

SCIENTIFIC NOTE

First Record of the Olive Bud Mite *Oxycenus maxwelli* (Keifer) (Acari: Eriophyidae) from Brazil

PR REIS¹, AF DE OLIVEIRA¹, D NAVIA²

¹EPAMIG Sul de Minas/EcoCentro, Lavras, MG, Brasil

²Lab de Quarentena Vegetal, Embrapa Recursos Genéticos e Biotecnologia, Brasília, DF, Brasil

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Correspondence

PAULO R REIS, EPAMIG Sul de Minas/ EcoCentro, CP 176, 37200-000, Lavras, MG, Brasil; paulo.rebelles@epamig.ufla.br

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Abstract

The mite *Oxycenus maxwelli* (Keifer) (Eriophyidae) is reported for the first time in Brazil infesting olive trees, *Olea europaea*. Specimens were found on seedlings at Maria da Fé, state of Minas Gerais, in 2007. Although minor symptoms were not noticed, significant damage to plants were observed. There is no reliable evidence of when the mite could have been introduced. It is believed that the mite occurs since the first introductions of olive trees, around 1820, through vegetative propagating material, but the mite remained unnoticed due to the lack of studies with olive trees in Brazil.

The olive tree, *Olea europaea* (Oleaceae), is one of the oldest plants cultivated by man, along with wheat and grape. This plant originated in the Mediterranean basin and was introduced to Brazil by European immigrants around 1820, and to southern Minas Gerais around 1950. Olive and olive oil have good nutritional values and are highly beneficial to human health. Because of the high consumption of these products, Brazil is the third largest importer of olives and the fifth of olive oil in the world. The cultivation of olive trees in Minas Gerais and other Brazilian states is an expanding economic activity; however, there is scarce information on pests, especially on phytophagous mites.

Twelve Eriophyoidea mite species belonging to seven genera, *Aceria* (3), *Aculops* (1), *Aculus* (1), *Ditrymacus* (1), *Oxycenus* (2), *Tegolophus* (1) and *Shevtchenkella* (3), have been reported associated with olive trees around the world. Most of these eriophyoid mites have been described from the Mediterranean region and are restricted to this area (Amrine Jr 2003). *Oxycenus maxwelli* (Keifer), *Ditrymacus athiasella* Keifer, *Shevtchenkella oleae* (Natcheff), *Tetraspinus lentus* Boczek and *Epitrimerus* sp.

are the only species reported to occur in the Americas (Prado *et al* 2003). *Oxycenus niloticus* Zaher & Abou-Awad was described from Egypt and is still restricted to its type locality (Zaher & Abou-Awad 1980).

Eriophyoid mites were detected infesting olive seedlings in the Fazenda Experimental de Maria da Fé, Minas Gerais, Brazil (EPAMIG) by Adelson Francisco de Oliveira in December 2007. The mites were identified as *Oxycenus maxwelli*, commonly known as the olive bud mite.

The olive bud mite was described from Sacramento, California, USA, although it probably has a Mediterranean origin, given that its sole known host plant is the olive tree. The olive bud mite has a wide world distribution. It is presently known from Europe (Greece, Italy, Montenegro, Portugal, Spain), Africa (Algeria, Egypt), Asia (Armenia), Near East (Iran), Oceania (Australia) (Jeppson *et al* 1975, González *et al* 2004, De Lillo & Amrine Jr 2006, Ramezani *et al* 2006, Snježana *et al* 2009) and South America (Chile and Argentina) (Prado *et al* 2003, Becerra *et al* 2007).

The Fig 1a shows a ventral view of a female of the olive tree bud mite. Females measure 140-160 μ m

