Uttar Pradesh J. Zool. 25(1) : 81-84, 2005 ISSN : 0256-971X

TWO NEW SPECIES OF PREDATORY MITES (ACARINA : PHYTOSEIIDAE) FROM KERALA (INDIA)

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Two new species of predatory mites of the family Phytoseiidae *viz. Amblyseius* (*Amblyseius*) *mohanasundarami* sp. nov. and *A.* (*A.*) *koothaliensis* sp. nov. are described with appropriate illustrations.

INTRODUCTION

Predatory mites constitute a highly significant beneficial group on account of their vital role in the maintenance of pest population below the economic injury level. The species of Phytoseiidae are potentially important as a biotic factor in the control of phytophagous mites (Ewing, 1914). Mass multiplication methods have been developed to use these predators in commercial scale on a variety of crops (Lo *et al.*, 1979; Krishnamoorthy, 1982). Phytoseiidae contain 168 species under 12 genera (Gupta & Arun Gupta, 1999). However, the reports on occurrence of new species are scanty from peninsular India. Hence a systematic survey was undertaken to unravel the occurrence of new species of Phytoseiidae from various districts of Kerala.

MATERIALS AND METHODS

The predatory mite fauna harbouring various species of economically important plants were collected by making extensive surveys in Kerala. Samples containing leaves, twigs, petioles and flowers were randomly collected in polythene bags and examined under stereozoom microscope. Quite often plant parts were beaten over a dark coloured rexin sheet and the dislodged mites were picked up with a camel hair brush and stored in 70% alcohol. They were then upgraded in alcohol series and then mounted in Hoyer's medium permanently. All the measurements are given in microns. All the type specimens have been deposited in the Division of Acrology, Department of Zoology, University of Calicut, Kerala.

RESULTS AND DISCUSSION

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

Female : Dorsal shield 365 long, 248 wide, smooth anteriorly and rugose posteriorly with 17 pairs of setae. j_1, j_3, s_4, Z_4, Z_5 long, Z_5 the longest; all other setae minute. Measurements of setae : j_1-33, j_3-48, s_4-99, Z_4-90, Z_5-252. Sternal shield 75 long, 90 wide with 3 pairs of sternal setae, 4th pair placed on the metasternal plates. Genital shield 146 wide with a pair of genital setae (18 long). A band present between genital and ventrianal shield. Ventrianal shield 100 long and 78 wide with 3 pairs of preanal setae and a pair of semicircular preanal pores; 4 pairs of setae present around ventrianal shield. Setae JV_5-65 long; 2 pairs of metapodal plates present, primary one 24 long and accessory one 10 long. Fixed digit of chelicera multidentate with a strong *pilus dentilis*, movable digit with one tooth. Peritreme extends beyond j_1 and curves inwards. Spermatheca with short cervix and swollen atrium. Macrosetae present on leg IV : genu-140, tibia-90, basitarsus-60; genu I-38, genu II-48, genu III-48.

Leg chaetotaxy : genu II $\frac{2\ 2}{0\ 0}$ $\frac{---\ ---}{1}$, tibia II $\frac{1\ 2}{1\ 1}$ $\frac{---\ ---}{1}$;

genu III $\frac{2\ 2}{1\ 0}$ $\frac{---\ ---}{1}$, tibia III $\frac{1\ 2}{1\ 1}$ $\frac{---\ ---}{1}$.

Male : Dorsal chaetotaxy similar to that of female spermatophoral process as illustrated.

Habitat : *Dioscorea alata*

Material examined : Holotype ♀ marked on each slide along with other 3 ♀♀ and a ♂, INDIA : KERALA : West Hill (Kozhikode district), 20.iv.2000, ex. *Dioscorea alata*, coll. Mary Anitha (No. A58/1). Two paratype slides with 12 ♀♀ collection details as that of the holotype (No. A58/2, 58/3).

