



RESEARCH PAPER

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Host plant records for the *Citrus mealybug*, *Planococcus citri* (Hemiptera, Pseudococcidae) in Baghdad Province, Iraq

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Abstract

This paper presents the results of field surveys on the host plants of the citrus mealybug, *Planococcus citri* (Risso)(Hemiptera, Pseudococcidae) is attacked many host plant in Baghdad Province, Iraq between 2013 and 2015. The survey included green houses, private nurseries, confined buildings, and previously published records. The aim of this study was to determine the host plants of the citrus mealybug, *Planococcus citri* in Baghdad, Iraq. The results revealed 19 species of host plants in 14 families including 4 fruit trees *Citrus* sp, *Morus alba*, *Punica granatum*, *Vitis vinifera* Linn. 2 vegetable crops *Cucumis melo*, *Fragaria vesca* and 13 ornamental plants. Among these host plants, four were previously recorded, while fifteen are newly recorded for Iraq in which seven of them are recorded most probably new for the world *Aglaonema crispum*, *Aphelandra sequarrosa*, *Begonia* sp., *Carissa grandiflora*, *Dieffenbachiaamoena*, *Dracaena fragrans*, *Epipremnum aureum*, *Ficus elastica*, *Platycerium bifurcatum*, *Philodendron scandens*. This result indicates that *P. citri* in Iraq does not have such a wide host range as reported from other countries.

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Introduction

The citrus mealybug, *Planococcus citri* (Risso, 1813) (Hemiptera, Pseudococcidae) is one of the most cosmopolitan species, damaging many outdoor crops in the tropical and subtropical regions as well as in greenhouses in the temperate regions (Cox, 1989). It was first described as *Dorthisia citri* by Risso in 1913 from specimens on citrus in southern France, and it is probably originated from China (Bartlett, 1978). The species is now found in numerous region distributed in 114 countries and it is a highly polyphagous pest attacking more than 250 plant species in 82 plant families (Ben-Dov *et al.*, 2015). Also, it was reported as the most economically important pest on citrus in the Mediterranean countries (Franco *et al.*, 2002). Plant damage is caused by nymphs and adults by feeding on the branches, twigs, shoots, leaves, flower buds and fruits resulting in stunting, distortion, chlorosis and defoliation (Kosztarab, and Konzar, 1988).

Planococcus citri was recorded for the first time in Iraq by Green (1922) as *Pseudococcus citri* on grape vine, *vitis vinifera*. Subsequently, Bodenheimer (1943) collected it on leaves of mulberry, *Morus alba* at Baghdad and on leaves of fig trees, *Ficus carica* at Aloka bridge (Mosul, Zakho road); Hussain (1963) recorded it on three host plants, fig, *Ficus carica*, grape vine and mulberry; Al-Ali (1977) reported it on mulberry, grape and pomegranate, *Punica granatum*, and Al-Azawi *et al.*, (1990) reported it on citrus. The aim of this study was to determine the host plants of the citrus mealybug, *Planococcus citri* in Baghdad, Iraq.

Materials and methods

A survey for host plants of citrus mealybug, *Planococcus citri* was conducted during 2013 – 2015 in different locations in Baghdad province including greenhouses, private nurseries, confined buildings, and previously published records. Infested plants by the mealybug, *P. citri* were collected and kept in plastic bags and brought to the laboratory for examination. The mealybug were carefully removed from the leave surface using soft camel hair brush and were put into a tube which contained 75% alcohol.

Mealybug were mounted on microscope slides using the method given by Kosztarab and Kozar (1988), and identification was carried out by the first author using keys provided by Williams (2004), and Moghaddam (2013). Mounted slides are deposited in the collection of Iraq Natural History Museum. The host plants have been arranged in three categories: fruit trees, vegetable plants and ornamental plants and then the plants have been arranged in alphabetical order in each category (Table 1).

Results and discussion

A survey was carried out during 2013-2015 in different locations in Baghdad province, to determine the host plant of *Planococcus citri* (Risso, 1813) including greenhouses, nurseries, and confined buildings. The survey results, as well as, the previously published records revealed that there are 19 different plant species including 4 fruit trees, 2 vegetable crops, and 13 ornamental plants (Table 1).

