NEW SPECIES OF ERIOPHYID MITES
(ACARI: ERIOPHYOIDEA)

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ABSTRACT

Nine species of eriophyd mites are described, 3 from Poland: Aceria malvacearum n.sp., Aculus malvae n.sp., and Epitrimerus tanaceti n.sp.; 5 from Brazil: Aculus pitangae n.sp., A. cauliflorus n.sp., A. catapae n.sp., A. solani n.sp., and Phyllocopites caseariae n.sp.; and, 1 from Colombia: Calacarus guerreroi n.sp.

RESUMEN

Son descritas nueve especies de acaros eriofidos, tres de las cuales fueron colectadas en Polonia: Aceria malvacearum n. sp.; Aculus malvae n. sp.; Epitrimerus tanaceti n. sp.; cinco en Brasil: Aculus pitangae n. sp.; A. cauliflorus n. sp.; A. catapae n. sp.; A. solani n. sp. y Phyllocopites caseariae n. sp.; y una en Colombia: Calacarus guerreroi n. sp.

The eriophyids (Eriophyoidea) are undoubtedly the most numerous of the plant feeding mites although, at present, only 1859 species are known (Davis et al., 1982).

Nine new species of eriophyd mites are described in this paper, 3 from Poland: Aceria malvacearum n.sp., Aculus malvae n.sp., and Epitrimerus tanaceti n.sp.; 5 from Brazil: Aculus pitangae n.sp., A. cauliflorus n.sp., A. catapae n.sp., A. solani n.sp., and Phyllocopites caseariae n.sp.; and, 1 from Colombia: Calacarus guerreroi n.sp.

Type materials are deposited at the Department of Applied Entomology, Agricultural University of Warsaw, Warsaw, Poland.

Aceria malvacearum Boczek and Davis, New Species
(Fig. 1)

FEMALE: 258 μm (range of 8 specimens 204-301 μm) long; 56 μm wide; wormlike; yellowish. Rostrum 19 μm long; rostral seta 10 μm long; chelicerae 18 μm long. Dorsal shield 38 μm long, 40 μm wide, without lobe over rostrum, with short median, 1 admedian line and 3 submedian lines on each side. Dorsal tubercles on rear shield margin; 26 μm apart; with dorsal setae 44 μm long, reclinate and diverging. Foreleg 66 μm long, tibia 8 μm long; claw 10 μm long; feather-claw 9 μm long, 8-9 rayed. Hindleg 50 μm long; hind coxal setae 28 μm apart. First pair of coxae with longitudinal ornamentation. Thansome with about 65 microtuberculate rings; microtubercles triangular. Lateral setae 40 μm long, on sternite 13; 1st ventral setae 56 μm long, on sternite 26; 2nd ventral setae 30 μm long; caudal setae 41 μm long;

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Fig. 1. *Aceria malvacearum* n. sp.: AP—internal female genitalia; C—claws; D—dorsal view; DA—anterior dorsal view; GF—external female genitalia; and SA—anterior lateral view.

Accessory setae 3 μm long. Female genital cover flap 20 μm long, 24 μm wide; with about 14 longitudinal striae; genital setae 23 μm apart, 18 μm long.

**Male:** Unknown.

**Nymph II:** 165 μm long; shield 32 μm long; dorsal setae 20 μm long; dorsal tubercles 20 μm apart, abdomen with 68 rings.

**Host:** *Malva sylvestris* L. (Malvaceae).

**Relation to Host:** Vagrant on undersurface of the leaves.

This species is close to Aculus elacanthi Keifer and can be distinguished by the shield pattern, size and location of the dorsal tubercles and the shape of the featherclaw. The dorsal shield A. elacanthi is subtriangular, with a broken median line and one pair of admedian lines; the dorsal tubercles are large, situated slightly ahead of rear shield margin; the featherclaw is 4-rayed. In the new species dorsal shield is rhomboidal, with a complete median line and 3 pairs of admedian lines; the dorsal tubercles are small, and on rear shield margin; the featherclaw is 8-9 rayed.

