

PHYTOPHAGOUS MITE FAUNA OF ASSAM TOGETHER WITH NEW RECORDS AND NEW SPECIES

G. L. SADANA & B. K. GUPTA 1983

Department of Zoology, Punjab Agricultural University, Ludhiana, India

(Received 21 February 1982)

Seven species of Tetranychoid mites are reported from the Assam State. Of these, three species viz. *Brevipalpus assamensis*, *B. gauhatiensis*, *B. tinsukiaensis* are new. The genus *Ultratenuipalpus* and the species *Ultratenuipalpus meekeri* (Deleon), 1957, *Tetranychus puschelii* Meyer, 1974 are reported for the first time from India.

(Key words: mite fauna of Assam, new records, new species)

The phytophagous mite fauna of Assam State is rather poorly known. So far, only twelve Tetranychoid mites are known to infest various economic plants of the State (Ghai, 1964; Gupta, 1976; Prasad, 1974). During an extensive survey, seven species of Tetranychoid mites infesting different economic plants were encountered. These species belong to the genera *Brevipalpus*, *Ultratenuipalpus*, *Tetranychus* and *Eutetranychus*. The genus *Ultratenuipalpus* and the species *Ultratenuipalpus meekeri* (Deleon) and *Tetranychus puschelii* Meyer are recorded for the first time from India. Three new species of the genus *Brevipalpus* Donnadieu were also encountered which are described here. In addition, many new host plants of these mites have been recorded which are marked with asterisks in their collection data. With the additions of the present records to the already known mite fauna, the total number of Tetranychoid mites now known from the Assam State stands at seventeen.

1. *Brevipalpus assamensis* sp. nov.

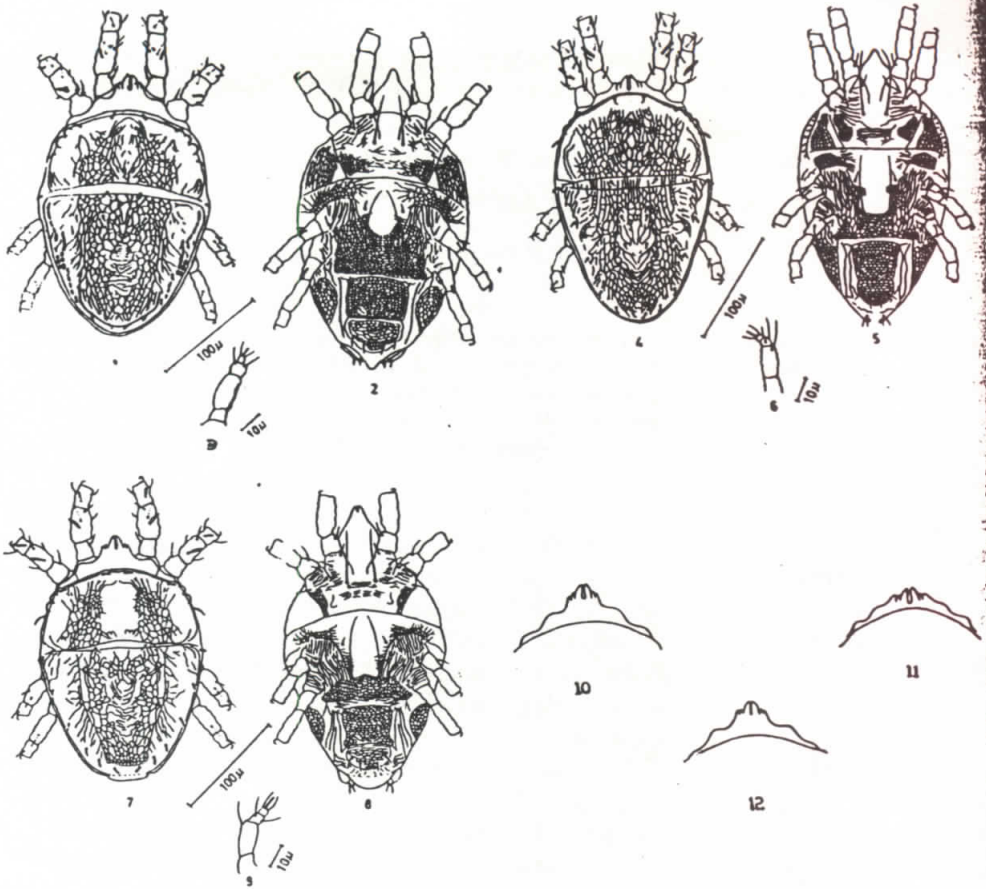
(Fig. 1-3, 10)

