

HOST PREFERENCE OF *Icerya seychellarum* (WESTWOOD) AND ITS EFFECT ON INSECT POPULATION AND FECUNDITY.

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ABSTRACT

Host preference of *I.seychellarum* (Westwood) (Homoptera, Margarodidae) on five mango cultivars showed that the highest mean number of insects in two studied years (2005 & 2006) was 16.7 individuals/ leaf occurred on Baladi cultivar, while the lowest mean number 0.0 individuals/ leaf occurred on Alphonso cultivar. The host plants could be arranged descendingly according to their preference by the insects in both studied years as follows: Baladi (16.7 individuals / leaf), Hendi (10.1 individuals/leaf), Ewasi (6.7 individuals / leaf), Timour (3.2 individual leaf) and Alphonso (0.0 individuals/ leaf). The egg production varied on different host plants with the maximum records on Baladi cultivar (37.6 eggs/ female) and the minimum on Timour cultivar (19.8 eggs/ female).

INTRODUCTION

I .seychellarum is one of the mealy-bug insects that hardly attack the mango leaves, branches and fruit causing serious damage. It is widely spread in many tropical and subtropical regions of the world (Newstead, 1908). In Egypt, the insect was first recorded in 1935 on *Citrus* sp. In Alexandria by (Birzi, 1935), also Ezz and Samhan (1965) recorded the insect on some ornamental plants near Suez. Ali (1980) studied some biological aspects of *I.seychellarum* reared on palm leaves at laboratory conditions and he mentioned that the hatchability of eggs was 86.6%. during 1990 heavy infestation was reported on the leaves of *Cycus revolute* at Cairo by Assem (1991).

El –Bolok *et al.* (1985) studied the host preference of *Parlatoria zizyphus* on nine *Citrus* species.

El-Borollosy *et al.* (1990) recorded three annual generations of *I.seychellarum* on the ornamental palm, *Cycus revolute* in Egypt. Salem (1994) studied the susceptibility of five mango cultivars to infestation with three species of scale insect *Insulaspis pallidula*, *Kilifia acuminata* and *Parlatoria olea*. The degree of infestation on each mango cultivar varied according to insect species. He mentioned that Hendi and Zebda cultivars were highly susceptible to infestation with the three scale insect, while Timour and alphonso cultivars were highly resistance, he suggested that the differences in susceptibility could be attributed to the morphological characters of the leaves of these cultivars. Hennessey and Schnell (1995) determined that for mature fruit of *M. indica* some genotypes are most resistant to Caribbean fruit fly than others. Pena and Moyhuddin (1997) reviewed mature mango fruit resistance to *Anastrepha oblique* (Macquart) and infestability differences among cultivars were suggested to be caused by

differences in their contents of toxic chemicals. Uaddin *et al.*(2003) studied the relation between cultivars of *M. indica* and the incidence of mango leaf cutting weevil; *Deporaus marginatus*, its extent of damage to mango leaves. Salem et al. (2006) found that levels of susceptibility of mango cultivars to *I. seychellarum* depend on the combined action of leaf nutrients / inhibitors and secondary metabolites which determined the food quality of their leaves the relative role of these factors may differ among different cultivars.

MATERIALS AND METHODS

Host preference was studied under filed conditions in the farm of the Faculty of Agriculture, Cairo University at Giza, Egypt. Samples of 25 mango leaves were picked out at random from the terminal branches of 10 trees representing 5 mango cultivars during Spring (April), Summer (Juli), Autumn (October) and Winter (January) in the mid of each sampling month during two successive years 2005 and 2006. Adult females and nymphs were counted on both leaf surfaces. In other words , each sampling trees were represented by 50 leaves. The five tested mango cultivars belonging to *Mangifera indica*, family; Anacardiaceae, were Baladi, Hendi, Ewasi, Timour and Aphonso.

To study the effect of the different hosts on the eggs production, samples of infested leaves representing 5 mango cultivars were taken form the experimental samples in the mid of two months (August and October) of 2005. from these samples 2 ovipositing females were chosen from the leaves of each host plant and number of eggs laid by each female were counted. Vaseline was used around each female to control the offspring from escaping and thus giving more accurate fecundity records.