Aculus malvae Boczek and Davis, New Species
(Fig. 2)

FEMALE: 186 µm (range of 12 specimens 180-203 µm) long; 82 µm wide; fusiform; yellowish-white. Rostrum 24 µm long; curved down; rostral seta 6 µm long. Shield 40 µm long; 75 µm wide, with broad anteriorly rounded lobe over rostrum, with minute granules; shield pattern of only 2 admedian lines curving lateral at both ends. Dorsal tubercles on rear margin of shield; 45 µm (32-51 µm) apart; dorsal setae 18 µm long, reclinato and diverging. Foreleg 57 µm long, with granulated tibiae and tarsi; tibia 11 µm long, claw 6 µm long, knobbed featherclaw 5-rayed, 5 µm long. Hindleg 54 µm long, tibia 9 µm long. Both pairs of coxae ornamented. Hind coxal setae 26 µm apart. Thansosome with about 40 dorsal rings, generally microtuberculate; and about 78 sternites with microtubercles. Tergal microtubercles elliptical, ventral ones almost rounded. Lateral setae 32 µm long, on sternite 56. Telesome with 5 rings; setae 30 µm long; microtubercles elongated; caudal setae 47 µm long; accessory setae 2 µm long. Female genital cover flap 12 µm long, 24 µm wide with 12 longitudinal striae; genital setae 17 µm apart, 20 µm long.

MALE: 179 µm long; shield 48 µm long; genitalia 23 µm wide.

NYMPH I: 154 µm long; shield 43 µm long; dorsal setae 12 µm long, 30 µm apart; abdomen with 54 microtuberculate tergites.

HOST: Malus sylvestris L. (Malvaceae).

RELATION to Host: Vagrant on undersurface of the leaves.

TYPE MATERIAL. Holotype: Female on slide, Poland, Warsaw-Lazienki, 22-VI-1982, D. Zagolska. Paratypes (6): females (5) and male (1) on slides, same data as holotype.

This species is close to Aculus fockeui (Nalepa and Troussart) and can be distinguished by the presence of shield spines, the shape of female genitalia and the featherclaw. In A. fockeui the shield lobe has 2 distinct spines; the female genitalia has 16-18 longitudinal striae; and the featherclaw is 4-rayed. In the new species the shield lobe is without spines; the female genitalia has 12 striae; and the featherclaw is 5-rayed.

Epitriciterus tanaceti Boczek and Davis, New Species
(Fig. 3)

FEMALE: 172 µm (range of 11 specimens 172-203 µm) long; 63 µm wide; straw-yellow; fusiform. Rostrum 17 µm long; chelicerae 20 µm long. Dorsal shield 50 µm long; 56 µm wide. Shield smooth, only laterally with some
Fig. 2. *Aculus malvae* n. sp.: AP—internal female genitalia; C—claws; DA—anterior dorsal view; GF—external female genitalia; GM—external male genitalia; S—lateral view; and SA—anterior lateral view.

granulation. Dorsal tubercles on rear margin of shield; 20 μm apart, with dorsal setae 8 μm long, pointed vertically and curved centrally. Foreleg 45 μm long; tibia 7 μm long; claw 6 μm long, knobbed; featherclaw 4-rayed, 5 μm long. Hindleg 40 μm long. Both pairs of coxae with linear troughs. Hind coxal setae 23 μm apart. Thanosome with 36 (36-41) tergites and about 70 sternites. First 3 tergites covered with delicate elongated microtubercles,
Fig. 3. *Epitricherus tanaceti* n. sp.: AP—internal female genitalia; C—claws; D—dorsal view; DA—anteromedial dorsal view; ES—lateral view of tergite-sternite juncture; GF—external female genitalia; and SA—anterolateral view.

Further tergites have such microtubercles only in central and lateral parts forming dorsally 3 longitudinal bands. Lateral setae 20 μm long on sternite 14; 1st ventral setae 46 μm long, on sternite 31; 2nd ventral setae 14 μm long, on sternite 49. Telosome with 5 microtuberculate rings and 22 μm long setae. Caudal setae 22 μm long; accessory setae 3 μm long. Female genital
cover flap 13 μm long, 24 μm wide, with 12 longitudinal striae; genital setae 14 μm apart, 25 μm long.

**MALE:** Unknown.

**NYMPH II:** 105 μm long; with microtuberculate rings.

**HOST:** Tanacetum vulgare L. (Compositae).

**RELATION TO HOST:** Vagrant on undersurface of the leaves.

**TYPE MATERIAL.** **Holotype:** Female on slide, Poland, Warsaw-Powsin Park, 13-VIII-1982, D. Zalewska. **Paratypes** (3): Females on slides, same data as holotype.

This species is close to *Epirrimerus jaceae* Liro and can be distinguished by the shape and pattern of the dorsal shield and the tergites. In *E. jaceae* the dorsal shield is longer than wide, with a few broken admedian lines; the tergites are smooth. In the new species, the dorsal shield is as long as wide with one short admedian line and some granulations laterally; the tergites have microtubercules in central and lateral regions forming a central longitudinal band.

