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FIRST RECORD OF THE MEALYBUG, *Phenacoccus solenopsis* TINSLEY (HEMIPTERA: PSEUDOCOCCIDAE) AS A NEW PEST ON BANANA PLANTS IN EGYPT

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ABSTRACT

Cotton mealybug, *Phenacoccus solenopsis* Tinsley (Hemiptera: Pseudococcidae) was recorded for the first time on banana, *Musa acuminate* L. (Musaceae) in Egypt during July, 2015. This species was recorded on banana plantations during a monitor study of pests from April to November, 2015 as a part of the periodical inspection of banana pests in El-Wasta, Beni-Swief Governorate, Egypt.

INTRODUCTION

The banana plant, *Musa acuminate* L. Family Musaceae is the largest herbaceous flowering plant. It is one of the most staple foods in tropical areas. In Egypt, banana cultivation is one of the largest and fastest growing fruit crops standing as fourth in terms of economic importance in the fruit trade after the horticultures; citrus, grape and mango. Addition to its nutritional value and high consumer demand by more than other fruits the rest of what is distinguished by its sweetness taste and distinctive flavor of a banana features from the rest of the potential availability of other fruit markets throughout the year as well as the ability to transfer dividends and trading and storage.

Banana is vulnerable to many common insect pests which cause significant damage to fruit and leaves due to greatly reduce in marketability of banana fruit. Insects infesting banana are belong to families Pseudococcidae, Diaspididae and Coccidae (Fatma A. Moharum, 2011).

Mealybugs, are one of the widely distributed insect pests all over the world and have a wide range of host plants.

Phenacoccus solenopsis Tinsley (Hemiptera: Pseudococcidae) is one of a soft bodied insects which excretes honeydew which encourages the development of black sooty mould (Hamlen, 1975 and Jagadish *et al.*, 2009). The extraction of sap by *P. solenopsis* results in the leaves of the plant turning yellow and becoming crinkled or malformed, which leads to loss of plant vigour, foliage and fruit-drop, and potential death of the plant, in case of abscent effective control methods. Phloem feeding affects the growing regions of the plant often resulting in bunched and stunted growth (Dhawan *et al*., 2009; Jagadish *et al*., 2009), with plants producing smaller fruit or flowers, which ultimately leads to a reduction in seed or fruit yields.

It is an exotic species originated from the USA (Ben-Dov, 2009). It is a polyphagous pest feeding on a wide variety of plants (Kumar and Kontodim, 2012). The host range of this mealybug included grapes, fig, date palm, apple, avocado, banana, citrus, okra, tomato, brinjal, cucurbits, cotton, and

ornamentals as Hibiscus sp., Chrysanthemum sp. and mulberry (Abbas *et al.* 2010).

Phenacoccus solenopsis has been reported from 35 localities of various ecological zones of the globe (Ben-Dov, 2009).

In Egypt*, P. solenopsis* was recorded in 2010 on Cyprus (Abd-Rabou *et al*., (2010); EPPO, 2011). Recently, Ibrahim *et al*. (2015) recorded *P. Solenopsis* as a new pest of tomato plants, *Lycopersicon esculentum* Mill) at Qalyoubia Governorate during summer season of 2014.

This work was conducted during a monitor study of pests from April to November, 2015 as a part of the periodical inspection of banana pests in El-Wasta, Beni-Swief Governorate, Egypt, and the species of cotton mealybug, *Phenacoccus solenopsis* Tinsley (Hemiptera: Pseudococcidae) was recorded for the first time on banana*, Musa acuminate* L. (Musaceae).

MATERIALS AND METHODS

Random specimens of this insect species were collected from various banana plantations as a part of the periodical inspection of banana pests conducted from April to November, 2015 in El-Wasta, Beni-Swief Governorate, Egypt. Samples were mounted according to the procedures of Ben-Dov and Hodgson (1997). They were identified based on specific taxonomic key morphological characters by the second author, using the method outlined in Williams and Granara de Willink (1992).