Female: Body 300.50¹ long including

rostrum and 175 wide. Palpus 4 segmented, with 1 sensory rod and 2 setae on terminal segment. Rostral shield deeply notched with a median and 4 lateral lobes on each side. Rostrum reaching upto middle of femur I. Propodosoma with reticulations mediolaterally; irregular and broken striations medially; bare laterally. Propodosomal setae 3 pairs, lanceolate and serrate, measuring, 5, 5 and 7.50 respectively. Eyes 2 pairs, 1 pair on each side. Humeral setae 1 pair, each seta 5 long. Hysterosoma with reticulations meeting caudally; faint reticulations anteromedially; transverse and broken striations in the rest of median portion; irregular and broken striations laterally. Dorsocentral setae 3 pairs, measuring 6.25, 5 and 5 respectively. Dorsolateral setae 5 pairs, lanceolate, serrate and located close to a thick band, I 5, II 5, III 7.50, IV 7.50, V 7.50 long.

Ventrally, propodosoma with a few striations and reticulations near the bases of coxae I and II. Reticulations inner and lateral to the posterior apodemes of coxae II. Area anterior to coxae III, in front of coxae IV, anterior and lateral to ventral shield, inner to the bases

¹Measurements are in μ m, unless otherwise stated.



Figs. 1—3 *Brevipalpus assamensis* sp. nov. 1. Dorsal view (Legs partially shown); 2. Ventral view (Legs partially shown); 3. Palpus. Figs. 4—6 *Brevipalpus gauhatiensis* sp. nov. 4. Dorsal view (Legs partially shown); 5. Ventral view (Legs partially shown); 6. Palpus. Figs. 7—9 *Brevipalpus tinsukiaensis* sp. nov. 7. Dorsal view (Legs partially shown); 8. Ventral view (Legs partially shown); 9. Palpus. Figs. 10—12 Rostral shields of *Brevipalpus assamensis* sp. nov., *B. gauhatiensis* sp. nov. and *B. tinsukiaensis* sp. nov. respectively.

of posterior medioventral metapodosomal setae with reticulations whereas area in front of coxae III and on coxae IV with striations. Ventral and genital shields reticulated. Ventral propodosomal setae 1 pair, long, each measuring 40; anterior medioventral metapodosomal setae 1 pair, each measuring 6.25; posterior medioventral metapodosomal setae 1 pair, long,

each measuring 37.50; ventral shield setae 1 pair, each measuring 5; genital shield setae 2 pairs, setae of both pairs being 12.50 long; anal setae 2 pairs. All setae on venter simple.

Legs 4 pairs, segments wrinkled. Setae and solenidia (in parentheses) on legs I-IV; coxae 2-2-1-1; trochanters 1-1-2-1

femora 4-4-2-1; genua 3-3-1-1; tibiae 5-5-3-3; tarsi 7(1)-7(1)-5-5.

Male: Not known.

Holotype: ♀, encircled on slide No. A73b, ex. unidentified plant, 14.v.1981, New Bongaigaon, Coll. Sita Ram.

