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A new-record species of Eriophyid mite on lemon from Taiwan (Acarina:Eriophyidae) 【Research report】

臺灣產Aculops屬(蟣蟜類：節蟜科)之一新紀錄種【研究報告】

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Abstract

A species of eriophyid mite, pink citrus rust mite, Aculops pelekassi (Keifer), recorded as new to Taiwan, is redescribed and photographed by scanning electron microscope (SEM), relying on female specimens collected on lemon trees, *Citrus limonia* Osbeck (Rutaceae) from Zehnshan, Yuanshan, Ilan Co., Hsitzu, taipwi Co. and the NCHU campus,Taichng city, Taiwan, R.O.C.

摘要

本文乃利用光學顯微鏡及掃描電子顯微鏡，就台灣產Aculops屬之一新紀錄種：柑桔淡紅锈蟜（pink citrus rust mite），*Aculops pelekassi* Keifer之外部形態特徵加以觀察、拍攝及描述。所得標本係採自枕山（員山鄉、宜蘭鄉）、汐止（台北縣）及中興大學校園（台中市）之檸檬樹（lemon trees），*Citrus limonia* Osbeck (Rutaceae)。

Key words: acarina, eriophyid mite, lemon, rust, mite.

關鍵詞：蟣蟜類，節蟜類，檸檬，锈蟜。

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A New-Record Species of Eriophyid Mite on Lemon from Taiwan (Acarina: Eriophyidae)

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ABSTRACT

A species of eriophyid mite, pink citrus rust mite, *Aculops pelekassi* (Keifer), recorded as new to Taiwan, is redescribed and photographed by scanning electron microscope (SEM), relying on female specimens collected on lemon trees, *Citrus limonia* Osbeck (Rutaceae) from Zehnshan, Yuanshan, Ilan Co.; Hsitzu, Taipei Co. and the NCHU Campus, Taichung City, Taiwan, R.O.C.

Key word: acarina, eriophyid mite, lemon, rust mite.

Introduction

Only 1 eriophyid species, *Phyllocoptes oleivora* (Ashmead) has been known hitherto to infest *Citrus* trees in Taiwan (Huang, 1966, 1974; Huang and Cheng, 1977). In this paper a new-record species of the genus *Aculops*, *Aculops pelekassi* (Keifer), is redescribed and photographed by scanning electron microscope (SEM) from specimens collected on lemon trees, *Citrus limonia* Osbeck (Rutaceae).

The abbreviation of names of setae follows that of Huang (1965). All specimens are deposited in the Research Institute of Entomology, National Chung-Hsing University (NCHU).

Materials and Methods

All specimens of the pink citrus rust mite, *Aculops pelekassi* (Keifer), were collected from lemon trees at Zehnshan, Yuanshan, Ilan Co.; Hsitzu, Taipei Co. in

northern Taiwan, and the NCHU campus, Taichung City in central Taiwan. Leaves infested with mites were separated from each other by pinning under a binocular microscope. The mites were dehydrated through a graded series of acetone (50%-100%).

