

SURVEY OF THE INSECT AND MITE PESTS ASSOCIATED WITH DATE PALM TREES IN AL-DAKHLIYA REGION, SULTANATE OF OMAN

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Abstract

The insect pests and mites associated with date palm trees in the 8 Wilayat of Al-Dakhliya region, Sultanate of Oman were surveyed throughout the three successive years 1994-1996. Nineteen insect pests belonging to 16 families and 8 orders in addition to 2 mites belonging to two families from the order Acari were recorded on the different parts of the palms.

Insect pests were *Schistocerca gregaria* (Forsk.) (Orthoptera: Acrididae); *Psammotermes* sp. (Isoptera: Rhinotermitidae); unidentified thrips species (Thysanoptera: Thripidae), 8 Homopteran species including *Platyplura arabica* Meyr. (Cicadidae); *Ommatissus bionotatus* lybicus DeBerg. (Tropiduchidae); *Pseudaspidopectus hyphaenicus* (Hall) (Margarodidae); *Maconellicoccus hirsutus* (Green) (Pseudococcidae); *Aonidiella orientalis* (New.), *Fiorinia linderæ* Takagi, *Parlatoria blachardii* (Targ.-Tozz.) (Diaspididae); *Phoenicococcus marlatti* (Ckll.) (Phoenicococcidae); 2 Lepidopteran species; *Batrachedra amydraula* (Meyr.) (Momphidae) and *Arenipsea sabella* (Hamps.) (Pyralidae) whereas, 3 Coleopteran species; *Jebusea hammerschmidtii* Reiche (Cerambycidae), *Oryctes agamemnon* (Burm.) (Scarabaeidae) and *Coccotrypes dactyliperda* (F.) (Scolytidae), a Dipteran species, *Bactrocera dorsalis* Hendel (Tephritidae) and 2 Hymenopteran species; *Polistes hebroeus* F. and *Vespa orientalis* L. (Vespidae). Mite pests were *Oligonychus afrasiaticus* (McGreg.) (Tetranychidae) and *Raoiella indica* Hirst. (Tenuipalpidae). Field observation indicated that the most economically important pests were *B. amydraula*, *O. lybicus*, *O. agamemnon*, scale insects in addition to the mite *O. afrasiaticus*.

INTRODUCTION

Al-Dakhliya Region is one of the major regions for date production in the Sultanate of Oman and produces 31,000 tons (17.8%) of the total production of dates in the Sultanate. It comprises 8 Wilayat: Adem, Al-Hamra, Bahla, Bidbid, Iski, Manah, Nizwa and Samail, Fig. 1.

Many commercial date palm cultivars are grown successfully in Al-Dakhliya due to its hot and dry climate. The importance of date palms in Al-Dakhliya region encouraged

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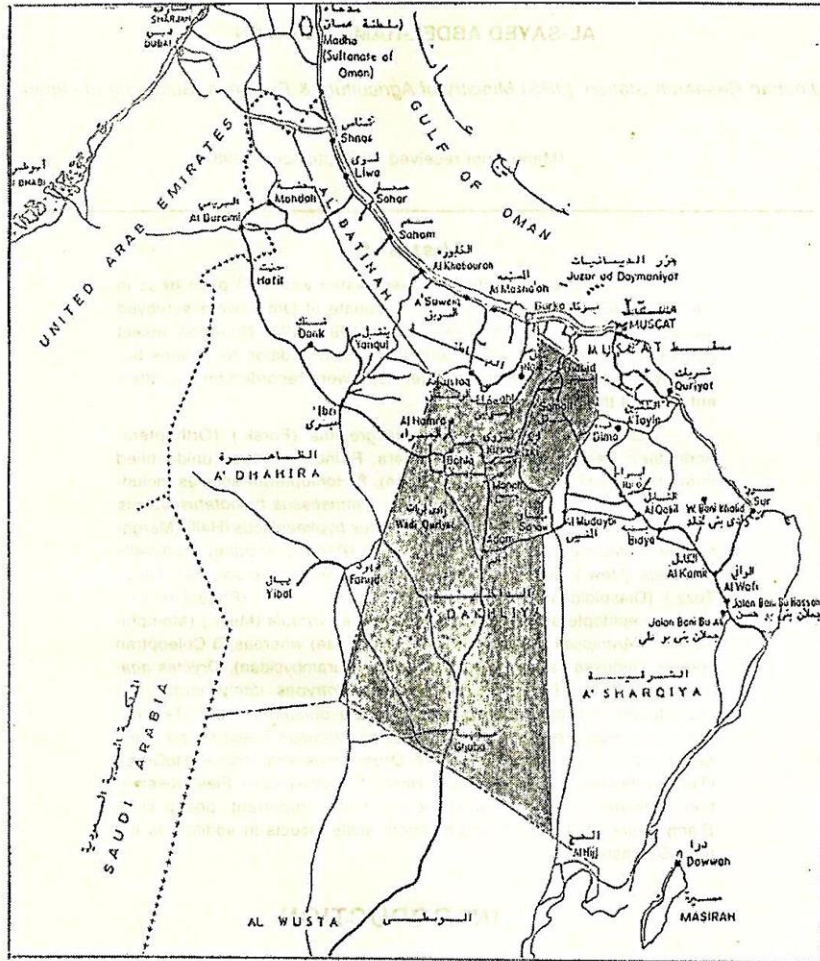