RESULTS AND DISCUSSION

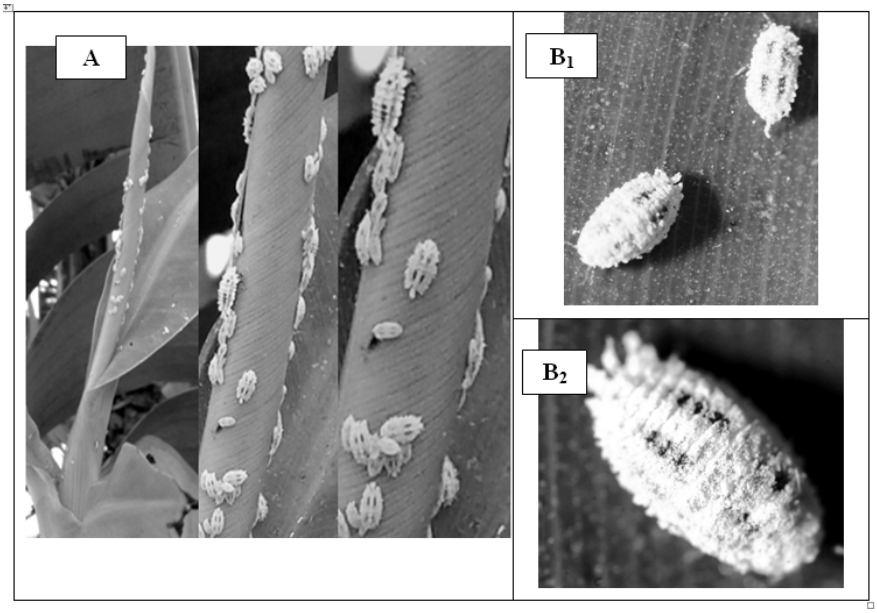
The present study represents the first record of *P. solenopsis* on banana plantations in Egypt at El-Wasta, Beni-Swief Governorate, Egypt (Plate 1: A, B_1 and B_2). The first record of this insect species in Egypt was on weed plants published by Abd-Rabou *et al.* (2010). It was also recorded for the first time on tomato at Qalyoubia Governorate during summer season of 2014 by Ibrahim *et al*. (2015).

It was first reported from USA on cultivated cotton and it has a wide geographical distribution with its origin in Central America (Fuchs, *et al.*, 1991).

In India, it has been reported as a serious pest (Nagrare *et al*., 2009) and it was also recorded in Punjab by Dhawan *et al*. (2010) on 22 plant species of 10 families of vegetable crops, 3 ornamentals and 12 weed Plants. Plants from Malvaceae, Solanaceae, Compositae, *Amaran taceae*, *Astera ceae*, Verbenaceae and Zygophyllaceae were generally found as preferred hosts of this mealybug. Among these, *Hibiscus rosachinensis*, *Abutilon spp*. (Malvaceae), *Parthenium hysterophorus* (Compositae) and *Achyranthes aspra* (Amaranthaceae) harboured this pest round the year and acted as a persistent source of spread of the mealybug to cotton and other crops. They added, *Gossypium hirsutum* (Cotton Sticks), *Lycopersicon esculentus* and *Solanum nigrum* served as winter hosts of the mealybug. Other plants were either less preferred or the mealybug was found incidentally in very low

numbers for shorter durations. The authors concluded that, based on the preference towards the family, the plants in Malvaceae family recorded the maximum pest incidence.

Also, the pest has already been reported on cotton from Punjab, Haryana, Gujarat (Jhala, *et al*., 2008). So far, it has been recorded on 183 plants in 52 families (Ben-Dov, 2009). In China, it became a potential serious threat (Wang *et al*., 2009).



Plate(1):Infestation of *Phenacoccus solenopsis* Tinsley on banana in Egypt.
A: Photos by Magdy A. Ahmed B_1 and B_2: Photos by Monira M. El-Fatih

In Pakistan, it was recorded on cotton (Hodgson *et al*., 2008). Arif *et al.* (2009) recorded this insect on 154 species in 53 families. In addition, Abbas *et al.* (2010) mentioned that since 2005, this New World species was emerged as serious pest of cotton and the other crops and weeds in Pakistan and neighbouring countries. These recorded host plants are grapes, fig, date palm, apple, avocado, banana, citrus, okra, tomato, brinjal, cucurbits, cotton, and ornamentals as *Hibiscus* sp., *Chrysanthemum* sp. and mulberry.

At the Mediterranean Sea, Pellizzari and Porcelli (2013) reported *P. Solenopsis* as a recent invader in countries of the Mediterranean basin.

Muthulingam and Vinobaba (2009) concluded that, wide host range of *P. Solenopsis* requires attention to alternate control measures and studying the population dynamics of this pest with the long term records of climatic changes will be useful to manage the pest problem and avoid its spread and potential risk.

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تسجيل جديد لحشرة بق القطن الدقيقي على نباتات الموز في مصر

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خلال اجراء عملية الحصرالدوري للافات التي تصيب نباتات الموز في الفترة من ابريل الى نوفمبر ٢١٠٥ والتي شملت منطقة الواسطى بمحافظة بني سويف بجمهورية مصر العربية لوحظ تواجد حشرة بق القطن الدقيقي *Phenacoccus solenopsis* Tinsley في شهر يوليو ٢٠١٥ لأول مرة، وهذا يعتبر هو التسجيل الاول لتواجد هذه الأفة على نباتات الموز في مصر.