

## Correspondence

### Mites associated with the date palm (*Phoenix dactylifera* L.) in Larestan (Fars province), southern Iran

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Date palm (*Phoenix dactylifera* L.) is one of the important fruit crops of Iran with more than 185000 hectares harvested areas, about 875000 tons annual production and 120000 tons fruits export according to FAO reports in 2004 so, in this regards it is the second largest producer country among the main producing countries of the world. Most regions of date palm plantations are located from south west to south east of Iran. In this research, mite fauna associated with the date palm trees in Larestan (Fars province), southern Iran is studied.

Larestan is located in the south of Iran, Fars province, between the latitudes 27° 05' to 28° 30' N and longitudes 52° 25' to 55° 38' E and altitudes of 800–950 m above sea level, and is known as one of the divisions of the tropical area of the province. This region covers an area of 16,000 sq. km. Date is the main garden product in this region and area under cultivation of dates reaches 3,630 hectares.

This study deals with mites associated with the date palm in Larestan, Fars province, southern Iran. Mites inhabiting date palms (soil, leaves, fruits and trunk fibers) studied during 2009–2011. The present study has revealed records of 56 species belonging to 47 genera and 34 families. The genus *Schizonobiella* of the family Tetranychidae is introduced as new record for mite fauna of Iran. Twenty six genera and species are new records for the date palm fauna in the world. For the first time, the oribatid mites associated with trunk fiber of date palms are introduced. These mites were classified according to their feeding habits into three categories: 8 species belong to phytophagous mites (families Tetranychidae, Tenuipalpidae and Eriophyidae), 27 species belong to predacious mites (families Cheyletidae, Caligonellidae, Raphignathidae, Camerobiidae, Cunaxidae, Bdellidae, Iolinidae, Smarididae, Phytoseiidae, Parasitidae, Ologamasidae and Rhodacaridae), while the remaining species belong to families of different feeding habits especially fungivorous (Eupodidae, Tydeidae, Urodinychidae, Acaridae, and 12 families belonging to oribatid mites).

Samples were transferred to the Acarological laboratory of the Department of Plant Protection, College of Agriculture, Shiraz University. Mites were extracted using a Berlese funnel or stereomicroscope. Specimens were removed, cleared in lactophenol and mounted in Hoyer's medium on glass microscopic slides for identification. The slides were placed in an oven at 45°C for 10 days and then the specimens were examined using a light microscope. Specimens are deposited in the Acarological Collection of the Department of Plant Protection, College of Agriculture, Shiraz University, Shiraz, Iran.

## Results

The present study has revealed 26 genera and species are new records for the date palm fauna in the world that marked by one asterisk (\*). Also all species are new records for Larestan.

### *Phytophagous mite fauna associated with date palm in Larestan*

#### **Tetranychidae Donnadieu, 1975**

*Oligonychus afrasiaticus* (McGregor, 1939): 40 specimens (33 ♀, 7 ♂).

- *Schizonobiella*\* sp.: 2 specimens (nymph).

Comments: This genus is the first record for Iran.

- *Bryobia*\* *rubrioculus* (Scheuten, 1857): 2 specimens (♀).

- *Eutetranychus orientalis* (Klein, 1960): 15 specimens (6 ♀, 5 ♂ and 4 nymphs).

#### **Tenuipalpidae Berlese, 1913**

- *Raoiella indica* Hirst, 1924: 16 specimens (5 ♀, 3 ♂, 8 nymphs).

- *Tenuipalpus eriophyoides* Baker, 1948: 10 specimens (7 ♀, 3 nymphs).

#### **Eriophyidae Nalepa, 1898**

- *Tegonotus*\* sp.: 10 specimens (♀).

- *Tetra*\* sp.: 10 specimens (8 ♀ + 2 ♂).

### *Predacious mite fauna associated with date palm in Larestan*

#### **Raphignathidae Kramer, 1877**

- *Rhaphignathus*\* *hecmatanaensis* Khanjani & Ueckermann, 2003: 5 specimens (♀).

- *Rhaphignathus*\* *giselae* Meyer and Ueckermann, 1989: 3 specimens (♀).

- *Rhaphignathus larestanensis* Bagheri *et al.* 2011: 3 specimens (♀).

#### **Caligonellidae Grandjean, 1944**

- *Molothrognathus mehrnejadi*\* Liang & Zhang, 1997: 6 specimens (5 ♀, 1 nymph).

- *Molothrognathus azizi*\* (Ueckermann & Khanjani, 2003): 3 specimens.

#### **Camerobiidae Southcott, 1957**

- *Neophyllobius fissus*\* De Leon, 1967: 5 specimens (3 ♀, 2 nymphs).