Paratypes: 2 ♀♀ and 1 ♀ on slide Nos Ala and b, ex. *Tugetes erecta*, 7.v.1981, Kismadarika (Kamrup, Assam); 6 ♀♀ on slide No. A15, ex. *Pergularia daemia*, 6 ♀♀ on slide No. A40a, ex. *Ocimum sanctum*, 9.v.1981, Tinsukia; 6 ♀♀ on slide No. A23, ex. *Jasminum grandiflora*, 4 ♀♀ and 5 ♀♀ on slide Nos. A 32a and b, ex. *Plumeria acutifolia*, 10.v.1981, Dibrugarh; 10 ♀♀, 8 ♀♀, 8 ♀♀ and 10 ♀♀ on slide Nos. A 60a, b, c and d; ex. *Helianthus annuus*, 15 ♀♀, 14 ♀♀ and 15 ♀♀ on slide Nos. A62a, b, and c, ex. *Dahlia* sp., 8 ♀♀ and 14 ♀♀ on slide Nos. A63a and b, ex. Glare, 8 ♀♀ on slide No. A70a, ex. *Ocimum sanctum*, 12.v.1981, Gauhati; 15 ♀♀, 15 ♀♀, 10 ♀♀ and 8 ♀♀ on slide Nos. A72a, b, c and d, ex. *Ipomoea reptans*, 7 ♀♀ and 14 ♀♀ on slide Nos. A73a and b, ex. unidentified plant, 14.v.1981, New Bongaigaon, Coll. Sita Ram.

Remarks: *Brevipalpus assamensis* sp. nov. resembles *B. obovatus* Donnadieu (Chaudhri, Akbar and Rasool, 1974) but differs from it in structure of rostral shield i. e., in having 4 lateral lobes on each side instead of 3 as in *B. obovatus*, pattern of reticulations on dorsum and venter and in having 2 setae on trochanter III instead of 1 seta as in *B. obovatus*. It also resembles *B. amicus* Chaudhri, 1972 but differs in rostral shield structure; pattern of reticulations on dorsum and venter.

2. *Brevipalpus gauhatiensis*

sp. nov. (Figs. 4-6, 11)

Female: Body 300 long including rostrum and 155 wide. Palpus 4 segmented,

with 1 sensory rod and 2 setae on terminal segment. Rostral shield deeply notched, with a median and 4 lateral lobes on each side. Rostrum reaching upto middle of femur I. Propodosoma with reticulations mediolaterally, median area with complete or incomplete areolae, bare laterally. Propodosomal setae 3 pairs, lanceolate and serrate, measuring 12.50, 12.50 and 13.75 respectively. Eyes 2 pairs, 1 pair on each side. Humeral setae 1 pair, each seta 3.75 long. Hysterosoma with reticulations meeting caudally, complete or broken reticulations medially, irregular striations laterally. Dorsocentral setae 3 pairs, all being 5 long. Dorsolateral setae 5 pairs, lanceolate and serrate, I 7.50, II 7.50 III 10, IV 10, V 10 long.

Ventrally, propodosoma with a few striations near the bases of coxae I and II. Reticulations inner and lateral to the posterior apodemes of coxae II. Area anterior to coxae III, anterior and lateral to ventral shield with reticulations whereas area in front of coxae III and IV with striations. Area inner to the bases of anterior and posterior medioventral metapodosomal setae bare. Ventral and genital shields reticulated. Ventral propodosomal setae 1 pair, long, each measuring 52.50; anterior medioventral metapodosomal setae 1 pair, each measuring 6.25; posterior medioventral metapodosomal setae 1 pair, long, each measuring 57.50; ventral shield setae 1 pair, each measuring 6.25; genital shield setae 2 pairs, both pairs being 12.50 long; anal setae 2 pairs. All setae on venter simple.

Legs 4 pairs, segments wrinkled. Setae and solenidia (in parentheses) on legs I-IV: coxae 2-2-1-1; trochanters 1--1-2-1; femora 4-4-2-1; genua 3-3-1-1; tibiae 5-5-3-3; tarsi 5 (1)-5 (1)-4-4.

Holotype: ♀, encircled on slide No. A65, ex. *Jasminum grandiflora*, 12.v.1981, Gauhati, Coll. Bimal Kumar Gupta.

Paratypes: 7 ♀♀ on slide No. A65, ex. *Jasminum grandiflora*; 1 ♀ on slide No. A60, ex. *Helianthus annuus*, 12.v.1981, Gauhati, Coll. Bimal Kumar Gupta.

