



A new species of *Amblyseius* Berlese (Acari: Phytoseiidae) from Kerala, India

P. P. Santhosh* and Mary Anithalatha Sadanandan

P.G. & Research Department of Zoology, Malabar Christian College, Calicut, Kerala, 673001, India. Affiliated to University of Calicut.

Email: santhuptb@yahoo.com; manithals@yahoo.co.in

ABSTRACT: During the course of investigation of phytoseiid mites inhabiting medicinal plants in North Kerala, a new species viz., *Amblyseius velayudhani* sp.nov. was identified and is described with appropriate illustrations. © 2016 Association for Advancement of Entomology

KEYWORDS: Predatory mite, Phytoseiidae, *Amblyseius*, New species.

Predatory mites are a significant beneficial group on account of their role in the maintenance of pest mite population below economic injury level. Predatory mites of the family Phytoseiidae are recognized as one of the most valuable groups of predators on plant feeding mites, especially spider mites.

The erection of the genus, *Amblyseius* was done by Berlese in 1914. The status of genus *Amblyseius* was made by Chant (1959). Wainstein (1962) again recognized *Amblyseius* and erected 7 subgenera and 8 sections. Genus *Amblyseius* is the largest group under the sub family Amblyseiinae with 400 species described from the world. Out of the 2436 phytoseiids from world, 195 species have been reported from India (Demite *et. al.*, 2014, Mallik *et. al.*, 2010).

The specimens under study were collected from infested leaves of medicinal plants and examined under stereozoom microscope. Mites were picked up with camel hair brush and permanent slides were prepared in Hoyer's medium (Haderson, 2001). The

setal nomenclature follows that of Rowell *et.al.*, (1978), Chant and Yoshida-Shaul (1989, 1991) and leg chaetotaxy of Evans (1963). Classification of Phytoseiidae followed is that of Chant and McMurtry (2007). Measurements are in microns showing means and ranges.

The specimens are kept in the P.G. & Research Department of Zoology, Malabar Christian College, Calicut and will be deposited to the National Zoological Collection of the Zoological Survey of India, Calicut, Kerala.

***Amblyseius velayudhani* sp. nov. (Fig 1)**

urn:lsid:zoobank.org:act:9ABEAB36-2CA5-4320-9A01-274CD014789B

Female:

Dorsum: Dorsal shield **370** (350-400) long and **280** (250-290) wide, smooth with 17 pairs of setae and 2 small pores. Measurement of setae: j1-**30** (28-32), j3-**40** (38-42), Z4- **90** (80-95), Z5- **250** (220-255) s4-**100** (92-104), other setae like j4, j5, j6, J2, J5, z2, z4, z5, S2, S4, S5, r3 and R1 are minute. Distance between j1-**10** (9-11), j3-**40** (35-45).