Among these host plants, four were previously reported for Iraq. Regarding vegetable plants, this mealybug was found attacking two species, Melon, *Cucumis melo* L. (Cucurbitaceae), and Strawberry, *Fragaria vesca* L. (Rosaceae) which was planted in a greenhouse held in the college of Agriculture, Baghdad University, while 13 species of ornamental plants are newly recorded for Iraq. Seven of which denoted by an asterisk (*) were not recorded by Ben-Dov *et al.* (2015) and thus considered probably new for the world.

This result indicates that *P. citri* in Iraq does not have such a wide host range as reported from other countries such as Egypt, in where it was found infesting 65 plant species belonging to 56 genera in 36 families (Ahmed *et al.*, 2010). On the other hand, the finding is similar to that of Moghaddam (2013) list in Iran who reported 18 plant species, in 13 families and that of Masten Milek *et al.* (2008) in Croatia who reported 19 host species in 12 plant families.

Table 1. A list of host plants infested by citrus mealybug in Baghdad province.

Host plant name	Common name	Family name	Reference
Fruit trees			
<i>Citrus</i> sp.	Citrus	Rutaceae	Al-Azawiy <i>et al.</i> , 1990
<i>Morus alba</i>	White Mulberry	Moraceae	Bodenheimer, 1943
<i>Punica granatum</i>	Pomegranate	Punicaceae	Al-Ali, 1977
<i>Vitis vinifera</i> Linn.	Grape Vine	Vitaceae	Green, 1922
Vegetable plants			
<i>Cucumis melo</i>	Melon	Cucurbitaceae	Present study
<i>Fragaria vesca</i>	Strawberry	Rosaceae	Present study
Ornamental plants			
<i>Aglaonema crispum</i>	Silver Queen	Araceae	Present study
<i>Aphelandra sequarrosa</i>	Zebra Plant	Acanthaceae	Present study
<i>Begonia</i> sp.	Her Majesty	Begoniaceae	Present study
* <i>Carissa grandiflora</i>	Natal Plum	Apocynaceae	Present study
<i>Codiaeum variegatum</i>	Croton	Euphorbiaceae	Present study
* <i>Dieffenbachia amoena</i>	Dumb Cane	Araceae	Present study
* <i>Dracaena fragrans</i>	Corn Palm	Asparagaceae	Present study
<i>Epipremnum aureum</i>	Golden Pothos	Araceae	Present study
<i>Ficus elastica</i>	Rubber Plant	Moraceae	Present study
* <i>Platynerium bifurcatum</i>	Stag's Horn Fern	Polypodiaceae	Present study
* <i>Philodendron scandens</i>	Sweetheart plant	Araceae	Present study
<i>Schefflera arabicola</i>	Umbrella Tree	Araliaceae	Present study
* <i>Spathiphyllum wallisii</i>	Peace Lily	Araceae	Present study

*New records for the world.

The mealybug, *P. citri* is the most common mealybug on indoor plants attacking ornamental plants growing in greenhouses, nurseries and confined buildings, and plants of the family Araceae were the most preferred hosts for this mealybug.

The species reported here are: *Cucumis melo* (Cucurbitaceae), which was mentioned by Ahmed *et al.* (2010) in Egypt; *Fragaria vesca* (Rosaceae) and *Codiaeum variegatum* (Euphorbiaceae) reported by Granara (1991) in Argentina, also by Masten Milek *et al.* (2008) in Croatia and by Moghaddam (2013) in Iran; *Ficus elastica* (Moraceae) by Moghaddam (2013) in Iran; *Schefflera arabicola* (Araliaceae) by Goszczynski and Golan (2011) in Poland.

Although the citrus mealybug reported in our neighboring countries as a serious pest on citrus as in

Turkey (Pollat *et al.*, 2008), Iran (Heidari, 1986), and Syria (Bodenheimer, 1926), but in Iraq there was no documented damage to the citrus trees either in this study or previous studies conducted on *Planococcus citri* (Bodenheimer, 1951; Al-Azawiy *et al.*, 1990).

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