Fig 1. Indicate the localitis of different Wilayats Al-Dakhiya Region, Sultanate of Oman.

the Ministry of Agriculture & Fisheries for establishing a Date palm Research Station in Wadi Quriyat where commercial cultivars and a Date palm Gene Bank are maintained. The aim of this investigation is to survey the insect pests and mites associated with date palm trees in Al-Dakhlyia region.

MATERIALS AND METHODS

Survey of the insect pests and mites on date palm trees in Al-Dakhliya region was carried out for three successive years (January, 1994-December, 1996). Samples of infested plant parts (roots, stems, leaves, inflorescence and dates) were collected monthly from the different Wilayat and transferred to the laboratory for inspection. Robinson light traps (Robinson & Robinson, 1950) were distributed between the date palm trees and used for trapping flying insects. Collected date palm pests were identified at the Department of entomology, Agricultural Research Station, Rumais, Ministry of Agricultural & Fisheries, Sultanate of Oman and Plant Protection Research Institute, ARC, MOA, Egypt.

RESULTS AND DISCUSSION

The insect pests and mites associated with date palm trees in Al-Dakhliya region are systematically arranged in Table 1. These pests could be classified into the following groups:

A. Insect and Mite pests attacking inflorescence and fruits (dates)

Thrips (Thysanoptera : Thripidae)

An unidentified thrips species was observed on male spadix in January-February. Large numbers of individuals emerged from opened spathes. El-Haidari (1980) in Iraq and Hammed & Kadous (1989) in Saudia Arabia recorded the thrips *Adiheterothrips jambudvipae* Ramok inside the male spadix feeding on flower juice.

The lesser date moth, *Batrachedra amydraula* (Meyr.) (Lepidoptera: Momphidae)

During March, some young fruits (chirmri stage) were observed dry and empty. Damaged fruits were either attached to each other or to the strands by stout webbing. Infested fruitlets showed small holes near the calyx and attained a brownish color. Larvae occurred inside the fruitlets feeding on decayed tissues.

Table 1. Insect and mite pests associated with date palm trees in Al-Dakhiya Region, Sultanate of Oman.

No	Common name	Species	Family	Order
1	Desert locust	<i>Schistocerca gregaria</i> (Forsk.)	Acrididae	Orthoptera
2	Termite	<i>Psammotermes</i> sp.	Rhinotermitidae	Isoptera
3	Thrips	Unidentified thrips	Thripidae	Thysanoptera
4	Cicada	<i>Platyplura arabica</i> Meyr.	Cacadiidae	Homoptera
5	Dubas-bug	<i>Ommatissus biontatus lybicus</i> DeBerg.	Tropiduchidae	Homoptera
6	Mealy-bug	<i>Pseudaspido proctus hyphaeniacus</i> (Hall)	Margarodidae	Homoptera
7	Hibiscus mealy-bug	<i>Maconelliococcus hirsutus</i> (Green)	Pseudococcidae	Homoptera
8	Oriental yellow scale	<i>Annidiella orientalis</i> (New.)	Diaspididae	Homoptera
9	Florinia dae scale	<i>Florinia linderiae</i> Takagi	Diaspididae	Homoptera
10	Parlatoria date scale	<i>Parlatoria blanchardii</i> (Targ. Tozz.)	Diaspididae	Homoptera
11	Red date Scale	<i>Phoenicoccus marlatti</i> (Ckll.)	Phoenicococcidae	Homoptera
12	Lessor date moth	<i>Batrachedra amydraula</i> (Mayr.)	Momphidae	Lepidoptera
13	Greater date moth	<i>Arenipsea sabella</i> (Hamps.)	pyralidae	Lepidoptera
14	Date palm stem borer	<i>Jebusea hammerschmidti</i> Reiche (= <i>Pseudophyllus testaceus</i> Ghahan)	Cerambycidae	Coleoptera
15	Fruit-stalk borer	<i>Oryctes agamemnon</i> (Burm.)	Scarabaeidae	Coleoptera
16	Date stone beetle	<i>Coccotrypes dactyliperda</i> (F.)	Scolytidae	Coleoptera
17	Oriental fruit-fly	<i>Bactroera dorsalis</i> Hendel	Tephritidae	Diptera
18	Yellow wasp	<i>Polistes hebreus</i> F.	Vespidae	Hymenoptera
19	Oriental wasp	<i>Vespa orientalis</i> L.	Vespidae	Hymenoptera
20	Old world date mite	<i>Oligonychus afrasiaticus</i> (McGreg.)	Tetranychidae	Acari
21	Red date mite	<i>Raoiella indica</i> Hirst.	Tenuipalpidae	Acari

