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FIRST RECORD OF NIGRA SCALE, *PARASAISSETIA NIGRA* (NIETNER, 1861) (HEMIPTERA; COCCIDAE) AS A PEST OF FIG TREES IN IRAQ

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ABSTRACT

The nigra scale, *Parasaissetia nigra* (Nietner, 1861) (Hemiptera, Coccidae) recorded as a new insect pest attacking fig trees, *Ficus carica* (Moraceae) in Iraq. It was observed during April 2014 in residential garden at Al-Hurriyah district in Baghdad.

Key words: Coccidae, Fig, Hemiptera, Iraq, Nigra scale.

INTRODUCTION

Fig tree, *Ficus carica* Linnaeus, 1758 (Moraceae) is one of the most economically important fruit crops in Iraq, its fruits are consumed as both fresh and dried forms. These trees are distributed throughout all Iraqi provinces, particularly Dohuk and Nineveh, which got the biggest number (Al-Azawi *et al*., 1990).

Fig trees in Iraq are reported to be attacked by more than 38 Arthropoda species belonging to 13 families of 6 orders. The order Coleoptera was represented by the highest number of species (18 species), followed by Hemiptera (10), Acarina (5), Lepidoptera (3), Diptera (1), and Thysanoptera (1) among which 7 were scale insects (Al-Ali, 1977).

According to the Ministry of Planning, the total number of trees planted during 2014 was about 416770 (Central Statistical Organization, 2014). The total fig production of Iraq was about 9457 tons, thus the mean production rate reached about 22.7 Kg per tree. It seems that this production rate is very low in comparison with neighbor countries, this decline in production can be attributed to the agricultural arthropod pests which are considered one of the most important factors affecting figs production (Al-Azawi *et al*., 1990).

During April, 2014 we have obtained specimens of unfamiliar soft scale insects infesting leaves and fruits of the fig tree from Al-Hurriyah district in Baghdad. These soft scales were identified by the second author as *Parasaissetia nigra* (Nietner, 1861). A study of the literature concerning this scale shows that the species has an African origin (EPPO, 2002), originally described by Nietner in 1861 from specimens collected from a coffee plant in Sri Lanka. It has at least 12 common names known in various parts of the world such as nigra

scale and black scale (Smith, 1940) and has many synonyms and various combinations (Ben-Dove and Miller, 2016).

In spite of its African origin (EPPO, 2002) *P. nigra* is now widely distributed in all the Zoogeographical Regions of the world. It is present in 121 countries (Ben-Dov and Miller, 2016) including the Middle Eastern countries such as Saudi Arabia (Matile-Ferrero, 1984; CABI **,** 1997); Israel (Ben-Dove, 1993); Turkey (Cebeci and Selmi, 2004; Kaydan, *et al*., 2007); Iran (Cheraghian ,2014), and Cyprus (Ulgenturk *et al*., 2015). It is now found in Iraq and perhaps this pest has entered Iraq from neighboring countries with infested plants.

Parasaissetia nigra is polyphagous, feeding on host plants from 92 families (Ben-Dov and Miller, 2016), particularly on ornamental plants of tropical origin. Several agricultural crops are attacked, including avocado, citrus, coffee, cotton, fig, guava, mango, pomegranate and other plants. Scales often infest leaves, branches and fruits (Hamon and Williams, 1984).

Observations on the type of damage showed that the nymphs and females of nigra scale *P. nigra* cause damage to the host plants with their piercing sucking mouthparts, by sucking sap and nutrients from leaves stem veins eventually affecting on plant growth, which often become stunted, distorted with reduced vigor in addition, the scale causes indirect damage by excreting honeydew which provides a medium for the growth of black molds, which covers the surfaces of the leaves, reducing photosynthesis causing further injury to the plant (Smith, 1944).

Reproduction in *P. nigra* is entirely parthenogenetic. The female lays 800 or more eggs in a cavity under her body and there are no males (Smith, 1944). It has one generation per year outdoors (Gill, 1988) while Ben-Dov (1978) recorded up to 6 generations per year in greenhouses in Israel. There are three nymphal stages, the first stage individuals are transparent green at first and turn transparent yellow-pink.

The aim of this study was to determine the occurrence of nigra scale, *Parasaissetia nigra* for the first time on the fig tree in Iraq.

MATERIALS AND METHODS

Infested leaves and fruits of fig trees by the nigra scale, *Parasaissetia nigra* were collected from a private garden at Al-Hurriyah district in Baghdad province during April, 2014. The nigra scales were carefully removed from the leaf and fruit surfaces and were mounted on microscope slides using the method given by Sirisena *et al*. (2013). The identification was made by the second author using key prepared by Mohammad and Moharum (2013) and the mounted slides are kept in the personal collections of the second author.

RESULTS

In the present work, we report for the first time the nigra scale, *Parasaissetia nigra* (Hemiptera, Coccidae) in Iraq, which was collected from fig trees that grow in private garden during April, 2014 at Al-Hurriyah district in Baghdad.

Diagnostic characters.

