

A new recording of the rose beetle *Maladera insanabilis* (Coleoptera: Scarabeidae) on some ornamental and fruit plants in Iraq

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ABSTRACT: Rose beetle *Maladera insanabilis* is one of the important economic insect that attacks ornamental and fruit plants in some countries of the world. It was recorded for the first time in several nurseries of different sites in Iraq/Baghdad during the year 2014-2015. The adult insects are characterized by: female insects are reddish- brown in color and larger than males in size, female size is 7.5 – 8.5 mm long and 5 -5.5 mm widths whereas the male size is 7-8 mm long and 4-5mm widths, the males are lighter than females in color, the abdomen ends in females are circular, the male genitalia are elongated, the distance between mesocoxa in this species is wide, the edges of the hind leg tibia are hairy with hard thick hairs on the tibia apex. The larvae are white and curved and present in the soil. The seriousness of the insect is due to the severe damages that it causes to plants. Adult insects are present during March – Jun on the vegetative growth chewing foliage. The grubs are found inside the soil, stay for 6-7 months feeding on roots, causing serious damage and leading to the deterioration and death of the plants. The presence of the larvae was recorded in the soils planted with rose (*Rosa hybrid*), olive (*Olea europaea*), citrus (*Citrus spp.*), jasmine (*Jasminum sambac*), conocarpus erectus, nerium (*Nerium oleander*), (*Gazania spicudens*), christ thorn (*Euphorbia milii*), and cypress (*Cupressus sempervirens*). The more presence of the insect larvae was in the pot soil of roses. 10-20 larvae/pot were recorded and the percentage of plant mortality was 70-80%.

Introduction

Rose beetle *Maladera insanabilis* is one of the important economic insects that attack a wide range of plant families. The larvae of this insect live in the soil and feed by chewing the root hairs and young roots of the transplants causing deterioration of plants and leading to an inevitable death, depending on the larva density and plant age. As well as the damage resulting from adult insects that feed on the leaves and flowering buds, leading to weakness of the plant, slowing growth and decreasing flowers. The insect larvae, white grubs, cause severe damages to the roots of grasses, legumes and young fruit plants in India and different areas over the world (7). The adult insects are spread in high densities and full activity during the period from March to July and feed on foliage of different fruit and forest trees (6). The beetle *Maladera insanabilis* is distinguished that it is present seasonally in the northern and southern India with high dominance and density causing severe damages (8). As Falach and Shani (5) have mentioned, this insect is one of the serious pests on multiple plant hosts whose larvae and adults destroy crops. The insect larvae firstly feed on crops under the soil surface such as peanut, sweet potato and carrot whereas the adults feed on flowers and foliage of many kinds of plants. The insect was recorded in Iran in 1970 and in Palestine in 1980, then spread over the Middle East and some areas of Asia like Pakistan, Afghanistan, and India (1, 2, 3). Ahren et. al. (4) also mentioned that an invasion of this insect was recorded in Mediterranean regions and spread to Libya and Yemen in 1990. This insect is considered one of the serious pests, in case it spreads, it causes economic damages to the crop and ornamental plants. Due to the appearance of this insect in Iraq, this study aimed to describe and identify the insect and survey the plant hosts, area of spread and the economic losses that caused by.

Materials And Methods

Adult insects, beetles, were observed coming out of soil planted with rose, settled on the vegetative growth, and chewing the foliage and flowers in many nurseries in Baghdad during the spring of 2014. A group of adult insects were collected and embalmed for the purpose of conducting microscopic tests necessary for identification. Other numbers of beetles and grubs were brought from rose transplant soil and from damaged and died rose plants found in different nurseries in Baghdad during the spring of 2015. Adult insects were embalmed and morphological and identification studies were conducted on them basing on the distinguishing keys available for the Scarabeidea family (1, 2). The male genitalia traits were also recognized, recorded and compared with the closest species of the same family. Some samples were sent to the Natural History Museum/ University of Baghdad in order to confirm the insect identification. A survey was conducted in a number of ornamental plant nurseries in Baghdad for the presence of adult insects on plants and in light traps and for the presence of larvae inside the soil planted with roses.

Results And Discussion

Taxonomic position of the insect

Maladera insanabilis belong to:

Order: Coleoptera

Superfamily: Scarabaeoidea

Family: Scarabeidae

Subfamily: Melolonthinae

Tribe: Sericini

Synonym name: Maladera matruda Argaman, 1986.