Infestation was observed in April and May. Many dates (Khalal stage) fell to the ground. Khalas cultivar seemed to be highly susceptible. El-Haidari (1981) indicated that *B.amydraula* is an important insect pest on date palms in many date-producing countries of the Near East and North Africa.

The date stone beetle, *Coccotrypes dactyliperda* (F.) (Coleoptera: Scolytidae)

Infestation occurred on the male inflorescence in few numbers by late January. During May infestation was low in fallen dates (Khalal stage). Thiab Al-Hafidh and Swair (1981) reported that *C.dactyliperda* infests the dates in khalal and ratlab stages in the orchard only.

The Oriental fruit fly, *Bactrocera dorsalis* Hendel (Diptera: Tephritidae)

Date samples were collected from Wilayt Ibri in December, 1997 and kept in beakers covered with muslin. Two to four days later maggots were seen, then collected, and left for pupation. Adults emerged within 8-10 days. This is the first record of *Bactrocera dorsalis* on dates in the Sultanate.

The yellow wasp, *Polistes hebroeus* F. (Hymenoptera : Vespidae)

Adults were observed attacking ripening dates causing severe damage to them. Wasp population was high during summer especially when the ripped dates stayed long on palms. In Saudi Arabia, Hammad and Kadous (1982) mentioned that *Polistes hebroeus* F.causes damage to male flowers in March and to dates in September and October particularly soft-fruit varieties, either on the trees or during marketing.

The oriental wasp, *Vespa orientalis* L (Hymenoptera: Vespidae)

A moderate population occurred on ripening dates during August and September (latest varieties) in Wilayt Adam, Wadi Ghul (Wilayt Al-Hamra) and Wadi Quriyat (Wilayt Bahla).

The old world date mite, *Oligonychus afrasiaticus* (McGreg.) (Acari: Tetranychidae)

This mite attacked immature dates (khalal stage) of Hilali cultivar in early April, whereas Gibri and Khanazi cultivars were attacked by the middle of the same month. Latter, infestation occurred on the other cultivars. Minute cracks appeared on infested

dates which turned reddish brown, with the progress of infestation, the mite spins thin webbing all over the fruit. Heavy dust accumulates on the infested fruits and the infested fruits and the bunches and infestation reflects a marked effect on yield quality and quantity.

B. Insect and Mite pests attacking fronds (leaves)

The desert locust, *Schistocerca gregaria* (Forsk.) (Orthoptera:Acrididae)

A moderate to light infestation was observed on the leaflets and unripe dates in the different Wilayat.

Cicada, *Platyplura arabica* Meyr. (Cicadidae: Homoptera)

A adults started to appear in orchards by late April on palms as well as the other trees. Eggs were deposited within the lower surface of midrib fronds. Infested midribs appeared punctured and their surfaces serrated with sharp teeth. El-Haidari (1980) mentioned that in Ras El-Khaima (UAE), *P.arabica* lay eggs in date palm fronds during April.

Dubas-bug, *Ommatissus binotatus lybicus* DeBerg. (Homoptera: Tropiduchidae):

This is an economically important pest on date palms in Oman. It attacks them causing considerable damage to leaves and fruits. There are two annual generations (spring and autumn generations). Nymphs pass through five nymphal instars. In Al-Dakhliya Region, *O.lybicus* is a common pest on date palms but infestation varies in the different Wilayat, being severe in Iski, Samail and Adam and light to moderate in Al-Hamra, Bahla, Bidbid, Manah and Nizwa.