*Aculus pitangae* Boczek and Davis, **NEW SPECIES**

*(Fig. 4)*

**FEMALE:** 185 μm (range of 23 specimens 166-191 μm) long; 60 μm wide; beige; fusiform. Rostrum 18 μm long; rostral seta 6 μm long. Shield sub-triangular, with lobe on rostrum, 42 μm (36-44 μm) long, 65 μm wide. Shield pattern with 2 distinct admedian, submedian forming a ridge which parallels shield margin, beginning and ending at the base of dorsal tubercles. Dorsal tubercles on rear margin of shield: 41 μm apart, dorsal setae 12 μm long, reclinate and slightly diverging. Foreleg 48 μm long; genu 5 μm long with setae 22 μm long; tibia 7 μm long, with seta 2 μm long. Claw 6 μm long, knobbed; featherclaw 4-rayed, 6 μm long. Hindleg 42 μm long, genu 4 μm long, tibia 5 μm long. Coxae ornamented, with small lines; hind coxae with dots; with setae 22 μm apart. Thanosome with 29 (26-34) tergites and 63 sternites. Tergites with 4 longitudinal bands of microtubercules reaching telosome. Sternites with oval, minute microtubercules. Lateral setae 12 μm long, on sternite 15; 1st ventral setae 44 μm long, on sternite 30; 2nd ventral setae 11 μm long, on sternite 48. Telosome with 6 rings and 16 μm long setae. Caudal setae 60 μm long; accessory setae absent. Genital cover flap 11 μm (10-12 μm) long; 18 μm (16-19 μm) wide; with 12 longitudinal striae; genital setae 12 μm apart, 12 μm long.

**MALE:** Unknown.

**HOST:** Eugenia uniflora L. (Myrtaceae).

**RELATION TO HOST:** Vagrants on undersurface of the leaves.

**TYPE MATERIAL:** Female on slide, Brazil, Piracicaba, Sao Paulo, 19-IX-1980, J. Boczek. **Paratypes** (22): Females on slides, same data as holotype.

This species is close to *Aculeopsis eugeniæ* Keifer (1977) described from the same host plant from Florida. However, it differs in the shield pattern, in the tegrite microtubercles, and from the n. sp. in its relationship to the host. In *A. eugeniæ* the shield has a broken median and 4 curved admedian lines; the tergites have microtubercles their entire length; and the mite causes bead galls on the upper surface of leaves. The new species has a dorsal shield with 2 pairs of admedian lines only; the tergites have microtubercles
Fig. 4. *Aculus pitangae* n. sp.: AP—internal female genitalia; C—claws; DA—anterior dorsal view; ES—lateral view of tergite-sternite juncture; GF—external female genitalia; S—lateral view; and SA—anterior lateral view.
forming 3 longitudinal bands; and they are vagrants on undersurface of the leaves not causing any apparent damage.

_Aculus caulisforus_ Boczek and Davis, New Species

(Fig. 5)

**Female:** 193 μm (range of 15 specimens 166-197 μm) long; 65 μm wide, yellowish; fusiform. Chelicerae 16 μm long. Dorsal shield subtriangular with rounded lobe over rostrum; with dorsal tubercles 32 μm apart, situated on rear margin of shield. Dorsal setae 10 μm long, reclinate and diverging. Dorsal shield with 2 indistinct broken submedian lines. Thanosome with 18 smooth tergites and about 70 microtuberculate sternites. Microtubercles oval.

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**Fig. 5. Aculus caulisforus** n. sp.: AP—internal female genitalia; C—claws; D—dorsal view; DA—anterior dorsal view; ES—lateral view of tergite-sternite juncture; GF—external female genitalia; GM—external male genitalia; and SA—anterior lateral view.
Lateral setae 27 μm long on sternite 12; 1st ventral 56 μm long, on sternite 30; 2nd ventral 8 μm long on sternite 49. Caudal setae 48 μm long; accessory setae 4 μm long. Forelegs 50 μm long; genu 6 μm long with seta 19 μm long; tibia 9 μm long with seta 4 μm long; claw 6 μm long, knobbed; featherclaw 4-rayed. Hindleg 45 μm long; genu 6 μm long with seta 6 μm long. Telosome with 5 rings and 20 μm long setae. Female genital coverflap 16 μm (16-20 μm) long, 22 μm (20-24 μm) wide, with 12 longitudinal striae; genital setae 16 μm apart, 12 μm long. Coxae slightly granulated; hind coxal setae 23 μm apart.

