



Citrus brown mite; *Eutetranychus orientalis* (Klein 1936) (Acari: Tetranychidae), in Turkey

Türkiye’de turunçgil kahverengi akar; *Eutetranychus orientalis* (Klein 1936) (Acari: Tetranychidae)

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ABSTRACT

Eutetranychus orientalis (Klein 1936) (Acari: Tetranychidae) is a phytophagous mite and known as “The oriental red mite”. *E. orientalis*, is an important pest in the quarantine list of “European and Mediterranean Plant Protection Organisation (EPPO)”. This species was mentioned by Jeppson et al. (1975) from Turkey. There wasn’t any indication report available (about host plants, locality and collection date), up to now from this species in Turkey. The samples were collected from *Citrus* trees in Kumluca-Antalya. Host species, distribution, damage and the identical taxonomical characteristics are provided.

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ÖZ

Turunçgil kahverengi akar olarak bilinen *Eutetranychus orientalis* (Klein 1936) (Acari: Tetranychidae)’ in dişi erkek ve nimfleri Kumluca-Antalya yöresi turunçgil bahçelerinden toplanmıştır. Bu türün Türkiye’de varlığı Jeppson et al. (1975) tarafından bildirilmiştir. *E. orientalis* “European and Mediterranean Plant Protection Organisation (EPPO)” karantina listesinde yer alan bir zararlıdır. Ancak konukçu bitkisi, lokalitesi ve toplanma tarihi hakkında günümüze kadar hiçbir bilgi verilmemiştir. Ayrıca o tarihten günümüze kadar da ülkemizde tespit edildiğine dair herhangi bir ilave çalışma ve kayda rastlanılmamıştır. Zararlının dünyada konukçu listesi, dağılımı, zarar şekli ve taksonomik özellikleri verilmiştir.

1. Introduction

Eutetranychus orientalis (Klein 1936) (Acari: Tetranychidae) is a phytophagous mite and known as “The oriental red mite”. This species was mentioned by Jeppson et al. (1975) from Turkey, but there wasn’t any indication about host plants, locality and there isn’t any available report up to now. *Eutetranychus orientalis* is a serious pest in citrus growing areas and in greenhouses, in the Middle East, Africa and Asia (Walter et al. 1995; Jeppson et al. 1975) and this is a pest in the quarantine list of the “European and Mediterranean Plant Protection Organisation (EPPO)”. The quarantine pests especially the mites have not been well known in Turkey.

The European red spider mite *Panonychus ulmi* (Koch), is considered to internal quarantine pest, however it is encountered

in many parts of Turkey recently. The important mites which are on the quarantine list of abroad are *Aculops fuchsiae* (Keifer) (Eriophyidae), *Oligonychus perditus* (Pritchard and Baker), *Eutetranychus orientalis* (Klein) (Tetranychidae), and *Phytonemus pallidus* (Banks) (Tarsonemidae) (Yeşilayer and Çobanoğlu 2010). *A. fuchsiae* (Keifer) and *O. perditus* (Pritchard and Baker) are not exist in Turkey. *P. pallidus* (Banks) was reported in Turkey from a very limited area and they are on the external quarantine list for the imported plants.

The aim of the study is to take attention of the Turkish researchers and growers to *Eutetranychus orientalis*, give some information about; identification, hosts plants and damage of symptoms. This species was re-described by Meyer (1974,

1987). The adeagus in male are characteristic in shape. *Eutetranychus* species produce silk very slightly for protecting of their eggs (Gutierrez and Helle 1971). This genus is identified by the lack of duplex setae on Tarsus I., and their empodium's are very small like as a protuberance.

2. Material and Methods

The samples were taken from branches and leaves of the *Citrus* trees; lemon (*Citrus limonum* (Risso.)), mandarins (*Citrus reticulata* Blanco) and oranges (*Citrus aurantium* L.) (Rutaceae) during 2012. Samples were transferred to the laboratory in an icebox. Mites were removed from the leaf samples under a stereomicroscope and extracted by using Berlese funnels. The mites were preserved in 70% ethyl alcohol. After clearing the mite samples in lactophenol solutions, they were mounted in Hoyer's medium. Measurements were made by means of a Zeiss Soft Imaging system. All measurements are given in micrometers (μm) and presented as the average followed by the range within parentheses. Terminology, notations for the idiosomal setae follows that; Meyer (1974, 1987) and Walter et al. (1995). The mite samples were collected by M. Can (University of Akdeniz, Kumluca Vocational School. Greenhouse Programme, Antalya) and specimens were deposited at the collection of University of Ankara, Faculty of Agriculture. Department of Plant Protection, Turkey (S. Çobanoğlu).