The oriental yellow scale, *Aonidiella orientalis* (New.) (Homoptera: Diaspididae)

This scale occurred in a light population on the leaves (khasab cultivar) in July 1996 at Al-Hamra, then a heavy infestation was recorded on date strands. In Saudi Arabia, Hammad *et al.* (1982) found that *A.orientalis* attacked date palm leaves in Al-Qatif Region and the scale had four periods of activity on rizez variety in December, February-March, June and August-September.

The fiorinia date scale, *Fiorinia linderæ* Takagi (Homoptera: Diaspididae)

In February 1994, an armored scale insect was found in Wilayat Bahla and Al-Hamra on the palm leaves. Its population was moderate on the upper surface of the leaflets. Severe infestation occurred in Wilayat Al-Hamra especially in Misfat Al-Abriyeen. Ghabbour *et al.* (1996) identified this species as *Fiorinia linderæ* Takagi and this is the first record for it in the Sultanate.

The parlatoria date scale, *Parlatoria blanchardii* (Targ.-Tozz.) (Homoptera: Diaspididae)

In Al-Dakhliya region this scale is common on date palm fronds. It attacks the upper and lower surfaces of the pinnae, the basal midribs of fronds and the dates. It was also observed on the green leaf bases unprotected with leaf-sheaths.

The mealy-bug, *Pseudaspidopectus hyphaenicus* (Hall) (Homoptera: Margarodidae)

This species was observed in a moderate population on the fronds in many orchards especially on the off-shoots. Bitaw and Ben Saad (1990) in Libya reported the same species infesting midribs and leaf bases especially newly emerged ones.

The hibiscus mealy-bug, *Maconellicoccus hirsutus* (Green) (Homoptera: Pseudococcidae)

This mealy bug was recorded on the roots of some date trees in Wadi Quriyat Research Station (Wilayat Bahla). It was also found on the roots of offshoots in a date palm nursery at Jimmah Research Station.

The Red date scale, *Phoenicococcus marlatti* (Ckll.) (Homoptera: Phoenicococcidae)

The scale was found mainly at the bases of the leaves protected with fibers, in splitted fruit-stalks and on splitted midrib fronds. In few cases, it was noticed in the cracks of pruned leaves as well as on the prop roots above the ground. Masses of the scale were of frequent occurrence between the compact pinnae of unopened fronds of off-shoots. El-Haidari (1981) observed *P.marlatti* on the basal parts of the leaves and between fibers in Bahrain, Qatar, United Arab Emirates and Yemen Arab Republic. Al-Azawi (1986) added that in Qatar it attacks the bases of fronds and sometimes fruits.

The Greater date moth, *Arenipses sabella* (Hamps.) (Lepidoptera: Pyralidae)

The earliest infestation was recorded by late January on the tips of unopened spathes, in late March infestation extended to few bunches at the fruit stalk rachis. Infested fruit strands withered and shriveled. Bitaw and Bin Saad (1990) mentioned that *A. Sabella* occurred in most date palm growing area in Libya where larvae feed on the tips of spadix before and after opening as well as on flowers and fruits.

The fruit-stalk borer, *Oryctes agamemnon* (Burm.) (Coleoptera : Scarabaeidae)

Larvae occurred in large numbers inside the frond bases of the dead and or weak off-shoots during autumn and winter at Wadi Quriyat especially in October and November when removing off-shoots from mothers was practiced, whereas in Al-Ghafat (Wilayt Bahla) some larvae were found under the old pruned frond bases above ground level at a height up to one meter especially in humid areas.

In the Sultanate of Oman, Elwan and Al-Tamiemi (in press) reported that the adult beetles of *Oryctes agamemnon* (Burm.) prevailed from April until October and had one peak per year. Talhouk (1982) reported several species of *Oryctes* associated with date palms in Saudi Arabia and mentioned that the adults of *O.boas* appeared in winter in Jizan area and those of *O.agamemnon* and *O.elegans* appeared as from April in Al-Kharj and Hofuf but mainly from June until August. Hammad and Kadous (1989) pointed out that, the adults of *O.elegans* Prell. were active in the Eastern Province of Saudi Arabia (Al-Hassa Oasis) from April until September, whereas *O.agamemnon* and *O.boas* were found in very few numbers. Talhouk (1991) mentioned that there are at least 3 species of *Oryctes* in Saudi Arabia, but their geographical distribution was different and adults appeared mostly from June till August.