* Author for correspondence

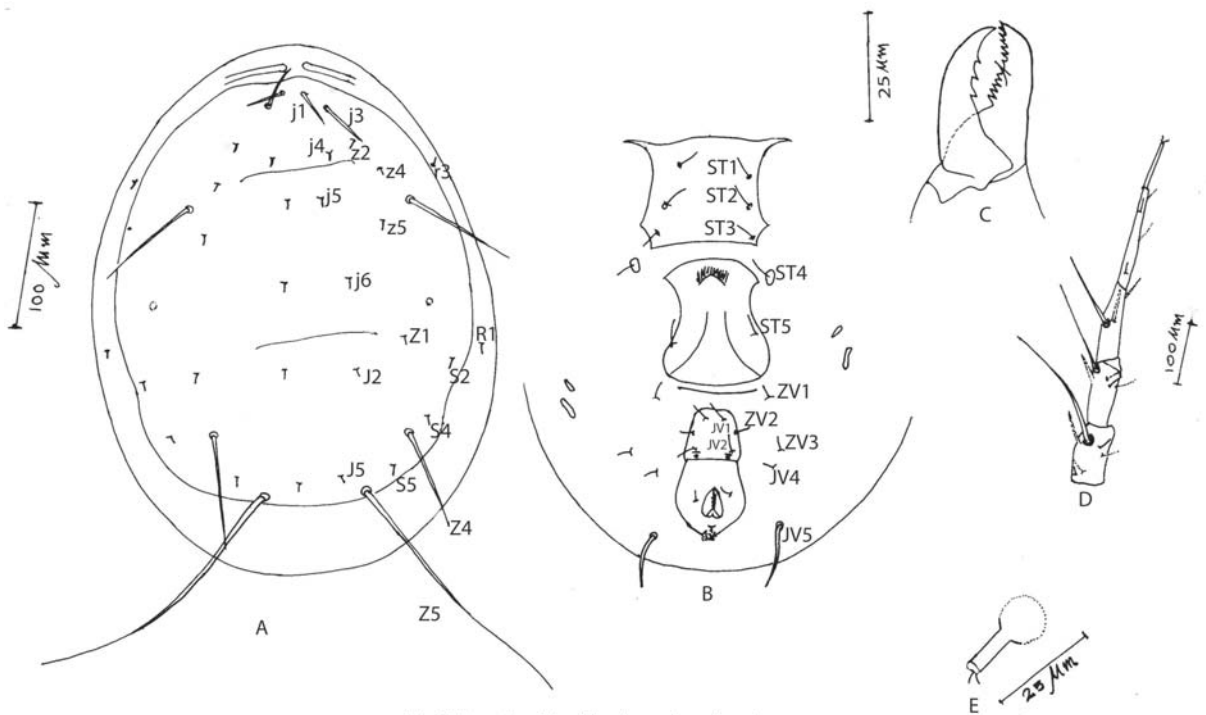


Fig.1. Female of *Amblyseius velayudhani* sp. nov.

A -Dorsal view .B-Ventral view .C-Chelicera .D-Leg.IV .E-Spermatheca

Venter: Sternal shield **90** (75-95) long, **100** (90-110) wide with 3 pairs of setae. Lateral margin of sternal shield slightly concave. ST1, ST2 and ST3-**20** (18-22), ST4-**15** (13-16), ST5-**14** (13-15). Distance between ST1-**50** (45-53), ST2 and ST3. **60** (58-63), ST5-**80** (76-83). Genital shield is **90** (85-96) wide. A clear septum is present between the ventrianal shield and genital shield. Ventrianal shield has a division below the elliptical pore but the shield is not separated each other. Ventrianal

shield **100** (95-105) long and **50** (45-55) wide with 3 pairs of preanal setae measuring JV1-**10** (8-12), ZV2- **9** (8-10), JV2-**5** (6-7). Four pairs of setae present on the area around the ventrianal shield. Setae JV4- **4** (3-5), JV5-**50** (48-55), ZV1-**8** (7-9), ZV3-**6** (5-7). Paranal setae **6** (5-6.5), post anal setae **-7** (6-8). Two pairs of metapodal plate present. Primary one 10 long and accessory one 7 long. Peritreme extends anteriorly up to j1. Spermatheca with tubular cervix (**10**) and short atrium. Fixed digit of chelicera with 6 teeth anterior to a short

		2	1		2	2
Leg chaetotaxy:	genu II	1	---	----	1,	tibia II 1 --- -- 1;
		2	0			1 0
		2	1			2 2
	genu III	1	---	----	1,	tibia III 1 -- ---- 1.
		2	0			0 0

pilus dentilis, 5 teeth posterior to it; movable digit with 3 teeth. Macrosetae present on leg IV- genu-110 (100-120), tibia-70 (68-78), basitarsus 50 (45-60)

Male: Unknown

Habitat: *Ocimum sanctum* (L.); *Cucurbita maxima* (Duch.)

Material examined: HOLOTYPE:Female, INDIA:KERALA: Botanical Garden, Calicut University, (Malappuram District), 18.iv.2014, ex:*Ocimum sanctum* (L.), coll. Santhosh (No.M 30/1). Five paratype slides with three females from Vengeri (Kozhikode district), 25.vi.2015, ex. *Cucurbita maxima* (Duch.), coll.Santhosh (No.K 30/2, 30/3, 30/4) and two female paratype, collection details same as holotype (No.M 30/5, 30/6).

