Acarologia

A quarterly journal of acarology, since 1959
Publishing on all aspects of the Acari

Acarologia is proudly non-profit,
with no page charges and free open access

Please help us maintain this system by
encouraging your institutes to subscribe to the print version of the journal
and by sending us your high quality research on the Acari.

Subscriptions: Year 2019 (Volume 59): 450 €
http://www1.montpellier.inra.fr/CBGP/acarologia/subscribe.php
Previous volumes (2010-2017): 250 € / year (4 issues)
Acarologia, CBGP, CS 30016, 34988 MONTFERRIER-sur-LEZ Cedex, France

The digitalization of Acarologia papers prior to 2000 was supported by Agropolis Fondation under the reference ID 1500-024 through the « Investissements d’avenir » programme (Labex Agro: ANR-10-LABX-0001-01)

Acarologia is under free license and distributed under the terms of the Creative Commons-BY-NC-ND which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original author and source are credited.
TWO NEW SPECIES OF THE SUBGENUS PHYTOSEIUS RIBAGA
(PHYTOSEIUS: PHYTOSEIIDAE: ACARINA)
FROM HILLY AREAS OF PAKISTAN

by M. AFZAL & S. AKBAR

(Accepted November 2005)

Summary: Some hilly areas of Pakistan were surveyed for the collection of species of sub-genus Phytoseius which resulted in the collection of two new species viz., Phytoseius (Phytoseius) kallion and Phytoseius (Phytoseius) deima have been recorded and described.


Introduction

The genus Phytoseius an important predatory genus of the family Phytoseiidae was erected by Ribaga in 1904 with Gamasus plumifer Canestrini & Fanzago, 1876 as its type species. The species of this genus are world wide in distribution and feed on phytophagous mites and small insects (Evans, 1992). A good deal of taxonomic work on these mites have been carried out in the world by Muma & Denmark (1968, 1970), Gupta (1977), McMurtry and Moraes (1991), Walter (1992) and Yoshida-Shaul & Chant (1995). From Pakistan, Chaudhri (1973) and Chaudhri et al. (1979) described 4 and 1 new species in this subgenus respectively. Whereas Shahid et al. (1982), Khan et al., (1990) and Afzal et al. (2000) described two new species each in it. The authors have now described 2 new species in this genus thus making a total of 13 species in it, from Pakistan. Previously the Garman System (Garman, 1948) of setal nomenclature was being followed but recently it has been changed to Lindquist-Evans System (Rowell et al., 1978). The authors have followed this system in the present paper.

Phytoseius (Phytoseius) kallion, new species
(Figs. 1 A-F)

Female: Dorsum. — Dorsal shield 290 μm long, 147 μm wide, with irregular broken striation, concave near seta s6, with 2 pairs pores and 15 pairs setae (Fig. 1-A). Chelicera 20 μm long, movable digit with 1 tooth, fixed digit with 3 teeth (Fig. 1-B). Dorsal and sublateral setae measuring: j1 25 μm, j3 70 μm, j4 = j5 = j6 5 μm, J5 8 μm; z2 15 μm, z3 33 μm, z4 28 μm, z5 minute, Z4 120 μm, Z5 73 μm; s4 140 μm, s6 50 μm; r3 50 μm; j3 > j3 - z2, z2 > z2 - z3, z3 > z3 - z4, Z4 > Z4 - Z5. All dorsal setae serrate except j4, j5, j6, J5, z2, and z5 being simple. Peritreme reaching up to seta j1 (Fig. 1-A).

1. Département de Agri Entomologie, University of Agriculture Faisalabad — Pakistan.

Acarologia, 2004 [2005], XLI, 4: 253-256.
VENTER. — Sternal shield with 3 pair simple setae, seta $St1 < St1-St2, St2 < St2-St3$. Metasternal setae 1 pair on separate platelets. Genital shield 70 $\mu$m wide, wider than ventrianal shield, with 1 pair simple setae. Ventrianal shield longer than wide, 95 $\mu$m long, 53 $\mu$m wide, 23 $\mu$m apart from genital shield, a membranous fold present between genital and ventrianal shields. Ventrianal shield with 3 pairs pre-anal setae almost in a vertical row, 1 pair para anal and 1 post anal seta, all simple, no pore on the shield. Seta $JV5$ thick, barbed 60 $\mu$m long. Metapodal platelets 1 pair, i.e., primary 25 $\mu$m long (Fig. 1-C). Spermatheca bell-shaped, atrium nodulated, major duct long (Fig. 1-D).