The red date mite, *Raoiella indica* Hirst. (Acari : Tenuipalpidae)

The mite was observed from December until April at the relatively humid localities in Wilayt Al-Hamra, Bahla and Nizwa. Lower surfaces of leaflets were highly infested than upper ones and red spots appeared on infested parts.

C. Insect pests attacking trunk and stem

The termite *Psammodermes* sp. (Isoptera: Rhinotermitidae)

Termite castes were observed attacking date palms in Wilayt Al-Hamera and Bah-

la. Termites bored holes in the green frond bases and built clay tunnels from soil surface upwards until the upper fronds. They also attacked off-shoots and weak palms in neglected orchards.

The date palm stem borer, *Jebusea hammerschmidtii* Reiche (= *Pseudophilus testaceus* (Gahan) (Coleoptera: Cerambycidae)

The borer was observed in Al-Ghafat (Wilayat Bahla) and many exit holes were seen on the fronds. Larvae infested palms at 2-3 meters height in the pruned fronds of the crown area. In Saudi Arabia, Kadous *et al.* (1982) reported that in Al-Hassa Oasis. *J. hammerschmidtii* attacks young and old, alive or dead date palms. They added that, the degree of infestation varied according to palm age, trunk height and pruning. Talhouk (1982) mentioned that in Saudi Arabia, the larvae of *J. hammerschmidtii* fed on the lignified tissues of the trunks of very weak trees in water-logged areas and neglected groves that are too densely crowded or irrigated with saline water.

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حصر الآفات الحشرية والأكاروسية لنخيل البلح بالمناطق الداخلية لسلطنة عمان

السيد عبد الحميد علوان

محطة البحوث الزراعية (جماح) بالمنطقة الداخلية ووزارة الزراعة والثروة السمكية -
سلطنة عمان.

أجري حصر الآفات الحشرية والأكاروسية لنخيل البلح في ولايات المنطقة الداخلية
الشمالية لسلطنة عمان خلال ثلاث سنوات متتالية (١٩٩٤ - ١٩٩٦). وقد بين الحصر وجود
١٩ آفة حشرية تنتمي إلى ١٦ عائلة من ٨ رتب ونوعان من الأكاروس ينتميان لرتبة
الأكارينا ويتبعان عائلتين. كانت الآفات الحشرية التي سجلت هي الجراد الصحراوي
Schistocerca gregaria (Forsk.) والنمل الأبيض *Psammotermes* sp. ونوع غير معرف من تريس
طلع النخيل، وحشرة السكادا *Platyplura arabica* Meyr. ودوباس النخيل *Ommatissus binot-*
atus lybicus DeBerg. والبق الدقيقي الكاذب *Pseudaspidopectus hyphaeniacus* (Hall) وبق
الهبسكس الدقيقي *Maconellicoccus hirsutus* (Green) والحشرة القشرية الشرقية *Aonidiella*
orientalis (New.) وحشرة الفيورانيا القشرية *Fiorinia linderæ* Takagi وحشرة النخيل
القشرية *Parlatoria blanchardii* (Targ.-Tozz.) وحشرة النخيل القشرية الحمراء *Phoenico-*
coccus marlatti (Ckll.) وحشرة الحميرة *Batrachedra amydraula* (Meyr.) ودودة الطلع *Arenip-*
ses sabella (Hamps.) وحفار ساق النخيل *Jebusea hammerschmidii* Reiche وجعل عذوق
النخيل *Oryctes agamemnon* (Burm.) وخنفساء نواة النخيل *Coccotrypes dactyliperda* (F.)
وذبابة الفاكهة الشرقية *Bactrocera dorsalis* Hendel والدبور الأصفر *Polistes hebreus* F.
والدبور الأحمر *Vespa orientalis*. أما الآفات الأكاروسية فشملت عنكبوت الغبار *Oligony-*
chus afrasiaticus واکاروس النخيل الأحمر *Raoiella indica* Hirst. وبينت الملاحظات الحقلية
أن أهم الآفات من الناحية الاقتصادية هي حشرات الحميرة، ودوباس النخيل، وحفار عذوق
النخيل، والحشرات القشرية إضافة إلى عنكبوت الغبار.