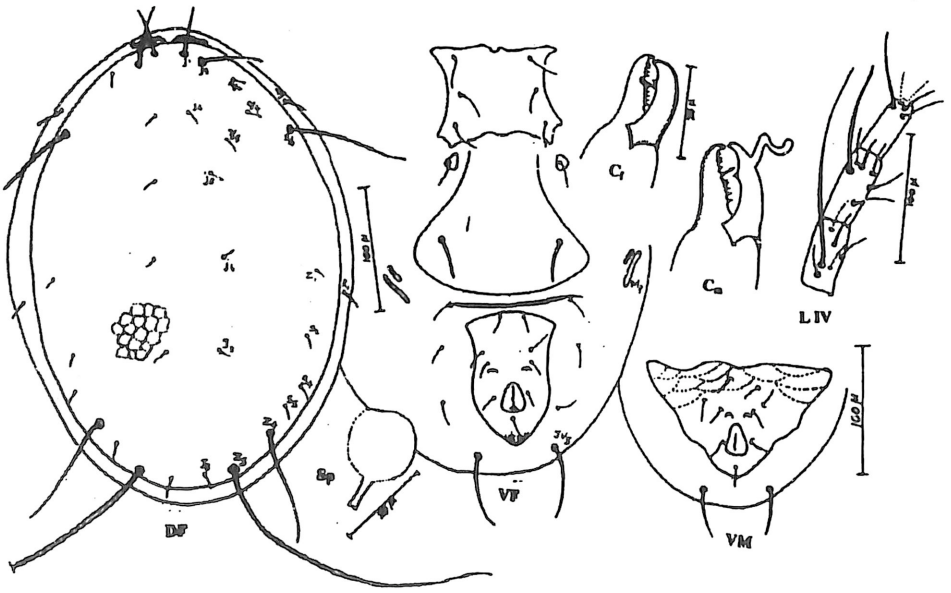

Fig. 1 : *Amblyseius* (*Amblyseius*) *mohanasundarami* sp. nov.

Remarks : This new species resembles *A.* (*A.*) *channabasavannai* Gupta (1986) in the dorsal chaetotaxy, peritreme structure and body design, but can be clearly differentiated from it by the possession of the following characters :

1. Movable digit of the chelicera possesses only a single tooth instead 4 in *A.* (*A.*) *channabasavannai* Gupta.
2. Shape of spermatheca different.
3. Larger size of genital shield (167 wide), whereas it is 76-80 in *A.* (*A.*) *channabasavannai* Gupta.
4. Longer nature of macrosetae on leg IV genu and tibia; genu 140 (80-95); tibia 90 (60-64).

This species is named for Dr. M. Mohanasundaram, Retd. Professor of Entomology, T.N. Agricultural University, Coimbatore for his rich contribution to the advancement of Acrology.

Amblyseius (Amblyseius) koothaliensis sp. nov. (Fig. 2)

Female : Dorsal shield 360 long, 295 wide with 17 pairs of setae, j_1, j_3, s_4, Z_4 and Z_5 long and Z_5, the longest. Measurements of setae : j_1-35, j_3-75, s_4-210, Z_4-115 and Z_5-528. Two pairs of sublateral setae present, $r_3 = R_1 = 18$, on the lateral integument. All other body setae measures 15-24 in length. Broad reticulate pattern seen on the dorsum. Sternal shield 78 long, 86 wide with 3 pairs of sternal setae (30 long), and 4th pair present on the faintly visible metasternal plates. Genital shield 90 wide with a pair of setae (20 long). The shape of ventrianal shield as figured measuring 120 long and 105 wide with 3 pairs of preanal setae (28 long) and a pair of crescent shaped preanal pores; 4 pairs of ventrolateral setae present on the membrane around the ventrianal shield. Setae JV_5 smooth, 70 long. Spermatheca as figured with round bulged captitulum and shorter tubular cervix. Chelicera 100 long and proportionate to the body size. The fixed digit of the chelicera with a distinct *pilus dentilis*, 5 teeth present anterior to *pilus dentilis* and 5 posterior to it. Movable digit tridentate; all the teeth prominent and pointed. Peritreme extends anteriorly beyond j_1, peritremal shield joined with dorsal shield anteriorly. Macrosetae present on leg I, III and IV; genu IV-264, tibia IV-201, basitarsus-160; genu III-148, tibia III-86, basitarsus III-115; genu I-93, tibia I-150, basitarsus I-120. Separation between basitarsus and tarsus weak, tarsal tips of the legs end with pinsor-like claws.

Leg chaetotaxy : genu II $\frac{2}{0}$ $\frac{2}{0}$ 1, tibia II $\frac{1}{1}$ $\frac{2}{1}$ 1 and genu III $\frac{1}{0}$ $\frac{2}{1}$ $\frac{2}{1}$ 1.

Male : Dorsal chaetotaxy similar to that of female. Spermatophoral process, ventrianal shield and sternitigenital shield as figured.

