae. *Phytophylactica*, 22 (3), 295–301.