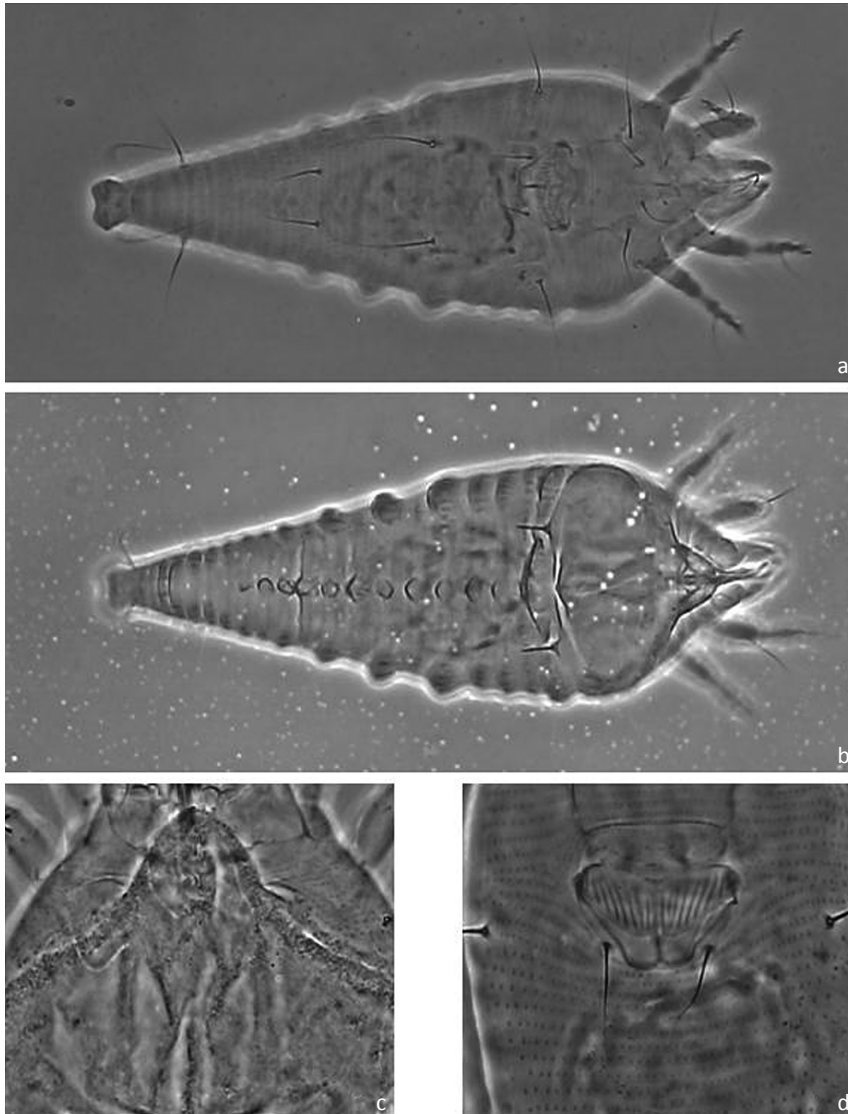


Fig 1 The olive bud mite, *Oxyacarus maxwelli*: micrographs under phase contrast microscopy. a) Ventral view; b) Dorsum view; c) Frontal lobe; d) Female genitalia.

(Keifer 1939). The rings are wider dorsal than ventral, forming tergites. Opisthosoma (dorsal region) has a serrate median elevation (Fig 1b). Arrows of dorsal shield near the posterior margin and some dorsal rings have lateral projections (Fig 1b). Frontal lobe acuminate, rounded above (Fig 1c). Female genital shield with 18-20 longitudinal ridges (Fig 1d) (Keifer 1939, Baker *et al* 1996). The body is fusiform and orange in color (Fig 2a).

Oxyacarus maxwelli feeds preferentially on the upper surface of terminal leaves, but in high infestations it also feeds on the lower leaf surface, buds, new shoots, flowers and stems (Keifer 1939, Jeppson *et al* 1975). Heavy infestations of *O. maxwelli* may cause premature flower drop as well as leaf spotted discoloration and distortion. High infestation of the mite on young leaves can cause silverying and distortion (Russo 1972), which reduces light absorption and decreases photosynthesis. Another

problem attributed to infestations by *O. maxwelli* is the reduction in internodal length, leading to the formation of overbudding (bunch-top). In young plants, bud infestation can lead to deficient plant growth (Castagnoli & Oldfield 1996).

Symptoms observed in Brazil were silverying and distortion of young leaves (Fig 2b), without causing serious damage to the plant and without affecting yield.

Authors are unaware of reliable evidences of the time the mite was introduced in Brazil. It is believed that *O. maxwelli* occurred in Brazil for many years, perhaps since the first olive tree introductions by European immigrants through vegetative propagating material. Specimens of this species had been intercepted a few times between 2005 and 2007 by the "Laboratório de Quarentena Vegetal, Embrapa Recursos Genéticos e Biotecnologia", Brasília-DF, Brazil, on olive seedlings imported from Portugal. However, it is not known how or when this mite reached



Fig 2 The olive bud mite, *Oxyencus maxwelli*: a) Live specimens on the upper leaf surface; b) Symptoms on leaves.

southern Maria da Fé, MG. That could have occurred long ago and the mite could have remained unnoticed because of the small size and, so far, inexpressive damage.

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