

Partial Survey of Date Palm Dust Mite, *Oligonychus afrasiaticus* (McGregor) in Egypt Including Historical Trait

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ABSTRACT

The economic importance of date palm tree *Phoenix, dactylifera* L. exceeds its nutrition value as the most valuable fruit. Preserve Egypt's international status as a large producer of dates in the world, requires tackling pests that attack palm trees. Diseases and pathogen pests are causing great economic loss to the growers, reducing about 52 % of the total yield. *Oligonychus afrasiaticus* (McGregor) (Acari: Tetranychidae) is a dominant acarine pest in date palm production area in the Middle East and North Africa. Current survey covered different date palm plantation in Giza, Assiut, Matruh and the New Valley Governorates. Results showed that the dust mite has spread out to promising agricultural expansion areas. This finding sets the alarm of existing this mite as a new potential pest for date palm industry in the New Valley governorate. It is a more important problem for new introduced varieties as the high cash crop Barhi variety (soft variety). The existence of this species in Egypt was firstly mentioned in 1979 at Al-Kharga oasis, the New Valley. A historical trait of this mite pest over Egypt was included.

Key words: Date palm, Dust mite, *Oligonychus afrasiaticus*.

INTRODUCTION

The date palm tree, *Phoenix dactylifera* L., has great socioeconomic, environmental importance and nutritional value in Egypt. Its traditional use as a primary source of food and by-products and its ecological benefits in oasis agriculture make it an important fruit tree and the best crop to be cultivated.

About 55 cultivars of date palm fruits are commercially produced in Egypt (Bekheet and El-Sharabasy, 2015). These cultivars are classified as soft, semi dry and dry ones. They also indicated that more than one hundred industries relying on date palm products.

Egypt is a productive country of date palm fruits. It produces an amount of 1,470,000 metric tons, contributing 17 % of world production (FAO STAT, 2012).

Diseases and pests are serious threat to date palm plantations, causing great economic loss to the growers in Egypt. They reduce about 52 % of the total yield (Central Administration for Agricultural Extension Services, Egypt, 2001).

Date palm trees are attacked by several mite species that frequently cause significant damage. The Banks grass mite, *Oligonychus pratensis* (Banks), and the Old World date mite, *Oligonychus afrasiaticus* (McGregor), (Acari: Tetranychidae) is considered as major pests of date palms (Negm *et al.*, 2015).

This work aimed to review the previous scientific efforts in this field in Egypt. Also, presents survey

results of the geographical distribution of this serious mite pest in Giza, Assiut, Matruh and the New Valley Governorates, with special reference to new cultivated areas in the New Valley (Ewinat) and suggesting further search points to be approached.

MATERIALS AND METHODS

A survey was conducted during May - July 2016 and 2017 in Giza, Assiut, Matruh and the New Valley governorates. Survey covered different common date palm dominant varieties plantation in different localities of the four visited governorates. Samples of date palm leaves and dates were collected. Inspection focused on the dust mite infestation symptoms. Heavily silk webbing on bunches was a primer sign on the occurrence of the dust mites. Samples were transferred to the laboratory for examination using a binocular microscope.

Specimens were identified according to Jeppson *et al.* (1975) and Zaher *et al.* (1982). Two groups of specimens (2 ♀ & 2 ♂) of the collected species were deposited in the Reference Collection of the Department of Zoology and Nematology, Faculty of Agricultural, Cairo University and the Reference Collection of Acarology at Fruit Trees Department, Plant Protection Research Institute, Egypt.

RESULTS AND DISCUSSION

The field observations revealed that date palm dust mite *O. afrasiaticus* spread out in new localities of the Egyptian cultivation area. Surveying results of dust mite, associated with the date palms in Giza, Assiut, Matruh and the New Valley Governorates are presented in Table (1).

Table (1): Occurrence of dust mite, *Oligonychus afrasiaticus* on date palm plants at Giza, Assiut, Matruh and New Valley, Egypt during 2016-2017.

