THE CASSAVA MITE COMPLEX. II. NEW RECORDS AND DESCRIPTION OF TWO NEW SPECIES IN THE GENUS *TETRANYCHUS* FROM ASIA[1]

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-----ABSTRACT—Literature on cassava mites is updated; two new species, namely *Tetranychus manihotis* and *Tetranychus bellottii* are figured and described. -----

The first installment in this series (Flechtmann, 1978) presents a revision of the literature on mites reported from *Manihot* spp. (Euphorbiaceae), and lists twenty-two species of spider mites and one false spider mite reported from cassavas throughout the world. In the first paper three references from Asia were overlooked:

Ehara (1966) first reported *Tetranychus kanzawai* Kishida, 1927 from cassavas in Okinawa Island and in 1969 in Taiwan; Ehara and Wongsiri (1975) first reported *Eutetranychus orientalis* (Klein, 1936) and *Tetranychus truncatus* Ehara, 1956 on cassavas from Thailand.

New records and new species of mites from cassavas are:

Family ERIOPHYIDAE

Dr. Jose Maria Guerrero from Centro Internacional de Agricultura Tropical, Cali, Colombia, collected cassava leaves heavily infested by eriophyid mites which covered both surfaces giving them an ashen appearance. He informs that no damage was observed. The mite is being sent to Dr. H. H. Keifer for identification.

Family TETRANYCHIDAE

Atrichoproctus uncinatus Flechtmann, 1967

Atrichoproctus uncinatus Flechtmann, 1967: 30; Flechtmann and Baker, 1970-Ann. Entomol. Soc. Amer., 63 (1): 157.

This species was collected by J. M. Guerrero in Colombia from cassava leaves and their pecioles, from plants in greenhouses. The mites are dark green, almost black. Damages were not ascertained.

Tetranychus hydrangeae Pritchard and Baker, 1955

Tetranychus hydrangeae Pritchard and Baker, 1955-Pacific Coast Entomol. Soc. Mem. Ser., 2: 425.

This species, which has been considered as a synonym of *T. kanzawai* Kishida, 1927 by Meyer (1974), differs from the latter by the larger knob of the aedeagus and by its rounded anterior projection being more conspicuous (Ehara and Wongsiri, 1975).

T. hydrangeae was collected from cassavas in Surabaya, Indonesia, by A. Bellotti, August 1, 1977, and in East Java, at the Agriculture Faculty Malang, by Ir. Dhamayanti on Nov. 6, 1977 and forwarded by A. Bellotti.