Remarks: *Brevipalpus gauhatiensis* sp. nov. resembles *B. obovatus* Donnadieu (Chaudhri, Akbar and Rasool, 1974) but differs from it in structure of rostral shield; presence of areolae medially on propodosoma; reticulations pattern of dorsum and venter. Trochanter III has 2 setae instead of 1 seta as in *B. obovatus*. It also resembles *B. assamensis* sp. nov. but differs from it in presence of areolae medially on propodosoma and reticulation pattern of dorsum and venter.

3. *Brevipalpus tinsukiaensis*

sp. nov. (Figs 7-9, 12)

Female: Body 300 long including rostrum and 150 wide. Palpus 4 segmented, with 1 sensory rod and 2 setae on terminal segment. Rostral shield deeply notched with a median and 4 lateral lobes on each side. Rostrum extending beyond the middle of femur I. Propodosoma with reticulations medio-laterally, bare medially and laterally. Propodosomal setae 3 pairs, lanceolate and serrate, measuring, 7.50, 7.50 and 10 respectively. Eyes 2 pairs, 1 pair on each side. Humeral setae 1 pair, each seta 3.75 long. Hysterosoma with reticulations meeting caudally, incomplete reticulations medially, oblique striations laterally. Dorsocentral setae 3 pairs, measuring, 7.50, 6.25 and 6.25 respectively. Dorsolateral setae 5 pairs, lanceolate and serrate, I, II 6.25, III 6.25, IV 6.25, V. 6.25 long.

Ventrally, propodosoma with a few striations and reticulations near the bases of coxae I and II. Area inner to pos-

terior apodemes of coxae II, anterior of coxae III, posterior to coxae IV, anterior and lateral to ventral shield with reticulations whereas area in front of coxae III and IV with irregular striations. Area inner to bases of anterior and posterior medioventral metapodosomal setae bare. Ventral and genital shields reticulated. Ventral propodosomal setae 1 pair long, each measuring 50; anterior medioventral metapodosomal setae 1 pair, each measuring 7.50; posterior medioventral metapodosomal setae 1 pair, long, each measuring 55; ventral shield setae 1 pair, each measuring 7.50; genital shield setae 2 pairs, members of both pairs measuring 12.50; anal setae 2 pairs. All setae on venter simple.

Legs 4 pairs, segments wrinkled. Setae and solenidia (in parenthesis) on legs I-IV: coxae 2-2-1-1; trochanters 1-1-1-1; femora 4-4-2-1; genua 3-3-1-1; tibiae 5-5-3-3; tarsi 7 (2)-7(2)-5-5.

Male: Podosoma broad anteriorly, opisthosoma narrowed posteriorly. Dorsum differentiated into propodosoma, metapodosoma and opisthosoma by two transverse sutures.

Holotype: ♀, encircled on slide No. A40, ex. *Ocimum sanctum*, 9.v.1981, Tinsukia, Coll. Sita Ram.

Paratypes: 1 ♀ on slide No. A3, ex. *Ziziphus jujuba*, 7.v.1981, Kismadarika (Kamrup, Assam); 10 ♀♀; 11 ♀♀ and 10 ♂♂ on slide Nos. A4a, b and c. ex. *Citrus limon*, 3 ♀♀ on slide No. A40, ex. *Ocimum sanctum*, Tinsukia; 1 ♀ on slide No. A22, ex. *Citrus limon*, 2 ♀♀ on slide No. A23, ex. *Jasminum grandiflorum*, 5 ♀♀ and 2 ♀♀ on slide Nos. A 3 and b, ex. *Plumeria acutifolia*, 10.v.1981, Dibrugarh, Coll. Sita Ram.

Remarks: *Brevipalpus tinsukiaensis* sp. nov. resembles *B. rugulosus* Chaudhri

Akbar and Rasool, 1974 but differs from it in having different reticulation pattern on dorsum. In the present form the medial propodosomal portion is bare but in *B. rugulosus* it bears irregular broken striations. It further differs in having reticulated anteromedian area in front of ventral shield. The genital setae are not serrated. Trochanter III and IV have 1 and 0 setae respectively instead of 2 and 1 as in *B. rugulosus*.