LEGS. — Macrosetae present on leg IV, tibia, basitarsus and distitarsus measuring 73 $\mu$m, 28 $\mu$m and 28 $\mu$m in length, respectively. Setae on tibia and basitarsus with minute bulbous tip (Fig. 1-F).

MATERIAL. — Not came in collection.

TYPE: Holotype female collected Chattar (3500 ft) from ‘fig’ (Ficus carica) on 17.x.1996 (AFZAL), paratypes 4 females, same collection data. All deposited in the Acarology Research Laboratory, Department of Agri. Entomology, University of Agriculture, Faisalabad, Pakistan.

REMARKS: Phytoseius (Phytoseius) kallion, new species comes closer to Phytoseius (Phytoseius) nipponicus Ehara on the basis of dorsal shield pattern, simple seta $z2$ and shape of ventrianal shield but differs from it on the basis of the following characters:

1. — Notocephalic pore absent in nipponicus but present in this new species.
2. — Membrane surrounding ventrianal shield with pores in nipponicus but pores no in this new species.

This species can also be distinguished from Phytoseius deima, new species on the basis of following points:

1. — Dorsal shield with 3 pairs pores (1 notocephalic, 2 rounded) in deima as against 2 pores (1 notocephalic, 1 elliptical) in this new species.
2. — Dorsal shield thickly reticulated posterior to seta $j6$ in deima but only a few reticulate elements in this new species.
3. — Shape of spermatheca differs in both the species.
4. — Metasternal setae on membrane in deima but on separate platelets in this new species.
5. — Sternal setae $St1=St1-St2, St2=St2-St3$, in deima but $St1<St1-St2, St2<St2-St3$ in this new species.

This new species can also be distinguished from Phytoseius (Phytoseius) mixtus Chaudhri on the basis of the following points.

1. — Dorsal shield with 1 pair notocephalic pores in mixtus whereas 1 simple and 1 notocephalic pair pores present in this new species.
2. — Seta $z2$ serrate in mixtus but simple in this new species.
3. — Membrane surrounding the ventrianal shield with 4 pairs pores in mixtus but no pores present in this new species.

Phytoseius (Phytoseius) deima, new species (Figs. 2 A-J)

FEMALE: DORSUM. — Dorsal shield with almost parallel sides, 280 $\mu$m long, 163 $\mu$m wide, with reticulate elements posterior to seta $j6$, with 3 pairs pores and 15 pairs setae (Fig. 2-A). Chelicera 20 $\mu$m long,
movable digit with 1 tooth, fixed digit with 3 teeth (Fig. 2-B). Dorsal and sublateral setae measuring: \( j_1 30 \mu m, j_2 60 \mu m, j_4 = j_5 = j_6 15 \mu m, j_3 13 \mu m, z_3 33 \mu m, z_4 25 \mu m, z_5 103 \mu m, Z_3 75 \mu m; s_4 128 \mu m, s_5 80 \mu m, r_3 33 \mu m; j_3 > j_2 > z_2 > z_3, z_4 > z_5, Z_4 > Z_5 \). All dorsal setae serrate except \( j_4, j_5, j_6, J_5, z_2, z_4 \) and \( z_5 \) being simple. Peritreme reaches up to seta \( j_1 \) (Fig. 2-A). Peritremal shield recurved, base pointed (Fig. 2-E).

**Fig. 2.** — *Phytoseius (Phytoseius) deima*, n.sp.; A. — dorsal shield; B. — chelicera; C. — sternal, genital and ventrianal shields; D. — spermatheca; E. — peritremal shield; F. — leg IV; G. — dorsal shield (male); H. — spermatodactyl; I. — sternogenital shield.

