



A new species of *Neoseiulus* Hughes, with records of seven species of predatory mites associated with date palm in Saudi Arabia (Acari: Phytoseiidae)

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Abstract

Eight species of phytoseiid mites are reported from date palm orchards in Saudi Arabia. Seven of them were first records for this country: *Neoseiulus bicaudus* (Wainstein), *N. conterminus* (Kolodochka), *N. makuwa* (Ehara), *N. rambami* (Swirski & Amitai), *Proprioseiopsis asetus* (Chant), *P. messor* (Wainstein), *P. ovatus* (Garman). *Neoseiulus makuwa* and *P. asetus* are recorded from the Middle East and North Africa for the first time. One new species is described from Bermuda grass, *Neoseiulus saudiensis* n. sp. The new species is most similar to *Neoseiulus alpinus* (Schweizer) and *N. marginatus* (Wainstein). A key for identification of the included species is provided.

Key words: Acari, Mesostigmata, Phytoseiidae, biological control, predatory mites, *Neoseiulus saudiensis*, Saudi Arabia.

Introduction

The predatory mite family Phytoseiidae contains most of the species presently used as biological control agents of mite pests (Kostiainen & Hoy, 1996; McMurtry & Croft, 1997). The fauna of Phytoseiidae in Saudi Arabia is very poorly known, with only ten species previously recorded (Dabbour & Abdel-Aziz, 1982; Al-Shammery, 2010; Al-Atawi, 2011a,b; Fouly & Al-Rehiyani, 2011). Projects are underway to identify the fauna of phytoseiid mites in Saudi Arabia and select the species that may have potential as biological control agents.

In Saudi Arabia, date palm is an economic plant that is attacked by several pests. Among these is the old world date mite *Oligonychus afrasiaticus* (McGregor, 1939) (Acari: Tetranychidae), which affects the quality of the product and downgrades its value on the market. The present study was intended to identify the predatory mites in date palm orchards, mainly in Riyadh region, and recommend promising species for further studies.

Material and methods

Orchards were sampled for predatory mites over two years (2010–2011). Tullgren funnels or/and direct observation under a stereoscopic microscope (SZX10, Olympus[®], Japan) were used to extract the mites from the plant material. Sampling included herbs and weeds growing in the orchards. Mites on weeds were sampled by using specialised hand-held aspirators (BioQuip[®], CA, USA) after modifying the collecting chamber by adding a small piece of light cloth. The collected specimens were cleared in Nesbitt's solution, mounted in Hoyer's medium on glass slides, dried on a hot plate, ringed with nail polish and examined under a phase-contrast microscope (BX51, Olympus[®]). Measurements were taken with a graded eyepiece and illustrations were made using a drawing tube attached to the microscope. Identification was carried out according to Chant & McMurtry (2003, 2005, 2007). Setal nomenclature follows that of Rowell *et al.* (1978) and Chant & Yoshida-Shaul (1991) for dorsal and ventral surfaces of the idiosoma, respectively. Notation of idiosomal poroidotaxy follows Athias-Henriot (1975). All measurements are in micrometres (µm) and presented as means followed by the range (in parentheses). The type material and voucher