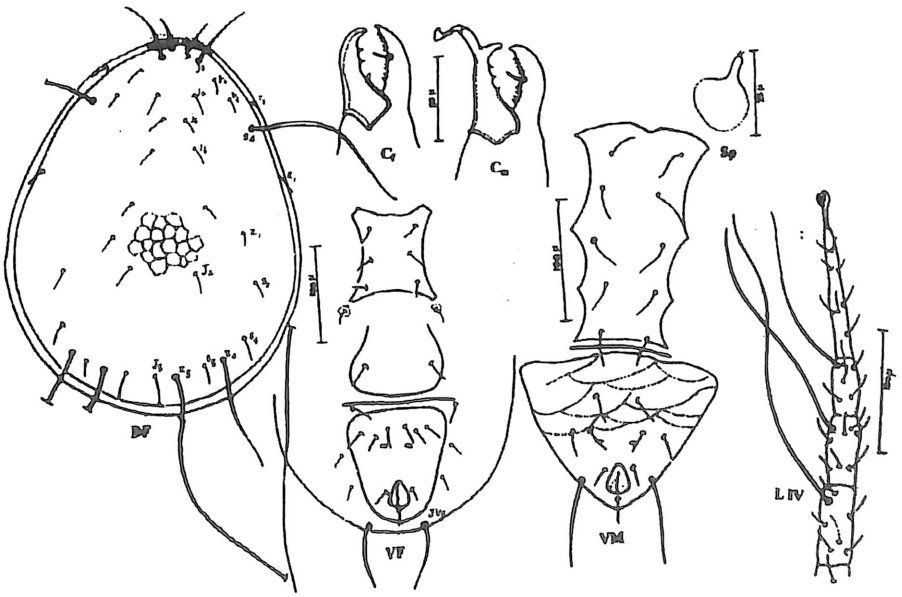

Fig. 2 : *Amblyseius (Amblyseius) koothaliensis* sp. nov.

Habitat : *Carica papaya*

Material examined : Holotype ♀ marked on the slide along with other 3 ♀♀ INDIA : KERALA : Agricultural Farm, Koothali (Kozhikode district), 19.iv.2001, ex. *Carica papaya*, coll. Mary Anitha (No. A14/1). Paratype slides with 14 ♀♀ and 2 ♂♂ collection details same as holotype (No. A14/2, 14/3 and 14/4).

Remarks : This new species can be differentiated from all other known species by the possession of the following characters :

1. Pinsor-like claws on tarsal tips of the legs.
2. Macrosetae on Leg I, III and IV.
3. Very long nature of the seta Z_5 when compared to all the other species studied.
4. Broad reticulate pattern of the dorsum.
5. Weak separation between basitarsus and tarsus.

Abbreviations : Cf=Chelicera of female; Cm=Chelicera of male; DF=Dorsal view of female; DM=Dorsal view of male; LIV=Leg IV showing setation; Mp=Metapodal plate; Sp=Spermatheca; VF=Ventral view of female; VM=Ventral view of male.

ACKNOWLEDGEMENTS

Author is thankful to UGC, New Delhi for the financial support extended under FIP. Thanks are also due to the authorities of University of Calicut for providing the facilities to work.

REFERENCES

EWING, H.E. 1914. The common red spider or spider mite. *Bull. Ore. Agric. Exp. Stn.* **121** : 95.

GUPTA, S.K. 1986. *Fauna of India (Acari : Mesostigmata). Family Phytoseiidae.* Zoological Survey of India, Calcutta. pp. 350.

GUPTA, S.K. & ARUN, GUPTA. 1999. Progress of taxonomic research on Indian mites upto the end of twentieth century and prospects of research in the next milliennium. *J. Acarol.* **15**(1-2) : 8-83.

KRISHNAMOORTHY, A. 1982. Mass rearing technique for a indigenous predatory mite *Amblyseius tetranychivorous* Gupta (Acarina : Phytoseiidae) in the laboratory. *Entomon.* **7** : 47-49.

LO, K.C., HO, C.C. & CHEN, S.T. 1979. Artificial propagation of *Amblyseius taiwanicus* and its tolerance to some pesticides. *J. Agri. Res. China.* **28** : 251-259.

QUAYLE, H.J. 1912. Red spiders and mites of citrus tree. *Calif. Agri. Exp. Stn. Bull.* **234** : 483-530.