#### **Cunaxidae Thor, 1902**

- *Cunaxa*\* *capreolus* Berlese, 1890: 3 specimens (1 ♀, 1 ♂, 1 nymph).

#### **Bdellidae Duges, 1834**

- *Spinibdella* sp.: 2 specimens.

- *Spinibdella cronini*\* (Baker & Balock, 1944): 8 specimens (2 ♀, 4 ♂, 2 nymphs).

#### **Cheyletidae Leach, 1815**

- *Cheyletus*\* sp.: 1 specimen.

- *Acaropsella*\* cf. *volgini* (Gerson, 1967): 2 specimens.

- *Hemicheyletia bakeri* (Ehara, 1962): 5 specimens (2 ♀, 3 ♂).

#### **Iolinidae Pritchard, 1956**

- *Pronematus* cf. *fleschneri* Baker, 1968: 4 specimens (2 ♀, 2 ♂).

#### **Smarididae Vitzthum, 1929**

- *Fessonnia* sp.: 5 specimens (nymph).

#### **Ologamasidae Ryke, 1962**

- *Gamasiphis*\* sp.: 2 specimens (1 ♀, 1 ♂).

#### **Rhodacaridae Oudemans, 1902**

- *Rhodacarellus*\* *iraniensis* Castilho *et al.* 2012: 1 specimen (♀).

- *Multidentorhodacarus\* saboorii* Castilho *et al.* 2012: 1 specimen (♀).

#### **Phytoseiidae Berlese, 1916**

- *Neoseiulus marginatus* (Wainstein, 1961): 1 specimen (♀).

- *Neoseiulus astutus\** (Beglyarov, 1960): 1 specimen (♀).

- *Neoseiulus bicaudus* (Wainstein, 1962): 1 specimen (♀).

- *Typhlodromus vulgaris\** Ehara, 1959: 1 specimen (♀).

#### **Parasitidae Oudemans, 1901**

- *Parasitus* sp.: 1 specimen (♀).

#### **Laelapidae Berlese, 1892**

- *Gaeolaelaps* sp.: 4 specimens (♀).

- *Gaeolaelaps aculeifer* (G. Canestrini, 1884): 2 specimens (♀).

- *Gaeolaelaps minor\** (Costa, 1968): 2 specimens (1 ♀, 1 nymph).

#### **Macrochelidae Vitzthum, 1930**

- *Macrocheles\** sp.: 6 specimens (5 ♀, 1 nymph).

#### **Sejidae Berlese, 1885**

- *Sejus\** sp.: 4 specimens (2 ♀, 2 nymphs).

### *Mite fauna with different feeding habits associated with date palm in Larestan*

#### **Eupodidae Koch, 1842**

- *Eupodes* sp.

Materials: 5 specimens (2 ♀, 2 ♂, 1 nymph).

#### **Tydeidae Kramer, 1877**

- *Brachytydeus\** sp.: 4 specimens (♀).

#### **Urodinychidae Berlese, 1917**

- *Uroobovella\* obovata* Canestrini & Berlese, 1884: 4 specimens (2 ♀, 1 ♂, 1 nymph).

- *Uroobovella\* cf. obovata* Canestrini & Berlese, 1884: 1 specimen (♀).

#### **Aphelacaridae Grandjean, 1954**

- *Aphelacarus\* acarinus* (Berlese, 1910): 3 specimens (♀).

#### **Cosmochthoniidae Grandjean, 1947**

- *Phyllozetes\* tauricus* Gordeeva, 1978: 1 specimen.

#### **Euphthiracaridae Jacot, 1930**

- *Acrotritia\* ardua* (Koch, 1841): 10 specimens (♀).

#### **Lohmanniidae Berlese, 1916**

- *Lohmannia (Lohmannia) turcmenica* Bulanova-Zachvatkina, 1960: 5 specimens (4 ♀, 1 nymph).

#### **Epilohmanniidae Oudemans, 1923**

- *Epilohmannia cylindrica cylindrica* (Berlese, 1904): 15 specimens (13 ♀ and 2 ♂).

#### **Haplochthoniidae Hammen, 1959**

- *Haplochthonius (Haplochthonius) sanctaeluciae\** Bernini, 1973: 8 specimens (♀).

#### **Microzetidae Grandjean, 1936**

- *Berlesezetes\** sp.: 2 specimens (♀).

#### **Oppiidae Sellnick, 1937**

- *Lasiobelba\* (Antenoppia) heterosa* (Wallwork, 1964): 11 specimens (5 ♀ and 6 ♂).

- *Discoppia\* (Cylindroppia) cylindrica* (Perez-Inigo, 1965): 4 specimens (♀).