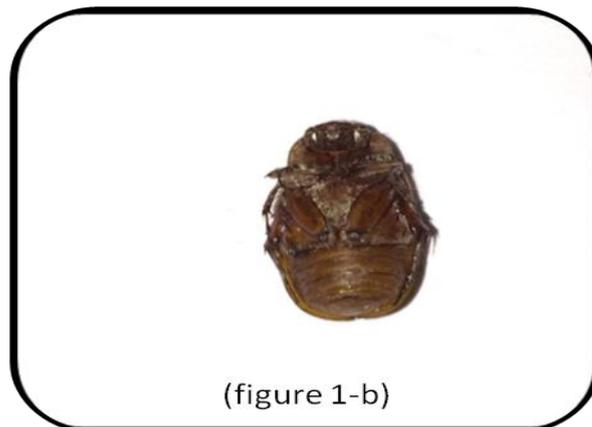
The identification was performed according to Ahren (1) and Ahren et. al. (4).

Description

The female beetles are reddish-brown color, 7.5 – 8.5 mm long and 5 -5.5mm width. Their abdomen ends are circular in shape. Whereas the males are lighter in color and smaller in size, 7-8 mm long and 4-5 mm, and their abdomens are straight (figure 1- a). The antennae of females are lamellate, but the lamellae in male antennae are denser. This species is characterized by more width distanced mesocoxa (figure 1-b), hairs at the edges of hind legs tibia (metatibia) and hard thick hairs at the tibia apexes (figure 1-c), elongated genitalia (figure 1- d), and the grubs are small, white and curved (figure 1-e).

The spread of the insect in Iraq

The presence of the insect was recorded in Baghdad, in the nurseries of the capital mayoralty, in the nurseries of Gre'at, Saba' abkar, and Alqanat, and in the gardens of the University of Baghdad/Al-Jadreia during 2014-2015. The presence of adult insects was recorded at higher densities during the period from March to June, and in less number during July, after this period, no any insect is present on foliage whereas the larvae presence was recorded during the period from June to March.





(figure 1-e)

Figure 1. Adults and larvae of insect and some taxonomic characters.

Plant hosts

The presence of the insect grubs was recorded in the soil of pots planted with rose (*Rosa hybrid*), olive (*Olea europaea*), citrus (*Citrus spp.*), jasmine (*Jasminum sambac*), conocarpus erectus, nerium (*Nerium oleander*), (*Gazania spicudens*), christ thorn (*Euphorbia milii*), and cypress (*Cupressus sempervirens*). The average number of grubs was 10-20 grub/pot, which was in accordance with other researchers that this insect is one of the polyphagous insects (4, 5, 7).

Economic losses

The highest presence of insect adults and grubs were recorded on roses. The mortality percent of plants in age 1-2 years was 70-80% (figure 2). This is in accordance with the results of many researchers who have explained that the grubs of this insect causes economic damages to the roots of many crops, fruit and ornamental plants (8, 7, 4). The high percent of economic losses caused by the insect refers to its great importance and epidemic on many economic crops in case of spreading over the Iraqi governorates after then.



(figure 2)

Figure 2. Injuries of insect on rose plants.

References

- Ahrens, D. 2000. Sericinae (Coleoptera: Scarabaeoidea: Melolonthinae) of Arabia. Fauna of Arabia. 18:177-210.
- Ahrens, D. 2003. *Maladera affinis* (Blanchard) (Coleoptera: Scarabaeoidea: Sericinae), an oriental fauna element in Malagasy region. D.E.Z. 50(1):133-142.
- Ahrens, D. 2004. Monographic der Sericini des Himalaya (Coleoptera: Scarabaeoidea). Dissertation de varlag in internet GmbH, Berlin. pp. 534.
- Ahrens, D.; M. Arnone and B. Masso. 2006. *Maladera insanabilis* (Brenske 1894), species invasive nella region Mediterranean ESUA distribution Libia (Coleoptera: Scarabaeoidea: Sericini). Naturalista Sissil. 5(2): 349-357.
- Falach, L. and A. Shani. 2002. Sexual behavior of the *Maladera matrida* male beetle as affected by female cuticular components. IOBC Wprs Bulletin. 25: 1-9.
- Mehta, P.K.; R. S. Chandel and Y. S. Mathur. 2008. Phytophagous White Grubs of Himachal Pradesh. Technical Bulletin: Dept. of Entomology, CSK HPKV, palampur. P. 13.
- Mehta, P.K.; R. S. Chandel and Y. S. Mathur. 2010. Status of White grubs in north western Himalayia. J. Insect Sci. 23(1): 1-14.
- Pathania, M.; R. S. Chandel; K. S. Verma and P. k. Mehta. 2015. Diversity and population dynamics of phytophagous scarabaeid beetle (Coleoptera: Scarabaeoidea) in different landscape of Himachal Pradesh, India . Arthropods. 4(2): 46-68.