**Male**: 154 μm long; shield 40 μm long; dorsal setae 6 μm long; abdomen with 23 tergites; genitalia 1b μm wide; genital setae 14 μm apart.

**Host**: *Aenigmatipennis cauliflorus* Schott. (Solanaceae).

**Relation to Host**: Vagrants on undersurface of the leaves.

**Type Material, Holotype**: Female on slide, Brazil, Piracicaba, Sao Paulo, 19-IX-1980, J. Boczek. **Paratypes** (14): Females (13) and male (1) on slides, same data as holotype.

This species is close to *Aculea schlechtiendali* (Nalepa) and can be distinguished by the shape and the pattern of dorsal shield, presence of microtubercles on tergites and the shape of female genital coverflap. In *A. schlechtiendali* the dorsal shield is semicircular, with median and some submedian lines; the tergites are smooth; and the female genital coverflap has striae in one rank. In the new species the dorsal shield is subtriangular with one pair of broken submedian lines; the tergites have microtubercles laterally; and the female genital coverflap has striae in 2 separate ranks.

*Aculea caappae* Boczek and Davis, New Species

(Fig. 6)

**Female**: 100 μm (range of 15 specimens 151-196 μm) long; 62 μm wide, amber; fusiform. Rostrum 20 μm long, with seta 7 μm long; chelicerae 16 μm long. Shield 41 μm (32-42 μm) long, 48 μm wide. Dorsal shield with median line fragmented and largely indistinct on posterior 1/3 of shield. Admedian lines complete in most specimens and forming a circular pattern on posterior 1/3 of shield. First and 2nd submedian lines slightly fragmented but distinguishable from anterior margin to dorsal tubercles. Additional submedian lines fragmented and presenting appearance of a hairy pattern on shield margins. Dorsal tubercles 27 μm apart, on rear margin of shield; dorsal setae 12 μm long, pointed reclinate and diverging. Foreleg 54 μm long; genu 6 μm long with seta 21 μm long; tibia 10 μm long with seta 5 μm long; claw 7 μm long, knobbed featherclaw 7-rayed. Hindleg 51 μm long. Telson with 52 (39-54) tergites and about 80 sternites. Both tergites and sternites microtuberculate; microtubercles elliptical. Lateral setae 22 μm long, on sternite 13; 1st ventral setae 64 μm long, on sternite 27; 2nd ventral setae 16 μm long, on sternite 48. Telosome with 6 rings and 32 μm long setae. Caudal setae 80 μm long; accessory setae 4 μm long. Female genital coverflap 13 μm (10-13 μm) long, 21 μm (16-24 μm) wide, with about 12 longitudinal ribs; genital setae 15 μm apart, 20 μm long.

**Male**: 151 μm long; shield 38 μm long.

**Host**: *Terminalia caappae* L. (Combretaceae).

**Relation to Host**: Vagrant on undersurface of the leaves.

**Type Material, Holotype**: Female on slide, Brazil, Piracicaba, Sao Paulo,
Fig. 6. *Aculus catappae* n. sp.: AP—internal female genitalia; C—claws; DA—anterior dorsal view; ES—lateral view of tergite-sternite juncture; GF—external female genitalia; S—lateral view; and SA—anterior lateral view.

19-IX-1980, J. Roczek. *Paratypes* (12): Females (10) and males (2) on slides, same data as holotype.

This species resembles *Acerima terminata* Keifer, and can be distinguished by the number of coxal setae, featherclaw rays and shape of
genital cover flap. In A. terminalis there is only one pair of forecoxal setae; the featherclaw is 6-rayed; and the female genital cover flap has diagonally lateral lines basally and is somewhat lobed laterally. In the new species there are 2 pairs of forecoxal setae; the featherclaw is 7-rayed; and the genital cover flap has striae of even length, and no lateral lobes.