3. Results and Discussion

Eutetranychus Banks

Type species: *Tetranychus banksi* McGregor *Eutetranychus* has a very small rudimentary empodium and true claws are pad like. Their duplex setae are not very conspicuous, they are loosely associated; with two pairs of para-anal and two pairs of anal setae (Meyer 1987)

Eutetranychus orientalis (Klein 1936) (Acari: Tetranychidae)

Synonyms (from Walter et al. 1995):

Anychus orientalis Klein 1936: 3; Sayed 1946: 143

Anychus ricini Rahman and Sapra 1940: 194

Eutetranychus monodi Andre 1954: 859; Gutierrez 1977: 476

Eutetranychus orientalis (Klein 1936): Baker and Pritchard 1960: 464.

Eutetranychus sudanicus Elbadry 1970: 301.

Eutetranychus annecki Meyer 1974: 148.

Eotetranychus orientalis (Klein 1936): Brough et al. 1994: 65.

3.1. Diagnosis

Eggs; The eggs are bright in color after hatching and over the time become darken and yellowish. Its shape oval and flattened. (Meyer 1987).

Female (n=10); Red, yellowish-brown and brown in color. The length of idiosoma 342 ± 19 , 3 (312-364) μm , width 307 ± 11 , 83 (280-320) μm . The females are broadly-oval in shape. The spinneret on palptarsus about 3 times as long as broad (Fig. 1). The dorsal setae set on the small tubercles and 13 pairs. Dorsocentral setae shorter than distances between the base of next dorsal setae. The dorsal setae subspatulae or broadly spatulate and vary in length. Dorsolateral setae longer than dorsocentrals. Integumental striate with minute tubercles. Dorsal striation between d1-e1 longitudinal to "V" shaped. First pair of dorso-lateral setae (c2) and humeral setae (c3), more or less in line. Fourth pair of dorsocentral setae in normal position. Hysterosomal integument with minute tubercles striae between the dorsocentrals. First pair of dorsocentrals (c_1) is almost in square shaped with dorsocentrals (f1) (Fig. 2, 3).

Legs, about as long as body. Coxa II with one setae; Femur I: 8; Femur IV: 3; Genu III and IV: 2; Tibia II and III: 6; Tibia IV: 7 setae. There is not duplex setae on Tarsus I. or very loosed. Their legs empodium's are very small, rudimentary and true claws are padlike. The legs setae and all the other characteristics matched the identified species by Meyer (1974, 1987).

Male (n=9); The colour of the male similar to female, yellowish, brown in colour. Male is smaller than female, the length of males: $308 \pm 18,6$ (272-336) μm and width: $230 \pm 11,8$ (208-244) μm (Fig. 1). Terminal sensillum on male palp tarsus is twice as long as borad. Dorsal body setae shorter than female. Aedeagus, bent dorsally and this part is longer than the dorsal shaft margin (Fig 4).