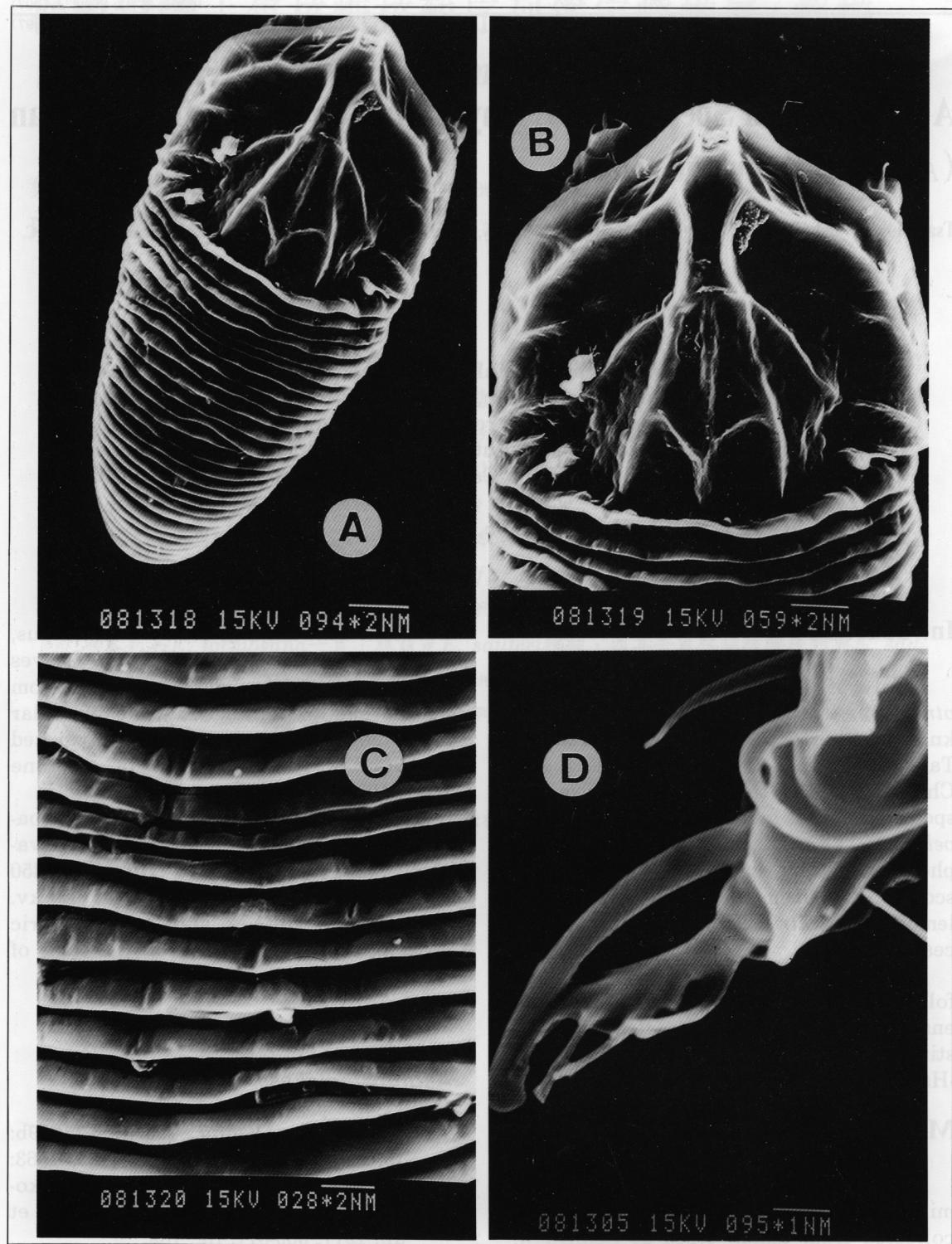
Afterwards, the specimens were coated with aurum in an ion coater. Observations were made with a Hitachi S-450 scanning electron microscope at 15 kv. accelerating voltage and morphometric descriptions were founded on the basis of the examination by light microscope.

Results

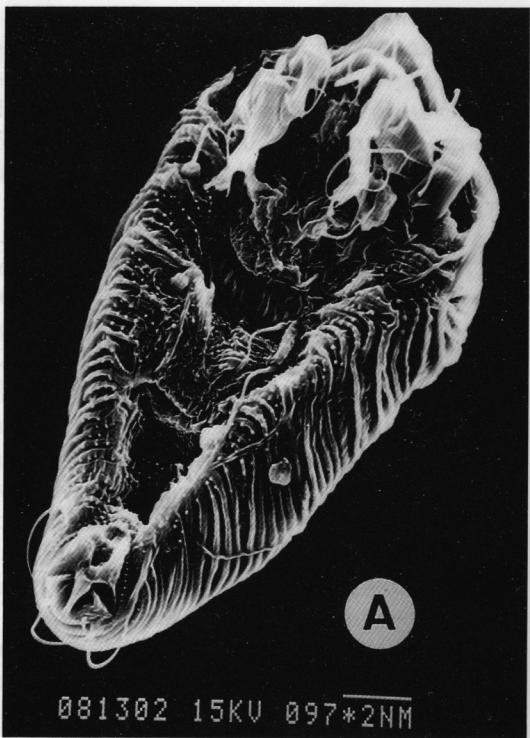
Aculops pelekassi (Keifer) (Pls. 1-2)

Aculus pelekassi Keifer, 1959a: 6, 1959b: 15, 1962: 11; Denmark 1962: 25, 1963: 17; Flechtmann, 1970: 97; Hatzinikolis, 1969a: 161, 1969b: 54; Jeppson et al., 1977: 509-511, fig. 132.

