

Genus *Euseius* Wainstein (Acarina: Phytoseiidae) Two New Predatory Mites Species from Pakistan

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Abstract: Two new species *Euseius affinis* and *Euseius alterno*, belonging to the genus *Euseius* Wainstein of the family Phytoseiidae are described. A detailed description of these species along with measurements have been given.

Key words: *Euseius affinis*, *Euseius alterno*, Pakistan

Introduction

Genus *Euseius* is one of the important predatory genera of world wide distribution. This genus was erected by Wainstein in 1962 and he designated *Euseius finlandicus* Oudemans as its type species. A great deal of taxonomic work on this genus have been carried out in the world by Deleon (1966), Denmark and Muma (1970, 1975, 1978), Gupta (1978), Denmark and Andrews (1981), Gilberto *et al.* (1982), McMurty and Moraes (1985), Walter (1999). In Pakistan, Chaudhri *et al.* (1979) described 3 new species, Ahmed *et al.* (1987), Khan and Chaudhri (1991), Khan *et al.* (1992), and Qayyum (2000) described, 4, 2, 3 and 2 new species in this genus respectively. The authors have now collected and described 2 new species, thus making a total of 16 species in this genus from Pakistan. The terminology and abbreviation used are those of followed by Rowell *et al.* (1978).

Euseius affinis, new species (Fig. 1 A-F)

Female:

Dorsum: Dorsal shield smooth, deeply concave near *R* 1; 260 μ m long, 170 μ m wide with 17 pairs setae and 5 pairs pores (4 pairs elliptical, 1 pair rounded) (Fig. 1-A). Chelicera 23 μ m long; movable digit with 1 tooth, fixed digit with 2 subapical teeth (Fig. 1-B). All dorsal shield setae smooth except *Z*5 weakly serrate, setae measuring: *j* 1 23 μ m, *j* 3 25 μ m, *j* 4 = *j* 5 = 20 μ m, *j* 6 = *J* 2 = 18 μ m, *J* 5 5 μ m; *z* 2 25 μ m, *z* 4 28 μ m, *z* 5 20 μ m, *Z* 1 18 μ m, *Z* 4 23 μ m, *Z* 5 43 μ m; *s* 4 33 μ m, *S* 2 25 μ m, *S* 4 20 μ m, *S* 5 23 μ m; *r* 3 25 μ m and *R* 1 18 μ m in length (both on membrane). Seta *j* 3 = *j* 3 - *z* 2, *z* 2 < *z* 2 - *z* 4, *z* 4 < *z* 4 - *s* 4, *S* 5 > *S* 5 - *Z* 5; seta *Z* 4 anterior to seta *S* 4, 28 μ m and 33 μ m apart respectively from setae *S* 4 and *S* 5, (Fig. 1-A). Peritreme blunt ended, reaching between setae *z* 4 and *z* 2. Peritremal shield base broad, 38 μ m long, with 1 process on ventral side, in middle (Fig. 1-E).

Venter: Sternal shield margins not clear. Genital shield smooth, 95 μ m wide, wider than ventrianal shield width, setae 1 pair. Genital and ventrianal shields 10 μ m apart, membranous fold present between them. Ventrianal shield smooth, ovate, 70 μ m long, 50 μ m wide, 3 pairs preanal setae, 1 pair elliptical pores (Fig. 1-C). Four pairs setae including *J* V 5 23 μ m, smooth and 1 pair pores on membrane surrounding ventrianal shield. Metapodal platelets 1 pair on each side; primary, elongate, pointed posteriorly, rounded anteriorly, 23 μ m long; secondary, 4 μ m long (Fig. 1-C). Spermatheca cervix bulging out at base, tubular posteriorly, 8 μ m long; atrium undifferentiated; major duct tubular; vesicle flask-like (Fig. 1-D).

Legs: Leg IV with 3 macrosetae, 1 seta each on genu, tibia and basitarsus, measuring 15 μ m, 15 μ m and 28 μ m in length, respectively, all setae pointed, simple (Fig. 1-F).

Male: Not came in collection.

Type: Holotype female, collected Zhob 4500' (Baluchistan) on 24.x.1995 (Shahbaz) from unidentified host plant No. 1/95 and deposited in the Acarology Research Laboratory, Department of Agric. Entomology, University of Agriculture, Faisalabad, Pakistan.

Remarks: *Euseius affinis*, new species is closely related to *Euseius asperum* Zia but following characters separate them from each other.

1. Cheliceral movable digit with 4 teeth in *asperum* but 2 teeth in this new species.
2. Dorsal shield setae *j* 3, *z* 2, *z* 4, *s* 4, *S* 2, *S* 4, *S* 5, *Z* 5 and *Z* 4 serrated in *asperum* whereas all dorsal shield setae smooth except seta *Z* 5 serrate in this new species.
3. Peritreme reaching upto seta *j* 3 in *asperum* but reaching between setae *z* 4 and *z* 2 in this new species.
4. Shape of spermatheca differs in both the species; vesicle ovate in *asperum* but flask-like in this new species.

Euseius affinis, new species differs from *Euseius subtilis*, Parvez due to the following characters:

1. Dorsal shield with 6 pairs pores (3 pairs elliptical, 3 pairs rounded) in *subtilis* but 5 pairs pores (4 pairs elliptical, 1 pair rounded) in this new species.
2. Seta *j* 3 = *j* 3 - *z* 2 in *subtilis* but seta *j* 3 = *j* 3 - *z* 2 in this new species.
3. Seta *z* 4 < *z* 4 - *s* 4 in *subtilis* but seta *z* 4 < *z* 4 - *s* 4 in this new species.
5. Two pairs pores on membrane surrounding ventrianal shield in *subtilis*, but 1 pair pores in this new species.