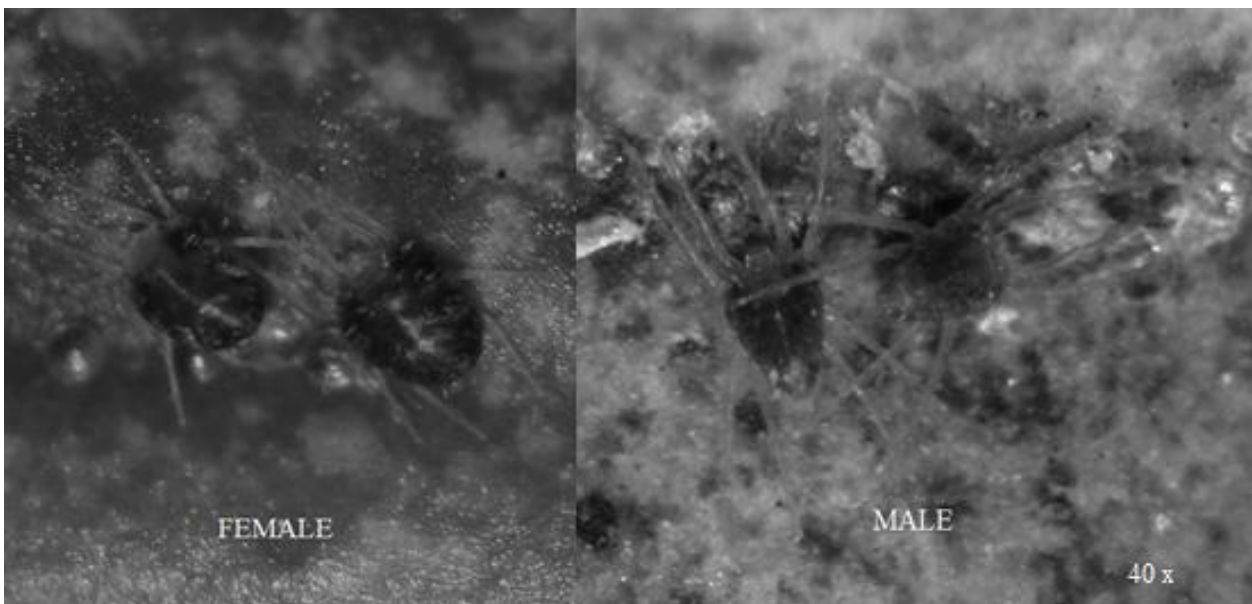


Figure 1. *Eutetranychus orientalis* (Klein) (Acari: Tetranychidae) (females and males)

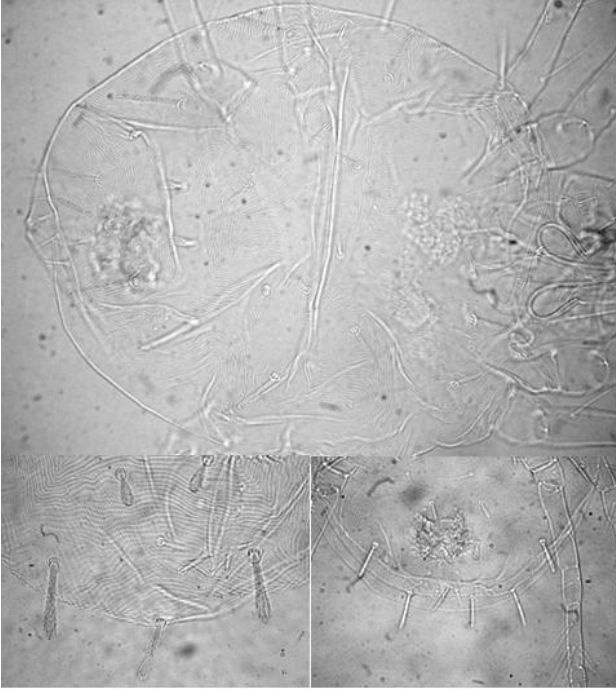


Figure 2. Female, *Eutetranychus orientalis* (Klein) (Acari: Tetranychidae) (dorsal setae and striation)



Figure 3. *Eutetranychus orientalis* (Klein) (Acari: Tetranychidae) (female).

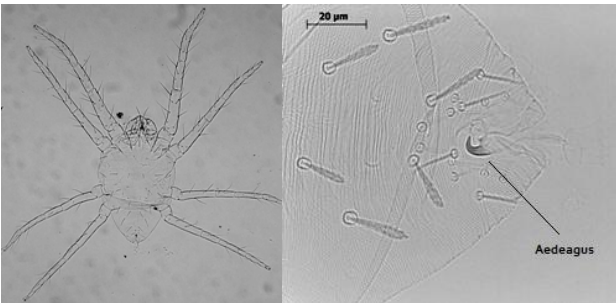


Figure 4. Male, *Eutetranychus orientalis* (Klein) (Acari: Tetranychidae) (male, aedeagus).

3.2. Damage

This species generally lives on young shrubs of the plants and feeds on upper surface along the midrib of the leaves and produces yellowish and grey chlorotic spots. This leaves weaken and drop easily and trees become defoliated (Figure 5). They cause slightly webbing and oviposit on the upper surface of the leaves.