*Aculus solani* Bocek and Davis, New Species
(Fig. 7)

**FEMALE**: 231 μm (range of 21 specimens 170-237 μm) long; 56 μm wide, amber; spindleform. Chelicerae 15 μm long. Dorsal shield subtriangular, 42 μm (40-44 μm) long, with median line visible as 2 short fragments on posterior 1/2 of shield. Medial, admedian, and submedial lines complete on anterior 1/4 of shield. A ridge formed by portions of the submedial lines, beginning and ending at the base of the dorsal tubercles, parallels the shield margin. Dorsal tubercles 40 μm apart, on rear margin of shield; dorsal setae 14 μm long; retractile and diverging. Forelegs 36 μm long; femur 10 μm long; tibia 10 μm long with setae 7 μm long; claw 8 μm long, slightly knobbed; featherclaw 6 μm long, 4 rayed. Hind legs 32 μm long. Forecoxae with 1st setae 12 μm long; 2nd setae 32 μm long; hindcoxal setae 47 μm long. Thanasome with 22 (22-24) smooth tergites and about 64 sternites. Stermites with oval microtubercles. Lateral setae 20 μm long, on sternite 6; 1st lateral setae 35 μm long, on sternite 26; 2nd lateral 22 μm long, on sternite 42. Telosome with 5 microtubercular rings and setae 30 μm long. Female genital cover flap 18 μm long, 24 μm wide, with 16 furrows; genital setae 22 μm long, 13 μm long.

**MALE**: 200 μm long; shield 44 μm long, with dorsal setae 14 μm long, with 28 tergites. Male genitalia 16 μm wide.

**Host**: *Solanum nigrum* L. (Solanaceae).

**RELATION TO HOST**: Vagrant on both surfaces of the leaves.

**TYPE MATERIAL**: Holotype: Female on slide, Brazil, Piracicaba, Sao Paulo, 18-IX-1980, J. Bocek. Paratypes (13): Females (11) and males (2) on slides, same data as holotype.

This species is close to *Aculus rhamnivagrans* (Keifer), and can be distinguished by the shield shape and the internal female genitalia. In *A. rhamnivagrans* the shield is subtriangular with a long and wide lobe over rostrum; the spermathecae are circular. In the new species the shield is semicircular with a very broad, short lobe over rostrum; the spermathecae are oval.

*Phyllocopes caseariae* Bocek and Davis, New Species
(Fig. 8)

**FEMALE**: 190 μm (range of 16 specimens 180-220 μm) long; 67 μm wide; 72 μm thick; amber; spindleform. Rostrum 24 μm long, curved downward obliquely. Chelicerae 17 μm long. Shield 45 μm (44-48 μm) long, with short lobe over rostrum; shield oval, surface with two declivities along median line at anterior of shield and near its midpoint. Admedian lines visible surrounding both declivities. Submedian lines extending from anterior margin to base of dorsal tubercles. Overall surface appearance is that of several fractured irregular placed rectangles. Dorsal tubercles 30 (20-22 μm)
Fig. 7. *Aculus solani* n. sp.: AP—internal female genitalia; C—claws; DA—anterior dorsal view; ES—lateral view of tergite-sternite juncture; GF—external female genitalia; GM—external male genitalia; S—lateral view; and SA—anterior lateral view.
Fig. 8. *Phyllocopites caseariae* n. sp.: AP—internal female genitalia; C—claws; DA—anterior dorsal view; ES—lateral view of tergite-stermite juncture; FG—external female genitalia; GM—external male genitalia; S—lateral view; and SA—anterior lateral view.

The legs: Foreleg 50 μm long; tarsus 9 μm long, genu 6 μm long with setae 32 μm long, tibia 10 μm long with setae 5 μm long; featherclaw 5-rayed, 6 μm long, claw knobbed. Hindlegs 41 μm long; tibia 8 μm long; tarsus 6 μm long. Thorosome
with 35 (31-36) broader tergites and about 59 sternites. Lateral ends of tergites with spiny microtubercules and sternites with rounded microtubercules. Lateral setae 12 μm long on sternite 5; 1st ventral seta 44 μm long on sternite 57. Telosome with 5 rings and 20 μm long setae. Caudal setae about 64 μm long, accessory setae absent. Female genital cover flap 18 μm (18-24 μm) wide, with 14-16 elongate furrows; setae 22 μm apart, 12 μm long.

**Male:** 152 μm long; dorsal shield 40 μm long; dorsal setae 5 μm long, 24 μm apart; 8 μm from rear margin of shield; cheliceræ 14 μm long; male genitalia 18 μm wide, genital setae 7 μm long.

**Nymph II:** 140 μm long; 56 μm thick; shield 30 μm long; dorsal setae 4 μm long; dorsal tubercles 9 μm apart, with 40 rings with spiny microtubercules.