Shape of spermatheca differs in both the species; cervix fundibuliform; vesicle rounded in *subtilis* but cervix bulging out at base, tubular posteriorly; vesicle flask like in this new species.

Euseius alterno, new species

Female: (Fig. 2A-F)

Dorsum: Dorsal shield smooth, sole shaped bulging out near seta *s* 4 deeply concave near *R* 1; 230 μ m long, 158 μ m wide with 17 pairs setae and 3 pairs elliptical pores. (Fig. 2-A). Chelicera 18 μ m long; movable digit with 1 tooth, fixed digit with 2 subapical teeth (Fig. 2-B). All dorsal shield setae smooth except *Z* 5 weakly serrate, setae measuring: *j* 1 30 μ m, *j* 3 23 μ m, *j* 4 10 μ m, *j* 5 13 μ m, *j* 6 = *J* 2 = 15 μ m, *J* 5 5 μ m; *z* 2 20 μ m, *z* 4 23 μ m, *z* 5 13 μ m, *Z* 1 13 μ m, *Z* 4 20 μ m, *Z* 5 50

Qayyum *et al.*: Euseius affinis, Euseius alterno, Pakistan

μm ; $s448 \mu\text{m}$, $S2 = S4 = 23 \mu\text{m}$, $S5 25 \mu\text{m}$; $r3 15 \mu\text{m}$ and $R1 13 \mu\text{m}$ in length (both on membrane). Seta $j3 < j3 - z2$, $z2 < z2 - z4$, $z4 < z4 - s4$, $S5 > S5 - Z5$; seta $Z4$ anterior to seta $S4$, $15 \mu\text{m}$ and $23 \mu\text{m}$ apart from $S4$ and $S5$, respectively (Fig. 2-A). Peritreme blunt ended, reaching much below seta $s4$. Peritremal shield base, $13 \mu\text{m}$ long, as shown in Fig. 2-E.

Venter: Sternal shield $82 \mu\text{m}$ long, $65 \mu\text{m}$ wide, anterior margins almost straight, 3 pairs sternal setae, 2 pairs pores; sternal setae $St1 < St1 - St2$, $St2 < St2 - St3$. Metasternal setae 1 pair, on membrane, metasternal platelets absent. Genital shield smooth, $68 \mu\text{m}$ wide, wider than ventrianal shield width, setae 1 pair. Genital and ventrianal shields $83 \mu\text{m}$ apart, membranous fold absent between them. Ventrianal shield smooth, ovate, $82 \mu\text{m}$ long, $60 \mu\text{m}$ wide, 3 pairs preanal setae, 1 pair elliptical pores (Fig. 2-C). Four pairs setae including $JV5 25 \mu\text{m}$ long, smooth on membrane surrounding ventrianal shield. Metapodal platelets 1 pair on each side; primary, elongate, rounded anteriorly, pointed posteriorly, $13 \mu\text{m}$ long; secondary, $4 \mu\text{m}$ long (Fig. 2-C). Spermatheca cervix tubular, with a bend medially, other parts not clear (Fig. 2-D).

Legs: Leg IV with 3 macrosetae, 1 seta each on genu, tibia and basitarsus, measuring $60 \mu\text{m}$, $55 \mu\text{m}$ and $80 \mu\text{m}$ in length, respectively, all setae pointed, simple (Fig. 2-F).

Male: Not came in collection.

Type: Holotype female, collected Daphar Forest on 24.vii.1995 (Shahbaz) from unidentified host plant No. 12/95, paratypes 1 female, same collection data, 2 females, collected Jhang on 20.ix.1994 from "Citrus" (*Citrus sinensis*). All deposited in the Acarology Research Laboratory, Department of Agric. Entomology, University of Agriculture, Faisalabad - Pakistan.

Remarks: *Euseius alterno*, new species is closely related to *Euseius lucidus* Parvez due to most of body the characters but following characters separate these two species from each other.

1. Cheliceral movable digit without teeth and fixed digit with 3 teeth in *lucidus* whereas movable digit with 1 tooth and fixed digit with 2 teeth in this new species.
2. Dorsal shield with 10 pairs pores in *lucidus* but 3 pairs pores in this new species.
3. Setae $j3$ and $z4$, longer then the distances to seta next in line in *lucidus* but setae $j3$ and $z4$, smaller in this new species.
3. Peritreme crossing seta $z2$ in *lucidus* but much below seta $s4$ in this new species.
4. Shape of peritremal shield base varies in both the species.
5. Shape of spermatheca varies in both the species.
6. *Euseius alterno*, new species, *Euseius caudicis*, new species, *Euseius basidium*, new species, *Euseius demissus*, new species, *Euseius dentaneus*, new species are closely related to one another due to the absence of membranous fold between genital and ventrianal shields; serrate setae $Z5$ and $Z4$ anterior to seta $S4$ and $S5$ but the following characters separate *Euseius alterno*, new species from above mentioned species:

1. Dorsal shield with variable number of pores in *caudicis*, *basidium*, *demissus*, *dentaneus* but 3 pairs pores in this new species.
2. The position of peritreme different in *caudicis*, *basidium*, *demissus*, *dentaneus*, but reaching much below seta $s4$ in this new species.
3. Shape of peritremal shield base differs in all the species. Shape of ventrianal shield varies from one another in all the species.

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