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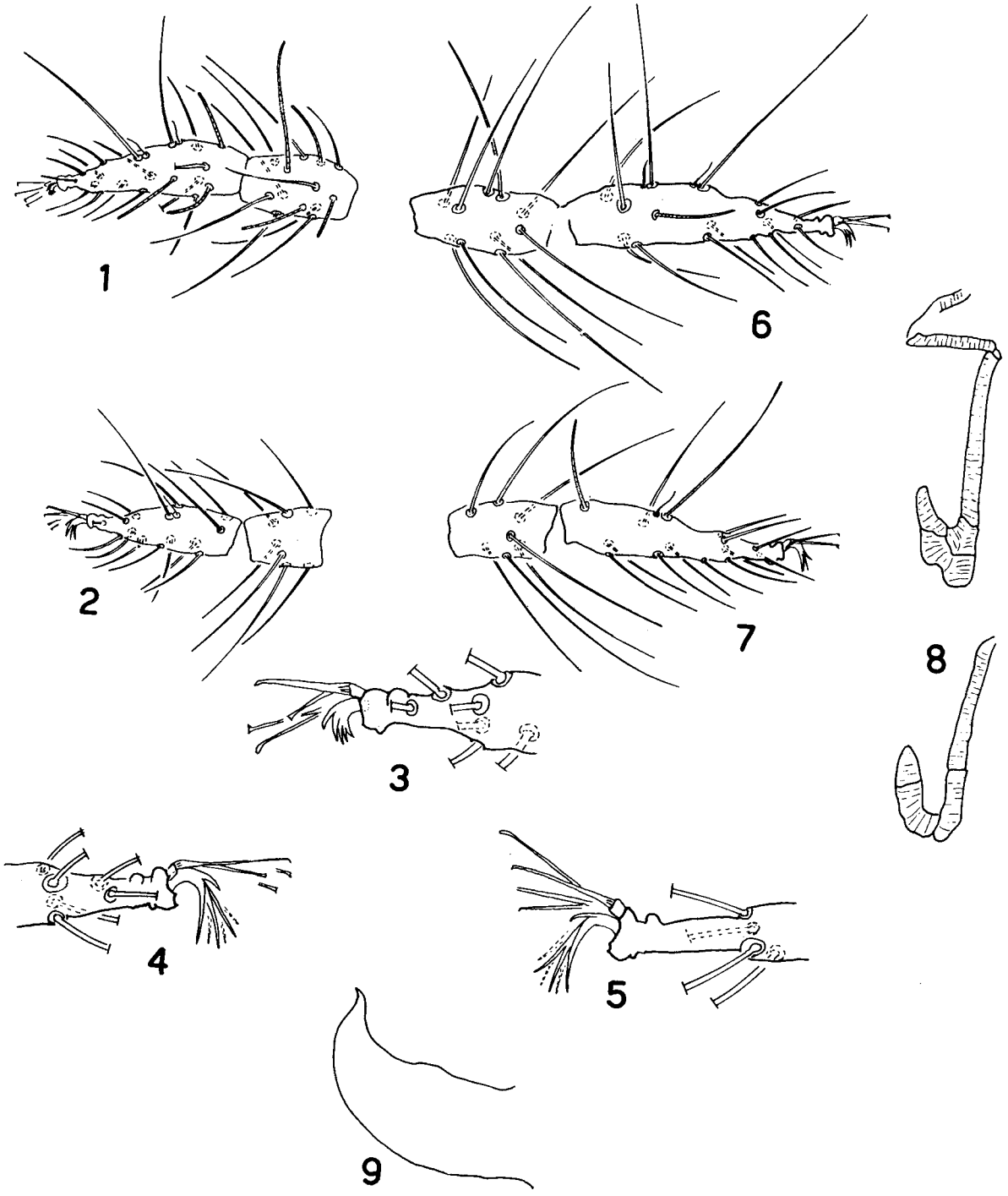
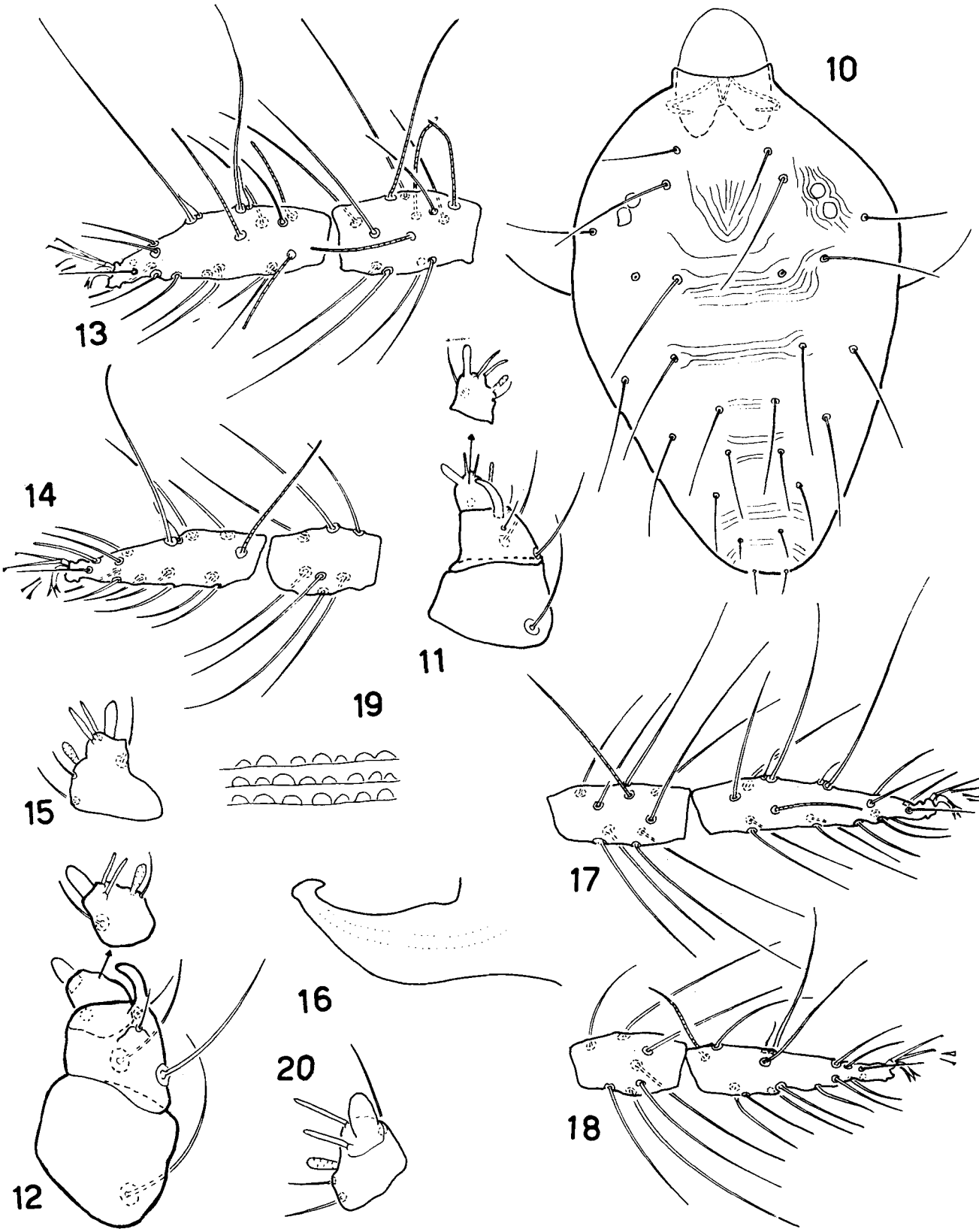