Locality	Date palm variety					Date palms of seed origin	Governorate
	Barhi (soft)	Zaghloul (soft)	Samani (soft)	Siwy (semidry)	Sakkoty, Bartamoda and Shamiya (dry)		
Giza (Giza City)	-	-	-	-	-	<i>O. afrasiaticus</i>	Giza
Bahariya Oasis (Elheez Village)	-	-	-	<i>O. afrasiaticus</i>	-	-	Giza
New Assiut city (Assiut Vally)	-	<i>O. afrasiaticus</i>	<i>O. afrasiaticus</i>	-	-	-	Assiut
Dakhla Oasis (Assment Village)	-	-	-	<i>O. afrasiaticus</i>	-	-	New Valley
Kharga Oasis (Nasser Village)	-	-	-	<i>O. afrasiaticus</i>	-	-	New Valley
Paries Oasis (El-Moks Village)	-	-	-	<i>O. afrasiaticus</i>	-	<i>O. afrasiaticus</i>	New Valley
Ewinat reclaimed land (El-Ain Village)	<i>O. afrasiaticus</i>	-	-	-	<i>O. afrasiaticus</i>	<i>O. afrasiaticus</i>	New Valley
Siwa Oasis (Siwa City)	-	-	-	<i>O. afrasiaticus</i>	-	-	Matruh

Documented history of dust mite in Egypt:

The first report of *Oligonychus* spp. as date palm common pests was in Kharga Oasis on Sewy semi dry variety (Saleh and Hosny, 1979). They indicated that the infestation rate could reach 100% of the infested bunches. However, the first record of *Oligonychus afrasiaticus* (McGregor) and *O. pratensis* (Banks) was reported on the weed, *Cynodon dactylon* Pers., in El-Ismailia and in Giza (Zaher *et al.*, 1982).

O. afrasiaticus was documented during survey of mites associated with palm trees in North and South Sinai Peninsula (El-Kady, 1997).

O. afrasiaticus was recorded on date palms with high population as a serious pest all over Egypt (El-Halawany *et al.*, 2001). These results were confirmed in ecological studies conducted on phytophagous mites inhabiting date palm plants at several governorates in Lower Egypt with special interest in *O. afrasiaticus* biology and its control (Rawash, 2003 unpublished M. Sc. Thesis).

Oligonychus sp. was found during the survey of different mites associated with date palm at Rashid region, El Beheira Governorate, Egypt. (Sallam *et al.*, 2007).

O. afrasiaticus was reported from Giza and Sohag Governorates as mite species associated with two varieties of date palm, including their abundance on Zaghloul and Sewy soft and semi dry varieties (El-Sanady and Mohamed, 2013). This species was also reported as one of three mite species occurring on date palms at the New Valley (Negm, 2015).

O. pratensis population fluctuations study was conducted on infested *Zea mays* L. at El-Sharkia and El-Dakahlia Governorates (Omar *et al.*, 2013).

It is worth mentioning that *O. afrasiaticus* is a dominant acarine pest in date palm production area in the Middle East (including Saudi Arabia, Oman, UAE, Iraq and Palestine). It also occurs in North Africa including Egypt (Negm *et al.*, 2015).

The present study recorded the date palm dust mite, *O. afrasiaticus* as a serious pest in new localities and new varieties which haven't been recorded before in Egypt. This finding sets the alarm of existence of this mite as new potential pest for date palm industry in the New Valley Governorate. It is more important problem for new introduced varieties as the high cash crop Barhi (soft variety).

The occurrence of *O. afrasiaticus* at other soft varieties like Zaghloul and Samani had grabbed the attention in Assiut Governorate, and the existence of this mite on Siwy variety (semidry) at Siwa also is a new finding at present work.

It is important to scout periodically and to survey pest species of such economic importance to date palm trees and even on wild plants to update the knowledge of the animal faunae. This would help in predicting its peaks to prevent any unexpected damage.

The lack of local studies related to different varieties susceptibility to date palm mite infestation and its biological traits, geographical distribution in all Egyptian date palm planting areas and/or varieties can mislead the control of this serious pest and threaten the expansion of the production area of date palm to fulfill local consumption in the whole country and to produce date fruits for export purposes.

The different control strategies proposed in (Negm *et al.*, 2015) indicated that the hope in controlling this

serious pest depends only on the integrated work (i.e. host plant resistance, agriculture, chemical and biological control practices).

More efforts is required in this prospective for continues monitoring, status evaluation and control strategy to contain the expansion of this mite as main pest of date palm trees in the survived areas as well as other date palm production areas in Egypt.

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