**Host:** *Casarea sylvestris* Sw. (Flacouriaceae).

**Relation to Host:** Vagrants on undersurface of leaf.

**Type Material. Holotype:** Female on slide, Brazil, Piracicaba, Sao Paulo, 19-IX-1980, J. Boczek. Paratypes (14): Females (13) and male (1) on slides, same data as holotype.

This species is close to *Phyllocopus aubaenus* Keifer and can be distinguished by the shield shape, the shape of microtubercules of the tergites and by the number of featherclaw rays. In *P. aubaenus* the shield has a long broad lobe; the sternites have oval microtubercules their entire length; and the featherclaw is 4-rayed. In the new species the shield is almost semicircular; the sternites have spiny microtubercules only laterally; and the featherclaw is 5-rayed. This is the first eriophyid mite described from the plant family Flacouriaceae.

*Calacarus guerreroi* Boczek and Davis, New Species
(Fig. 9)

**Female:** 196 μm (range of 30 specimens 166-196 μm) long; 76 μm wide; straw yellow; fusiform. Rostrum 36 μm long; seta 20 μm long. Cheliceræ 40 μm long. Dorsal shield 50 μm long; 72 μm wide. Shield pattern in form of network of ridges and granulation laterally. Shield lobe over rostrum wide, short, rounded anteriorly. Dorsal tubercles and setae absent. Foreleg 66 μm long, genu 5 μm long with seta 36 μm long; tibia 15 μm long, with seta 2 μm long. Claw 6 μm long, knobbled featherclaw 6 μm long, 4-rayed. Hindleg 58 μm long; genu 4 μm long; tibia 12 μm long. Thanosome with 54 (49-64) tergites and about 97 sternites. Tergites forming central ridge and two abdominal ridges with wax points. Microtubercules present on all sternites and usually on some proximal tergites laterally. Telosome of 8 rings and setae 21 μm long; caudal setae 98 μm long; accessory setae absent. Telosomal microtubercules elongated. Lateral setae 36 μm long, on sternite 19; 1st ventral setae 40 μm long, on sternite 47; 2nd ventral setae 36 μm long, on sternite 80. Female genital cover flap 22 μm long, 28 μm wide; epigynum with about 12 longitudinal striae; genital setae 18 μm apart, 12 μm long.

**Male:** 154 μm long; with dorsal shield 56 μm long; genitalia 18 μm wide.

**Host:** *Manihot esculenta* Crantz (Euphorbiaceae) (Cassava, Tapioca).

**Relation to Host:** On the undersurface of leaf; they prefer the basal leaves of the plant. Infested leaves curl upward, and gradually shrink.

**Type Material. Holotype:** Female on slide, Colombia, Cali, 2-VIII-1982,
Fig. 9. *Calacarus guerreroi* n. sp.: SP—internal female genitalia; C—claws; DA—anterior dorsal view; FG—external female genitalia; GM—external male genitalia; S—lateral view; and SA—anterior lateral view.

J. M. Guerrero, *Paratypes* (20): Females (13) and males (2) on slides, same data as holotype.

This species is close to *Calacarus microrostrus* Chakrabarti and Gosh and can be distinguished by the shape of female genitalia and the number of featherclaw rays. In *C. microrostrus* the genital overlap is smooth; the
featherclaw is 7-rayed. In the new species the genital coverflap has 12 longitudinal striae; the featherclaw is 4-rayed.

We are pleased to name this mite for Mr. Jose Marla Guerrero, Centro Internacional de Agricultura Tropical, Apartado Aereo 6713, Cali, Colombia. This is the first species of eriophyid mite found on cassava (Bellotti & Schoonhoven 1978), an economical subsistence crop plant grown in about 90 developing countries.

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REFERENCES CITED


A SYNTHESIS OF TEMPERATURE DEPENDENT DEVELOPMENTAL STUDIES WITH THE CITRUS RED MITE, PANONYCHUS CITRI (McGREGOR) (ACARI: TETRANYCHIDAE)

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ABSTRACT

A literature review revealed 12 temperature-humidity studies performed on the citrus red mite, Panonychus citri (McGregor) (Acari: Tetranychidae). An analysis of these studies using a heat unit scale indicated that they were in surprisingly close agreement especially in view of the different host plants and experimental techniques utilized. Theoretical thresholds for development, degree days necessary to complete development, and temperature dependent mortality for the egg, immature and adult female stages are presented. This synthesis implies that further research with the citrus red mite is needed in the area of variable temperature developmental rates, fecundity and mortality rates.

RESUMEN

Una revisión de la bibliografía reveló 12 estudios de temperatura