Aculops pelekassi (Keifer) Keifer,



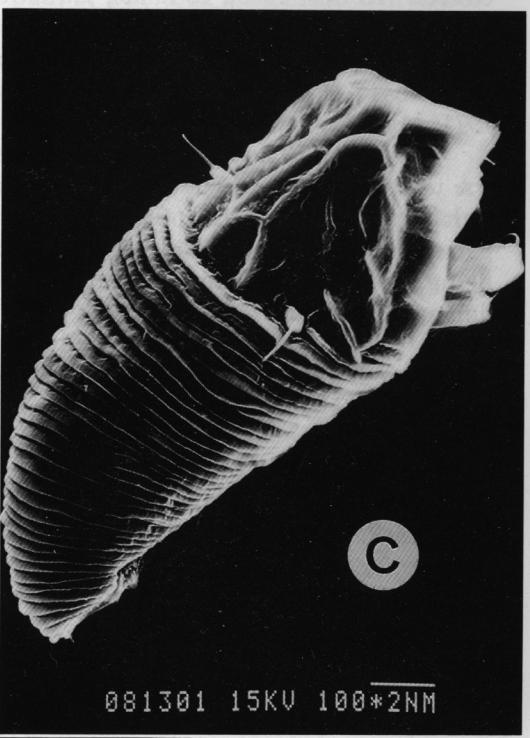
Pl.1. *Aculops pelekassi* (Keifer), female: A, dorsum; B, shield; C, tergites; D, featherclaw.



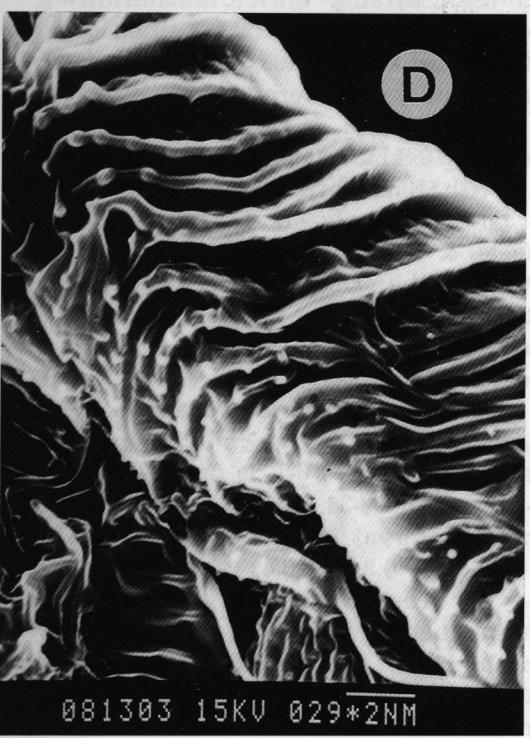
081302 15KV 097*2NM



081304 15KV 022*2NM



081301 15KV 100*2NM



081303 15KV 029*2NM

PI.2. *Aculops pelekassi* (Keifer), female: A, venter; B, genitalis; C, laterad; D, side skin structure.

1966: 9; Huang, 1971: 271; Jeppson et al., 1975: 509-511; Mijuskovic, 1973: 98; Mijuskovic & Velimirovic, 1971: 105.

Female: Body fusiform, light yellow to pinkish in color. Rostrum bending down diagonally. Shield with subparallel sides, and anterior projection (pl. 1, A, B), sharpening in anterior side view (pl. 2, C); ratio of width / length 0.7; median line incomplete, starting at 1 / 3 from the anterior, extending toward posterior margin; admedians complete, running from anterior lobe to rear, joining with median line at 2 points by transversals which trisect admedians into 3 sub-equal parts (pl. 1, B); distinct lateral lines inventing cells along the shield edge; dorsal tubercles 37.5-40 μm apart, on posterior margin; dorsal setae 8.8-11.3 μm long, curving backward. Abdomen with microtubercles, consisting of 36-38 tergites and 50-52 sternites; breadth of tergite 3.6 μm , sternite 2.8 μm . Relative lengths of segments of fore-leg: tarsus > claw \geq featherclaw \geq tibia; hind-leg, tarsus > claw \geq tibia; coxae with a few short lines; claw generously curved and with a terminal knob; featherclaw 4-rayed (pl. 1, D). Genitalia 20-22.5 μm wide, 8.8-11.3 μm long; genital cover-flap with 10-12 longitudinal furrows (pl. 2, B). Intervals "ts₁-ts₁" & "vs₂-vs₂", "ts₁-ts₂" & "ts₂-ts₃", and "ls-vs₁" & "vs₁-vs₂", almost at the same distance respectively; "ts₂-ts₂" to "gs-gs", "ts₂-ts₂" to "vs₃-vs₃", and "ts₁-ts₂" to "ls-vs₁" nearly 1 / 2, 1 / 3, and 1 / 5, separately.