Figs. 1-9: *Tetranychus manihotis* n. sp.—1, tarsus and tibia I of male; 2, tarsus and tibia II of male; 3, tip of tarsus I of male; 4, tip of tarsus II of male; 5, tip of tarsus IV of male; 6, tarsus and tibia I of female; 7, tarsus and tibia II of female; 8, peritremes, male; 9, aedeagus.



Figs. 10-12: *Tetranychus manihotis* n. sp. —10, dorsum of male; 11, palp of male; 12, palp of female. Figs. 13-20: *Tetranychus bellottii* n. sp. –13, tarsus and tibia I of male; tarsus and tibia II of male; 15, palpal tarsus of male; 16, aedeagus; 17 17, tarsus and tibia I of female; 18, tarsus and tibia II of female; 19, lobes of dorsal striae of female; 20, palpal tarsus of female. (Obs. : figs. 13 & 14 drawn at a higher magnification than 17 & 18).

The specimens were identified by Dr. E. W. Baker.

Tetranychus manihotis n. sp.
(Figs. 1-12)

FEMALE—Dorsal body setae longer than intervals between bases. Palp with terminal sensillum robust, about two and half times as long as broad. Peritremes hooked terminally. Striae of hysterosoma forming a diamond shaped pattern between third and fourth pairs of dorsocentral setae. Lobes of dorsal striae small, triangular, giving the striae a sawtoothed appearance. Proximal duplex setae of tarsus I distad from the four proximal tactile setae. Leg chaetotaxy, from coxae to tarsi:

I	2	1	9	5	1 + 9	1 + 13 + 2 duplexes
II	2	1	6	5	7	1 + 12 + 1 duplex
III	1	1	4	4	7	1 + 9
IV	1	1	4	4	7	1 + 10

Tarsal empodial claw split in a tuft of hairs, without dorsomedian spur.

Length of body 450μm, including rostrum 530μm; width 330μm.