- *Multioppia\* (Multioppia) sp.*: 1 specimen (♂).

#### **Gymnodamaeidae Grandjean, 1954**

- *Plesiodyamaeus\* ornatus* Perez-Inigo, 1972: 3 specimens (♀).

#### **Scheloribatidae Jacot, 1935**

- *Scheloribates (Scheloribates) fimbriatus*\* Thor, 1930: 26 specimens: (18 ♀, 8 ♂).

#### **Galumnidae Jacot, 1925**

- *Galumna (Galumna) karajica*\* Mahunka and Akrami, 2001: 9 specimens (♀).

#### **Haplozetidae Grandjean, 1936**

- *Trachyoribates\* (Rostrozetes) persiangulfi* Akrami *et al.* 2011: 11 specimens (♀).

- *Protoribates\* paracapusinus* (Mahunka, 1988): 8 specimens (♀).

- *Baloghiella\* granulata* Bayartogtokh & Akrami, 2000: 9 specimens (4 ♀, 5 ♂).

#### **Acaridae Latreille, 1802**

- *Tyrophagus putrescentiae* Schrank, 1781: 9 specimens (6 ♀, 2 ♂, 1 nymph).

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#### **References**


- Abul-hab, J. (2009) Further contribution to the Acarina fauna of Iraq. *International Journal of Acarology*, 10(1): 43–44.
- Blumberg, D. (2008) Review: Date Palm Arthropod Pests and Their Management in Israel. *Phytoparasitica*, 36(5): 411–448.
- Chaudhri, W.M. & Akbar, S. (1985) *Studies on the biosystematics and control of mites of field crops, vegetables and fruit plants in Pakistan*. University Of Agriculture Faisalabad, Pakistan, 314 pp.
- Chaudhri, W.M., Akbar, S. & Rasool, A. (1974) *Taxonomic studies of the mites belonging to the families Tenuipalpidae, Tetranychidae, Tuckerellidae, Caligonellidae, Stigmaeidae and Phytoseiidae*. University Of Agriculture Faisalabad, Pakistan, 250 pp.
- Djelloul, Gh. & Djamel-Eddine, Z. (2012) Study of the wildlife acarology (Acari: Oribatida) in the palm groves of Biskra. *Journal of Cell and Animal Biology*, 6(7): 115–122.
- El-Halawany, M.E., Abdel-Samad, M.A. & El-Naggar, M.E. (2001) Mites inhabiting date palms. *Second International Conference on Date Palms*, Al-Ain, UAE, pp. 366–373.
- Hountondji, F.C.C., De Moraes, G.J. & Al-Zawarmi, H. (2010) Mites (Acari) on coconut, date palm and associated plants in Oman. *Systematic and Applied Acarology*, 15: 228–234.
- Kajbaf-Vala, Gh. (1991) *Faunistic study of date mites in Khuzestan and biology of important species*. M.Sc thesis, Shahid Chamran University, Ahwaz, 166 pp. [In Persian]

- Khalilmanesh, B. (1973) Phytophagous mite fauna of Iran (I). *Applied Entomology Phytopathology*, 35: 30–38.
- Lepesme, P. (1947) Les insectes des palmiers. Paris. *Lechevalier*, pp: 701–708.
- Mohajeri, A., Haghightatkah, M. & Ostovan, H. (1995) Mites associated with date-palms in khuzestan province. Proc. 12<sup>th</sup> Iranian Plant Protection Congress, Tehran University, Karaj, pp. 204.
- Mohamed, I. & Elhaidari, H. (1968) Contribution of the knowledge of the mite Fauna of Iraq. *Bulletin of the Entomological Society of Egypt*, 50:127–128.
- Palevsky, E., Ucko, O., Peles, S., Yablonski, S. & Gerson, U. (2003) Species of *Oligonychus* Infesting Date Palm Cultivars in the Southern Arava Valley of Israel. *Phytoparasitica*, 31(2):1-10.
- Palevsky, E., Gala, S. & Ueckermann, E.A. (2009) Phytoseiidae from date palms in Israel with descriptions of two new taxa and a key to the species found on date palms worldwide (Acari: Mesostigmata). *Journal of Natural History*, 43: 1715–1747.
- Saleh, S.M. & Abd El-Hamid, M.M. (1993) Seasonal variations in soil mites under date-palm trees in Rashid region. *The third symposium on the date palm in Kingdom of Saudi Arabia*.

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کنه‌های مرتبط با خرما (*Phoenix dactylifera* L.) در لارستان (استان فارس)،

جنوب ایران

مریم مجیدی و محمدعلی اکرمی

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