Relative lengths of setae: vs₁ \geq gs \geq cs \geq vs₃ $>$ ls $>$ ts₃ \geq ds \geq ts₁ \geq vs₂ \geq ts₂ $>$ acs. Setae gs on sternites 6-7, ls on 12-13, vs₁ on 22-24, vs₂ on 33-34, vs₃ on 46-47. Ratio of length / interval of pair ts₁=0.5, ts₂=1.0, ts₃=0.5, ds=0.3, ls=0.4, vs₁=1.0, vs₂=0.5, vs₃=1.2, acs=0.3, cs=3.0, gs=2. Average measurements in micra (n=5): body length 147.8, width 61.5; shield length 36.3, width 50; lengths: fore-leg, tibia 2.8, tarsus 7.0, claw 4.8, featherclaw 3.3; hind-leg, tibia 3.0, tarsus 5.8, claw 3.5;

setae ts₁ 8.0, ts₂ 7.5, ts₃ 12.3, ds 9.8, ls 19.0, vs₁ 31.3, vs₂ 7.5, vs₃ 26.5, acs 2.1, cs 29.3, gs 30.3; intervals of setae ds-ds 38.8, ts₁-ts₁ 15.5, ts₂-ts₂ 7.3, ts₃-ts₃ 26.8, gs-gs 15.1, ls-ls 52, vs₁-vs₁ 32.1, vs₂-vs₂ 15.7, vs₃-vs₃ 21.3, cs-cs 10, acs-acs 6.0, ts₁-ts₂ 5.8, ts₂-ts₃ 5.5, ts₃-gs 20.3, gs-ls 17, ls-vs₁ 28.9, vs₁-vs₂ 28.2, vs₂-vs₃ 30, cs-acs 2.2.

Male: Not available to the writers.

Specimens examined: 20♀, ILAN: Yuanshan: Zehnshan (枕山), 29-IX-1993, C. F. Wang; 12♀, TAIPEI: Hsitzu (汐止), 9-X-1993, C. F. Wang; 16♀, TAICHUNG: N C H U campus (中興大學校園), 20-IV-1994, T. Huang; on Citrus limonia Osbeck (Rutaceae).

Distribution and hosts: Taiwan (China, first record) on lemon; Japan (Keifer, 1962; Huang, 1971) on orange; Thailand (Keifer, 1959b) on mandarin; U. S.A. (Denmark, 1962 & 1963; Jeppson et al., 1975) on orange; Brazil (Flechtmann & Aranda, 1970) on orange; Paraguay (Flechtmann & Aranda, 1970) on orange; Greece (Keifer, 1959a & 1959b; Hatzinikolitis, 1969a & 1969b) on orange and mandarin; Italy (Keifer, 1962) on mandarin; Yugoslavia (Mijuskovic & Velimirovic, 1971; Mijuskovic, 1973) on orange.

Remarks: The mite mainly infests the undersurface of lemon leaves, forming light-brown speckles on the opposite upper-surface and ultimately causing bronzing. Similarly, lemon fruit is also damaged and shows serious silvering or russet effects. Thus the commodity value of lemon fruit would be seriously downgraded.

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臺灣產 *Aculops* 屬（蟎蜱類：節蜱科）之一新紀錄種

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摘要

本文乃利用光學顯微鏡及掃描電子顯微鏡，就台灣產 *Aculops* 屬之一新紀錄種：柑桔淡紅锈蜱（pink citrus rust mite），*Aculops pelekassi* Keifer之外部形態特徵加以觀察、拍攝及描述。

所得標本係採自枕山（員山鄉、宜蘭縣），汐止（台北縣）及中興大學校園（台中市）之檸檬樹（lemon trees），*Citrus limonia* Osbeck (Rutaceae)。

關鍵詞：蟎蜱類，節蜱類，檸檬，锈蜱。