4. *Ultratenuipalpus meekeri* (Deleon), 1957

Tenuipalpus meekeri Deleon, 1957, *Fla. Ent.* 40 (3): 82-93.

Collection data: 1 ♀ each on slide No. A 73 a and b, ex. unidentified plant, 14.v.1981, New Bongaigaoh (Assam), Coll. Sita Ram Yadav.

Remarks: Deleon (1957) reported this species from Mexico. The authors are reporting this species and the genus for the first time from India.

5. *Tetranychus puschelii* Meyer, 1974

Tetranychus puschelii Meyer, 1974, *Entomology Mem. Dep. agric. tech. Serv. Repub. S. Afr.* 36: 292 pp.

Collection data: 10 ♀♀ on slide No. A2, ex. *Cucumis sativa**, 7.v.1981, Patiladaha (Kamrup, Assam); 12 ♀♀ 1 ♂; 11 ♀♀ and 12 ♀♀ on slide Nos. A5a, b and c, ex. *Ocimum basilicum**, 10 ♀♀, 12 ♀♀ and 6 ♀♀ on slide Nos. A7a, b and c, ex. *Chrysanthemum** sp., 5 ♀♀, 8 ♀♀ and 9 ♀♀ on slide Nos. 10a, b and c, ex. *Jasminus sambac**, 6 ♀♀; 9 ♀♀ and 10 ♀♀, 1 ♂ on slide Nos. A 11 a, b, and c, ex. *Tagetes erecta**, 12 ♀♀, 10 ♀♀ and 14 ♀♀ on slide Nos. A12a, b and c, *Calendula officinalis**, 15 ♀♀, 1 ♂ and 15 ♀♀ on slide Nos. A16a and b, ex. *Ranunculus** sp., 16 ♀♀ and 21 ♀♀ on slide Nos. A17a and b, ex. *Cannabis sativa**, 8.v.1981, Tinsukia; 15 ♀♀, 10 ♀♀ and 12 ♀♀ on slide Nos. A13a, b and c,

ex. *Abutilon ramosum**, 7.v.1981, Kismardika (Kamrup, Assam); 15 ♀♀, 12 ♀♀ and 15 ♀♀ on slide Nos. A19a, b and c, ex. *Helianthus annuus**, 12 ♀♀, 8 ♀♀ on slide Nos. A20a, and b, ex. *Dahlia**, sp., 9.v.1981, Tinsukia; 2 ♀♀ on slide No. A21, ex. unidentified plant, 9 ♀♀, 1 ♂ on slide No. A24, ex. *Carica papaya**, 2 ♀♀ on slide No. A25, ex. *Capsicum annum**, 8 ♀♀ 1 ♂ on slide No. A27, ex. *Cannabis sativa**, 6 ♀♀ and 5 ♀♀ on slide Nos. A 29a, and b, ex. *Cosmos* sp., 5 ♀♀ and 5 ♀♀ on slide Nos. A 30a, and b, ex. *Helianthus annuus**, 9 ♀♀, 1 ♂; 5 ♀♀ and 6 ♀♀ on slide Nos. A31a, b and c, ex. *Tagetes erecta**, 14 ♀♀, 1 ♂; 12 ♀♀ and 8 ♀♀ on slide Nos. A35a, b and c, ex. *Cucumis sativus**, 9 ♀♀ and 12 ♀♀ on slide Nos. A36a, and b, ex. *Lagenaria leucontha**, 15 ♀♀, 4 ♀♀ on slide Nos. A37a, and b, ex. *Xanthium strumarium**, 8 ♀♀; 11 ♀♀, 1 ♂ and 11 ♀♀ on slide Nos. A39a, b and c, ex. *Solanum melongena**, 10.v.1981, Dibrugarh; 15 ♀♀ and 15 ♀♀ on slide Nos. A41a and b, ex. *Cucumis melo* var. *utilissima**, 12 ♀♀, 10 ♀♀ and 11 ♀♀ on slide Nos. A42a, b and c, ex. *Glycine max**, 12 ♀♀ and 20 ♀♀ on slide Nos. A44a and b, ex. *Hibiscus esculentus**, 14 ♀♀ on slide No. A51, ex. *Solanum melongena**, 13 ♀♀ on slide No. A52, ex. *Helianthus annuus**, 9.v.1981, Tinsukia, Coll. Sita Ram. 7 ♀♀ and 8 ♀♀ on slide Nos. A59a and b, ex. *Chenopodium ambrosioides** 11.v.1981, Gauhati, Coll. Bimal Kumar Gupta.

