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TYDEID MITES ASSOCIATED WITH APPLES IN LEBANON
(ACARI : ACTINEDIDA : TYDEIDAE)

BY Ali BAYAN *

ABSTRACT: Three species of the family Tydeidae were found on apples in Lebanon:
Pronematus ubiquitus (McG.); Orthotydeus californicus (Banks); and Orthotydeus bkaasifrini n. sp., which is described and illustrated.

RÉSUMÉ: Trois espèces de la famille Tydeidae se trouvent sur le pommier au Liban:
Pronematus ubiquitus (McG.); Orthotydeus californicus (Banks); et une nouvelle espèce Orthotydeus bkaasifrini, pour laquelle sont données une description et des figures.

INTRODUCTION

In his review, BAKER (1965) divided the family Tydeidae into 15 genera; later (1968, 1970) he published a series of studies upon some genera, in which he divided the genus Tydeus into 3 sub-genera and 26 species, and the genus Pronematus into 15 species. In his detailed studies on the classification of the family Tydeidae, ANDRÉ (1979, 1980, 1981) divided the family into 7 sub-families under which many known and newly reported genera were listed.

BAKER and WHARTON (1952), ATALLA and EL-ATROUZY (1971), ATALLA, ZAHER and EL-ATROUZY (1972), and OSMAN (1974) stated that the Orthotydeus californicus (Banks) is a predator on other mite species. On the other hand FLESCHER and ARAKAWA (1953), BAKER (1970), WAHAB, YOUSEF and HEMED (1974), NACHEV and SIMOVA (1978), BALEVSKI, NACHEV and SIMOVA (1982), and BAYAN (1984) reported that this species is phytophagous on different host-plants. JURGENSEN (1968) stated that this species may have served as alternative food predators of the injurious tetranychids. All authors working on mites agreed that the species Pronematus ubiquitus (McG.) is a predator of other mite or insect species.

This paper presents description and illustrations of the new species Orthotydeus bkaasifrini, which was found on apple leaves in north Lebanon, and some information on Orthotydeus californicus and Pronematus ubiquitus.

MATERIALS AND METHODS

Samples of apple leaves and twigs were collected during 1983-1984 from different regions in Lebanon. Mite specimens were preserved in

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small vials containing a solution composed of 95 parts ethyl alcohol (70 %) and 5 parts lactic acid. They were cleared by using a small glass spatula containing 0.5-1 cc lactic acid, heated gently on an alcohol lamp until vapour was observed and before the boiling of lactic acid. Individual mites were mounted on microscopic slides, using polyvinyl lactophenol. Terminology of different taxonomic features and determination of species were made according to the studies of BAKER (1965, 1968, 1970) and the recent works of ANDRE (1979, 1980, 1981) on the classification genera and species of the family Tydeidae.

RESULTS


1. Pronematus ubiquitus (McG).

*Tydeus ubiquitus* McGregor, 1932.  
*Pronematus ubiquitus* Thor, 1933.

This is the first time that this species is reported in Lebanon. It is distinctive in having a bent solenidion on leg tarsus 1, and this solenidion is much longer in males than in females; the ventral body setae are in longitudinal line. Other characters are similar to those in other species of the genus *Pronematus*.

This species was found in all apple orchards in Lebanon and its population density was significantly higher on apple trees highly infested with apple leaf rust mite, *Aculus schlechtendali* (Nal.), than on trees slightly infested or free from the eriophyid mite.


1. Orthotydeus californicus (Banks).

*Teitranychoides californicus* Banks, 1904; Quayle, 1912.  
*Tydeus californicus* Baker and Wharton, 1952.  
*Orthotydeus californicus* Castagnoli, 1984.

This species is distinctive in having 5 pairs of posterior spatulate setae on the histerosoma: D3, D4, D5, L4 and L5 setae. It was found in all apple growing regions in Lebanon. Larvae and protonymphs fed primarily on honeydew excreted by the rosy aphid, *Dysaphis mali* (Ferr.), *Dysaphis plantaginea* (Pass.). The other stages fed and developed normally on aphid-free apple leaves. The population density of the mite was much higher in apple orchards highly infested with this aphid, than in slightly infested orchards.

2. Orthotydeus bkaasifrini, n. sp. (Figs. 1-7).

This species is easily recognized by having 6 pairs of spatulate setae (D3, D4, D5, L1, L4, and L5), setae D2, D3 and D4 in longitudinal line, trichobothria as long as distances between their bases and the genital setae and genital aperture are surrounded by closed suture.

FEMALE:

Gnathosoma: Visible from above, movable cheliceral digit (md) long, palpus with 5-2-2-setal pattern (Fig. 2). Palptarsus long with one small mediolateral solenidion and one distal eupathidia surrounded by 5 setae.

Idiosoma: Oviform, 296 μm long; 186 μm wide. Dorsal striations longitudinal on propodosoma and transverse on histerosoma. Setae P1, P2, P3, D1, D2, and L3 pilose; S nude; D3, D4, D5, L1, L4 and L5 spatulate (Fig. 1, B). Length of dorsal setae (in micrometres) as follows: P1, P2, D1, D2 and D3-19; P3-24; S-28, D3, D4, D5, L4 and L5-22; L1-26. Distance between setal bases (in micrometres): P1P1-22; P2P2-38; P3P3-86; SS-28; L1L1-117; L3L3-70; L4A4-57; L5L5-61; D1D1-54; D2D2-30; D3D3-30; D4D4-30; D5D5-19. On the ventral face there are 3 pairs of ventral setae; 6 pairs genitals (ge); 4 pairs aggenitals (ag); and one pair anals (a). Genital setae and genital aperture are surrounded by closed suture (Fig. 3). Many sigilla are seen distributed on the idiosoma: One pair longitudinal on propodosoma around first pair propodosomal (P1); one continued v-shape sigillum joining coxae 3; two pairs anterolaterally and two pairs posterolaterally to the genital setae. Other sigilla are of different sizes and randomly distributed.
Fig. 1: Orthotydeus bkcnsfrini n. sp., dorsal view: A. — Diagrammatic representation (the setae are indicated by the circles); B. — Dorsal setae and striations; md = movable cheliceral digit.
Figs. 2-3: *Orthotydeus bkaasifrinii* n. sp., 2. — Palpus ; 3. — Genito-anal region; 
*a* = Genital setae; *ag* = Aggenital setae; *g* = Genital setae; *a* = Anal setae.

Legs: (Figs. 4-7): Length of leg 1-199 μm; leg 2-164 μm; leg 3-168 μm; and leg 4-192 μm. Leg chaetotaxy is:

- Leg 1: 8, 3*, 3, 3, 1, 2.
- Leg 2: 6, 2, 2, 2, 0, 1.
- Leg 3: 5, 2, 1, 1, 1, 3.
- Leg 4: 5, 2, 1, 1, 0, 1.

Legtarsus 1 has one solenidion surrounded by three serrate and one nude setae. Other setae on legs are nude or pilose. Each tarsus has a vestigial claw at the base of the empodium. Femora 2 and 4 are divided by transverse sutures, femur 1 has one v-shape, one semi-circular and three small linear sutures, femur 3 has one small linear suture.

**Male**: not known.

**Type Material**: Female holotype and tritonymph collected at 25.VII.1983 in Bkaasifrin, Diniya district, north Lebanon from apple leaves are deposited in the collection of the Lebanese National Council for Scientific Research, Beirut, Lebanon.

**References**

FIGS. 4-7: Orthotydeus bkaasifrini n. sp., 4. - Leg 1; 5. - Leg 2; 6. - Leg 3; 7. - Leg 4.


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