**Venter.** — Sternal shield with 3 pairs simple setae, seta \( St_1 = St_1-St_2, St_2 = St_2-St_3 \). Metasternal setae 1 pair on membrane. Genital shield 75 \( \mu m \) wide, wider than ventrianal shield, with 1 pair simple setae. Ventrianal shield longer than wide, 95 \( \mu m \) long, 55 \( \mu m \) wide, 20 \( \mu m \) apart from genital shield, a membranous fold present between genital and ventrianal shields, ventrianal shield with 3 pairs pre anal setae almost in a vertical row, 1 pair para-anal and 1 post-anal seta, all simple, no pore on the shield. Seta \( JV_5 \) thick, barbed 58 \( \mu m \) long. Metapodal platelets 1 pair, primary 28 \( \mu m \) long (Fig. 2-C). Spermatheca bell-shaped, atrium nodulated (Fig. 2-D).

**Legs.** — Macrosetae present on leg IV, tibia, basiTarsus and distitarsus measuring 53 \( \mu m \), 25 \( \mu m \) and 25 \( \mu m \) in length, respectively. Setae on tibia and basiTarsus with rounded tip (Fig. 2-F).

**Male.** — Dorsal shield 213 \( \mu m \) long, 120 \( \mu m \) wide, with very few scattered striations 15 pairs setae. Dorsal setae measuring: \( j_1 23 \mu m, j_3 40 \mu m, j_4 = j_5 = j_6 5 \mu m; j_5 6 \mu m; z_2 13 \mu m, z_3 23 \mu m, z_4 18 \mu m, z_5 23 \mu m, Z_4 35 \mu m; s_4 55 \mu m, s_6 48 \mu m; r_3 30 \mu m \). All dorsal setae serrate except \( j_4, j_5, j_6, J_5, z_2, z_3, z_4 \), and \( z_5 \) being simple. Peritreme reaching up to seta \( j_1 \) (Fig. 2-G). Sternogenital shield smooth, 118 \( \mu m \) long and 68 \( \mu m \) wide with 5 pairs setae (Fig. 2-I). Ventrianal shield 68 \( \mu m \) long, 110 \( \mu m \) wide; preanal setae 3 pairs, 1 pair paraanal and 1 postanal seta; wider than sternogenital shield in width (Fig. 2-I). Chelicerae movable digit with spermatodactyl. Spermatodactyl foot 5 \( \mu m \) long with 3 \( \mu m \) long toe; shaft 10 \( \mu m \) long, heel slightly pointed (Fig. 2-I). Macrosetae on leg IV tibia, basiTarsus and distitarsus measuring 25 \( \mu m \), 18 \( \mu m \) and 18 \( \mu m \) in length respectively. Macrosetae bacillate on tibia and setaceous on basiTarsus and distitarsus (Fig. 2-J).

**Type.** — Holotype female collected Bagh (6000 ft) from ‘papaya’ (*Carica papaya*) on 24.x.1996 (AFZAL), paratypes 2 females, allotype one male collected Bagh (6000 ft), same collection data. All deposited in the Acarology Research Laboratory, Department of Agri. Entomology, University of Agriculture, Faisalabad, Pakistan.

**Remarks.** — *Phytoseius (Phytoseius) deima*, new species can be separated from *Phytoseius (Phytoseius) kallion*, new species on the basis of following points.

1. — Dorsal shield with 2 pores (1 notocephalic, 1 elliptical) in *kallion* as against 3 pairs pores (1 notocephalic, 2 rounded) in this new species.

2. — Dorsal shield having a few reticulate elements posterior to seta \( j_6 \) in *kallion* but thickly reticulated in this new species.

3. — Shape of spermatheca differs in both the species.

4. — Metasternal setae on a separate platelet in *kallion* but on membrane in this new species.

5. — Sternal setae \( St_1 = St_1-St_2, St_2 < St_2-St_3 \), in *kallion* but \( St_1 = St_1-St_2, St_2 = St_2-St_3 \) in this new species.
REFERENCES