Remarks: The present form closely resembles *Tetranychus puschelii* Meyer but differs from it in having unlobed ventral striae. This difference is considered as intra-specific variation and the present form is referred as *T. puschelii*. This species has been recorded for the first time in India on many new host plants marked with asterisks in collection data.

6. *Brevipalpus phoenicis* (Geijskes) 1939

Collection data: 1 ♀ each on slide Nos. A62a and c, ex. *Dahlia** sp; 1 ♀ on slide No. A70a, ex. *Ocimum sanctum**, 12.v.1981, Gauhati, Coll. Sita Ram Yadav.

7. *Eutetranychus orientalis* (Klein), 1936

Collection data: 10 ♀♀, 1 ♂; 15 ♀♀ and 12 ♀♀ on slide Nos. A 53a, c and d, ex. *Zizyphus jujuba*; 10 ♀♀, 1 ♂; 12 ♀♀, 1 ♂ and 3 ♀♀ on slide Nos, 56a, b and c; ex. *Ricinus communis*, 3 ♀♀; 10 ♀♀, 1 ♂ and 12 ♀♀ on slide Nos. A 57a, b and c; ex. *Tabernaemontana divaricata*, 11. v. 1981, Gauhati, Coll. Bimal Kumar Gupta.

Acknowledgements: The authors are thankful to Dr. S. S. Guraya, Professor and Head, Department of Zoology, Punjab Agricultural University, Ludhiana for laboratory facilities and I C A R, for financing the scheme to carry out the taxonomic work on tetranychoid mites. The help rendered by Sita Ram is gratefully acknowledged.

REFERENCES

CHAUDHRI, W. M. (1972) The genus *Brevipalpus* in Pakistan. I. Description of six new species and redescription of one species with new records. *Pak. J. Zool.*, 4 (1), 53-88.

CHAUDHRI, W. M., S. AKBAR & A. RASOOL (1974) Taxonomic studies of the mites belonging to the families Tenuipalpidae, Tetranychidae, Tuckerellidae, Caligonellidae, Sigmaleidae and Phytoseiidae. PL-480 *Proceedings on Mites, University of Agriculture, Lyallpur Pakistan*, pp 1-250.

DELEON, D. (1957) The genus *Tenuipalpus* in Mexico (Acarina: Tenuipalpidae). *Fla. Entomol.* 40 (3), 82-93.

GHAJ, S. (1964) Mites, in: *Entomology in India* Silver Jubilee Number, E S I., 385-296.

GUPTA, S. K. (1976) Contribution to our knowledge of Tetranychid mites (Acarina) with descriptions of three new species from India. *Oriental Ins.*, 10 (3), 327-351.

MEYER, M. K. P. (1974) A revision of the Tetranychidae of Africa (Acari) with a key to the genera of the world. *Entomology Mem. Dep. agric. tech. Serv. Repub. S. Afr.* 36, pp. 292.

MEYER, M. K. P. (1979) The Tenuipalpidae (Acari) of Africa with keys to the world fauna. *Entomology Mem. Dep. agric. tech. Serv. Repub. S. Afr.*, 50, pp. 135.

PRASAD, V. (1974) *A Catalogue of Mites of India*. Indira Acarology Publishing House, Ludhiana (Punjab), India, pp 320.