Remarks: This new species closely resembles *A. cucurbitae* (Rather, 1985) in dorsal chaetotaxy but differs from it by the possession of the following features:

1. Dorsal shield longer and wider (400, 290) than that of *A. cucurbitae* (365, 197).
2. The ventrianal scutum shows division below the elliptical pore which is absent in *A.cucurbitae*.
3. In the new species Z4 (90) is shorter and Z5 (250) is longer, without serration whereas in *A.cucurbitae* it is serrated (Z4-109, Z5-235).
4. Fixed digit of chelicera with 11 teeth with short *pilus dentilis* whereas in *A.cucurbitae* it has 9 teeth without a *pilus dentilis*.
5. Movable digit of chelicera with 3 teeth, instead of 1 in *A.cucurbitae*.
6. Macro setae on leg IV genu-110, tibia-70, and tarsus- 50 long, whereas in *A. cucurbitae* genu -137, tibia -74, and basitarsus- 74 long.
7. Spermatheca with tubular cervix and short atrium instead of corniform cervix and bifid atrium in *A. cucurbitae*.

This new species also resembles *A. perditus* (Chant

and Baker, 1965) in dorsal chaetotaxy, structure of ventrianal shield and chelicerae but differs from it by the following features:

1. Dorsal shield longer and wider (400, 290) than in *A. perditus* (351,212).
2. Spermatheca with tubular cervix and short atrium instead of tubular-pocular cervix with nodular atrium in *A. perditus*.
3. Length of macrosetae: genu-110, tibia-70, tarsus-50 compared to that of *A. perditus*, 78, 58, 64 respectively.

Etymology: The nomenclature of this new species is dedicated to the memory of late Mr. Velayudhan, who is the father of first Author.

ACKNOWLEDGEMENTS

We wish to express our gratitude to the Principal and Manager, Malabar Christian College, Calicut, for the facilities provided. We are indebted to Dr. S.K. Gupta, Emeritus Scientist (MoEF), Colleges under Calcutta University, West Bengal for the confirmation of the new species. The First Author is also thankful to U.G.C, New Delhi for the financial assistance extended under FDP.

REFERENCES

- Berlese A. (1914) *Acarinuovi*. Redia., 10:113-150
- Chant D.A. (1959) Phytoseiid mites (Acarina: Phytoseiidae). Part II, A Taxonomic review of the family Phytoseiidae, with descriptions of 38 new species. *Canadian Entomologist (supp.)*12:1-166.
- Chant D.A and Baker E.W. (1965) The Phytoseiidae (Acarina) of Central America. *Memoirs of Entomological Society of Canada*, 41: 1-57.
- Chant D.A. and McMurtry J.A. (2007) *Illustrated Keys and diagnosis for the genera and subgenera of the Phytoseiidae of the world (Acari: Mesostigmata)*. Indira Publishing House, West Bloomfield, 1- 220 pp.
- Chant D.A. and Yoshida-Shaul E. (1989) Adult dorsal setal pattern in the family Phytoseiidae (Acari: Gamasina). *International Journal of Acarology*, 15(4):219-233.
- Chant D.A and Yoshida-Shaul E. (1991) Adult ventral setal pattern in the family Phytoseiidae (Acari:

- Gamasina). *International Journal of Acarology*, 17(3):187-199.
- Demite P.R., McMurtry J.A. and Moraes G.J. (2014) Phytoseiidae Database: a website for taxonomic and distributional information on phytoseiid mites (Acari). *Zootaxa* 3795(5): 571–577.
- Evans G.O. (1963) Observations on the Chaetotaxy of the legs in the free-living Gamasina (Acari: Mesostigmata). *Bulletin of British Museum (Natural History) Zoology*, 10: 277-303
- Haderson R.C. (2001) Technique for positional slide mounting of Acari. *Systematic and Applied Acarology Special publications* 7: 1-4
- Mallik B., Chinnamada Gowda C., Srinivasa N. and Rajeshkarappa. 2010. Phytoseiid mites as biocontrol agents. Indian scenario. *Proceedings-International symposium cum workshop in Acarology BCKN, Kalyani, W. Bengal.* 117-118.
- Rather A.Q. (1985) On some Phytoseiid mites from India. *Riv. Parasitology*, 46(1/2): 291-296.
- Rowel H.J., Chant D.A and Hansell R.I.C. (1978) The determination of setal homologies and setal patterns on the dorsal shield in the family Phytoseiidae (Acarina: Mesostigmata). *Canadian Entomologist*, 110: 859-876.
- Wainstein B.A. (1962) Revision du genera *Typhlodromus Scheuten*, 1857 et systematique de la familie des Phytoseiidae (Berlese, 1916) (Acarina: Parasitiformes). *Acarologia*, 4(1): 15-30.

(Received 13 October 2015; Accepted 05 December 2015; Published 31 March 2016)