The nigra scale, *Parasaissetia nigra* recognized by the following characters(figure 1): Adult females 3.0-4.5 mm long, 3.5-4.0 wide, oval to elongate oval and flat to rounded,

usually convex in lateral view; dark brown to purple-black in color. Dorsum with reticulate pattern, without raised dorsal "H" pattern, marginal setae slightly enlarged, fimbriate. Antennae usually 8-segmented; legs obvious, without tibiotarsal sclerosis; claws without denticle. Ventral tubular ducts in submarginal band around body margin; setae on dorsal surface with 4 subapical setae on each anal plate; anal with fringe setae; multioculars pores near valvar area and submarginal; preopercular pores in small numbers on apical anal. Immature stages and young adult translucent yellow in colour, with two black eyes placed anterolaterally; males are not known; ovisacs absent, eggs laid under body of female.

Remarks:
Parasaissetia nigra is similar to species of Saissetia by having a reticulate pattern on the dorsum but differs by lacking "H" pattern on dorsum.

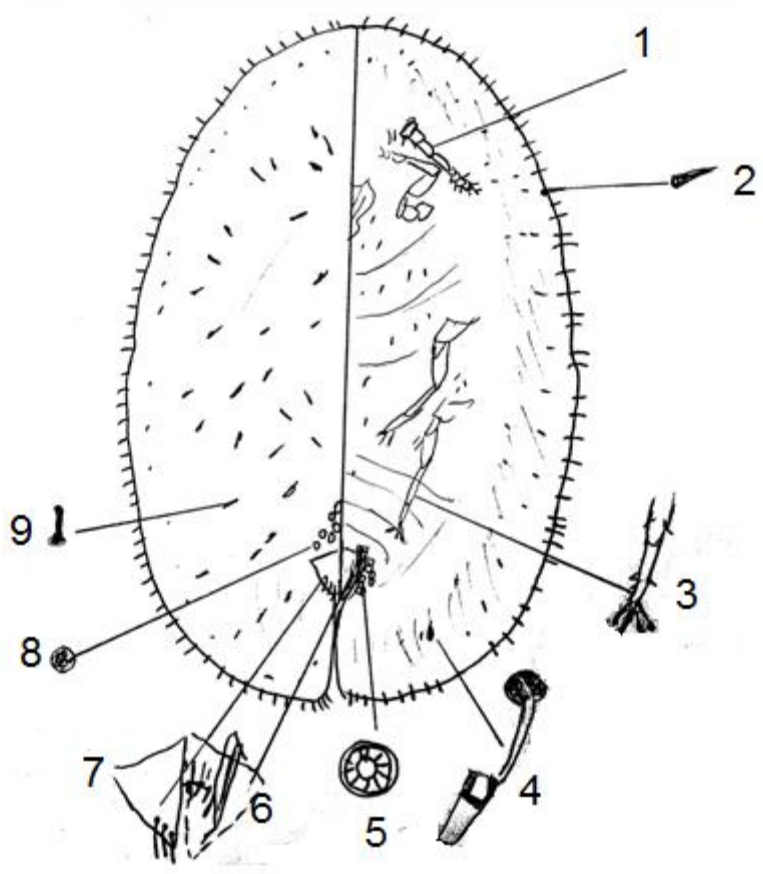

Figure (1): *Parasaissetia nigra* (Nietner)
Ventral surface: 1-antenna, 2- marginal setae, 3- tarsus, 4- ventral tubular ducts, 5- multiloculars pore, 6- anal plates.
Dorsal surface: 7- anal plates, 8- preopercular pores, 9-seta.

Plate (1): Female adults of *P. nigra* on leaves of Figs

Plate (2): Female adults of *P. nigra* aggregates along the twigs of fig tree

DISCUSSION

This is the first record of *P. nigra* in Iraq, where it was found on the leaves of the fig tree in Baghdad. It had been most probably introduced accidentally to Iraq by the trade of fruit trees and ornamental plants.

The infestation appeared during April, soon after leaves emerged, and gradually increased with the advancement of plant growth. The highest infestation rate was observed during October.

The scale pest fed on the aerial parts of the plant mainly the leaves, where it was found on the lower and upper surfaces or along leaf veins (Plate -1) and was also aggregated along the twigs and branches of the plant (Plate 2).

Although this pest affects several agricultural crops in different part of the world, it had been observed only on fig trees in Iraq up to date. This finding is met with the results of Hall (1923), Ezzat and Hussein (1969) in Egypt; Bodenheimer (1924), Ben-Dov (1978) in Israel; Ali (1971) in India Matile-Ferrero and Noveillerd (1984) and in Saudi Arabia where it is known to feed on fig trees, *Ficus carica.*

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تسجيل جديد للحشرة القشرية السوداء *Parasaissetia nigra* (Nietner, 1861) (Hemiptera; Coccidae) كآفة على أشجار التين في العراق

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الخلاصة

الحشرة القشرية السوداء*Parasaissetia nigra* (Nietner, 1861) (Hemiptera: coccidae) تسجل في هذا البحث لأول مرة كآفة حشرية على أشجار التين في العراق.

شوهدت هذه الحشرة خلال شهر نيسان من عام ٢٠١٤ على أوراق وثمار التين في إحدى الحدائق المنزلية في مدينة الحرية - بغداد.