MALE—Dorsal body setae longer than intervals between their bases. Terminal sensillum of palpus long and slender, about four times as long as broad. Peritremes hooked distally. Dorsal hysterosomal striae transversally parallel. Aedeagus bent dorsad, typical, as figured. Leg chaetotaxy, from coxae to tarsi:

I	2	0	10	5	4 + 9	3 + 13 + 2 duplex
II	2	1	5	5	7	1 + 12 + 1 duplex
III	1	1	4	4	7	1 + 9
IV	1	1	4	4	7	1 + 10

Tarsal empodial claw I with an obvious dorsomedian spur and split into 4 platelets; II-IV ending in a tuft of hairs and a dorsomedian spur.

Length of body 410μm, including gnathosoma.

DIAGNOSIS—This species belongs to the sub-genus *Tetranychus* (*Tetranychus*) s. str., group *telarius*. The aedeagus is typical, resembling somewhat the one figured for *T. piercei* McGregor by Ehara (1966, 1969), but, the female lobes of striae are sawtoothed (angular to semicircular in *piercei*).

TYPE MATERIAL—Holotype male, ex-*Manihot* sp. (Euphorbiaceae), Obiyn-Perak, Malaysia, by A. Bellotti, 25 July 1977.

PARATYPES—10 males, 7 females, same data as for holotype. Dept. Zoology, ESALQ, Univ. S. Paulo, Piracicaba, São Paulo, Piracicaba, São Paulo, Brazil, no. 1066.

Tetranychus bellottii n. sp.
(Figs. 13-20)

FEMALE—Dorsal body setae longer than intervals between their bases. Palp terminal sensillum short and robust, about one and one third times as long as broad. Peritremes hooked distally. Striae of hysterosoma forming a diamond shaped pattern between third and fourth pairs of dorsocentral setae. Lobes of dorsal striae broadly rounded to semicircular. Proximal set of duplex setae on tarsus I distad of the four proximal tactile setae. Leg chaetotaxy from coxae to tarsi:

I	2	1	10	5	1 + 9	1 + 13 + 2 duplexes
II	2	1	7	5	7	1 + 13 + 1 duplex
III	1	1	4	4	5	1 + 9
IV	1	1	4	4	7	1 + 9

Tarsal empodial claw split in a tuft of hairs; dorsomedian spur absent.

Length of body 393-540μm; including gnathosoma 520-625μm; width 328-430μm.

MALE—Dorsal body setae longer than intervals between bases. Terminal sensillum of palpus slender, about two and half times as long as broad. Stylophore rounded anteriorly, striated longitudinally. Peritremes hooked distally; chambers, if present, difficult to distinguish Aedaeagus bent dorsad, as figured; knob with anterior angulation acute, caudal angulation. rounded; rounded dorsally. Leg chaetotaxy,, from coxae to tarsi:

I	2	1	7	5	4 + 9	3 + 13 + 2 duplexes
II	2	1	7	5	7	1 + 13 + 1 duplex
III	0	1	4	4	7	1 + 9
IV	0	1	4	4	7	1 + 9

Length of body 391μm.

This species has been named in honour of Dr. Anthony Bellotti, cassava Entomologist, Centro Internacional de Agricultura Tropical, Colombia.

DIAGNOSIS—The aedeagus is similar to that of *T. ludeni*, but the leg chaetotaxy is different and also the aspect of the lobes of dorsal striae.

The leg setal count for *ludeni* female from Colombia, S. A.. is:

I	2	1	10	5	1 + 9	2 + 13 + 2 duplexes
II	2	1	6	5	7	1 + 14 + 1 duplex
III	1	1	4	4	6	1 9
IV	1	1	4	4	7	1 10

TYPE MATERIAL—Holotype: male, ex-*Manihot* sp. (Euphorbiaceae) CTCRI, India, by A. Bellotti, 20 July 1977.

PARATYPES—4 males, 12 females, same data as holotype. Dept. Zoology, ESALQ, Univ. S. Paulo, Piracicabe, São Paulo, Brazil; no. 1067.

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