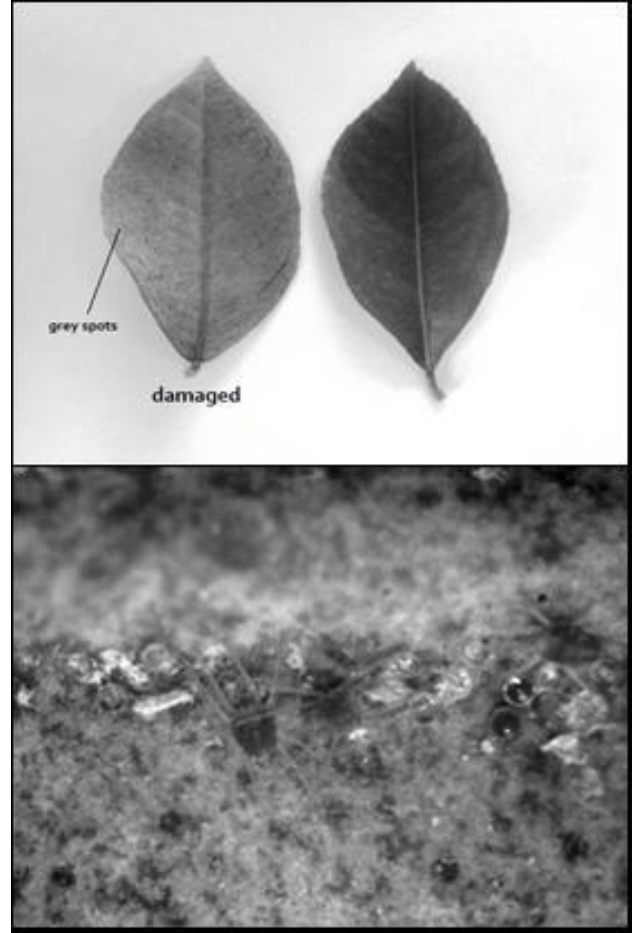


Figure 5. *Eutetranychus orientalis* (Klein) (Acari: Tetranychidae), damage on *Citrus* plants.

3.3. Examined Material

Females, males and nymphs of *Eutetranychus orientalis* were collected from *Citrus* trees in Kumluca-Antalya; 10.10.2012, *Citrus sinensis* (3♂♂) (3♀♀); 15.10.2012, *C. sinensis* (2♀♀)(1♂)(1nymph). The other examined host species are, lemons (*Citrus limonum*), mandarins (*Citrus reticulata*) and oranges (*Citrus aurantium*).

3.4. Biology

Females feed along the main vein on the upper surface of the citrus leaf. The incubation period of the eggs is 5-6 days. This species have larval, protonymphal and deutonymphal developmental stages. Each generation is completed in 10-12 days in summer; 25 generations can be occur per year. The females lay about an average of 8 eggs per day (Meyer 1981; Jeppson et al. 1975).

3.5. Host Plants

Eutetranychus orientalis widely distributed *Citrus* spp. (Rutaceae); lemons, mandarins and oranges and these are its main host plants. Some of the other host plants are, banana, cassava, castor bean, cotton, fig, maize, mulberry, oleander, peach, plum, rose plants, squash, grape, pear, quince, walnut. It has been collected, *Chenopodium vulgare*, *Croton* sp., *Eucalyptus globulus*, *Euphorbia* sp., *Gossypium*, *Glyricedia* sp., *Grewia villosa*, *Melia azedarach*, *Nerium indicum*, *Peltophorum africanum*, *Phragmites australis*, *Punica granatum*, *Solanum melongena*, *Sorbus domestica*, *Tabernaemontana coronaria*, *Thevetia peruviana*, *Trema orientalis*, *Toona ciliata* and *Zizypus jujuba* (EPPO data sheets, 90/399003; Jeppson et al. 1975; Meyer 1987; Walter et al. 1995).

3.6. Distribution

EPPO region: Cyprus, Egypt, Israel (rare), Lebanon, Libya (unconfirmed), Turkey.

Asia: Afghanistan, Bangladesh, China, Cyprus, India, Iran, Israel, Jordan, Lebanon, Pakistan, Philippines, Taiwan, Thailand, Turkey, Yemen.

Africa: Cape Verde, Egypt, Ethiopia, Kenya, Libya, Malawi, Mauritania, Mozambique, Nigeria, Senegal, South Africa, Sudan, Swaziland (Prepared by CABI and EPPO for the AUEPPO data sheets, 90/399003 (EPPO 2013); on Quarantine Pests. *Eutetranychus orientalis*) (Jeppson et al. 1975). This species is very common in Africa *Citrus* growing areas; Chitala, Thika, Kenya, Nigeria and Egypt (Meyer 1987). Europe: Greece and Spain restricted distribution (Migeon and Dorkeld. 2013). Poland (in greenhouse) (EFSA 2013).

4. Remarks

E. orientalis is a pest of *Citrus*. and considered by EPPO for the A2 list. *E. orientalis* is close to African red mite *Eutetranychus africanus* (Tucker) is the pest of the same crops as oriental redmite (Jeppson et al. 1975). African red mite differs from oriental red mite in terms of having two setae on coxa II instead of one. The shape of the aedeagus is different from *E. orientalis* of which the distal bent portion is longer than the dorsal (Walter et al. 1995). Mites have spread out easily between the plant to plant. *E. orientalis* was collected from *Citrus* trees in Antalya, but knowledge about the biology and natural enemies of this species is very limited in Turkey. It is necessary for further biological studies on this species. It is very important that, precaution measurements to be taken for preventing to enter of this mite species to country.

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