RESULTS AND DISCUSSIONS

A- Host preference of *I.seychellarum*:

The data presenting table (1) and fig. (1) proved that Baldi cultivar was the most favorable mango host of *I.seychellarum* harboring the highest mean number of insects (16.7 individuals / leaf). The lowest mean was recorded on Alphonso (0.0 insects/leaf). This trend was clear in all samples in different months in both sampling years. The other host plants could be arranged descendingly according to the mean infestation as follows: Hendi (10.1), Ewasi (6.7) and Timour (3.2 individuals/ leaf).

Table (1): Mean number of *I.seychellarum* / leaf on five mango cultivars in 2005 and 2006.

Host plant					
Months	Baladi	Hendi	Ewasi	Alphonso	Timour
2005					
Jan.	6.5	4.3	2.3	0.0	1.1
Apr.	15.8	9.7	4.9	0.0	2.4
Jul.	19.7	11.2	9.8	0.0	3.3
Oct.	23.9	13.6	10.3	0.0	5.1
2006					
Jan.	7.6	3.7	1.8	0.0	1.7
Apr.	16.3	7.9	3.7	0.0	2.3
Jul.	18.7	13.9	9.2	0.0	4.7
Oct.	25.3	16.7	11.4	0.0	5.1
Overall mean	16.7	10.1	6.7	0.0	3.2

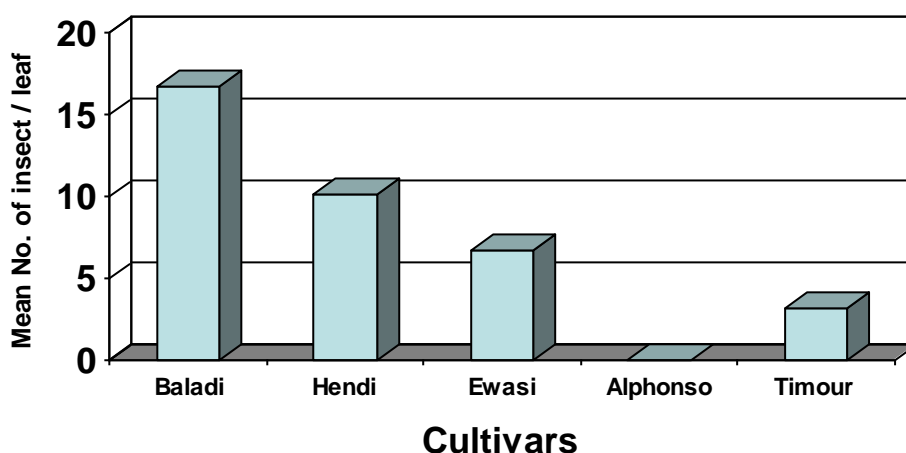


Fig. (1) : *I. seychellarum* mean No. / leaf on mango cultivars during 2005& 2006.

B- Fecundity of *I.seychellarum* females on different mango cultivars:

The wide variety of mango host plants of *I.seychellarum* necessitated the study of production of eggs in table (2) and fig.(2) that females emerged in October laid more eggs than those emerged in August (37.6 compared with 32.0 eggs/ female). The highest egg production (82 eggs/ female) was obtained on Baldi cultivar in October (25.5°C and 62% R.H.), while the lowest (15 eggs/ female) was obtained on Timour cultivar in August (32.5°C and 65% R.H.).

In general Baldi cultivar was the most preferable host for egg production (59.1 eggs/ female), followed by Hendi cultivar (39.1), Ewasi (32.2) and Timour (19.8 eggs/ female). The Alphonso cultivar was seemed to

be resistant to any infestation by *I.seychellarum*. comparing the preference of the host for the insect regarding its population and eggs production on various hosts, Baladi cultivar was the most preferable while Alphonso was the resistant cultivar to any infestation by that insect pest. Many factors could probably be responsible for insect preference to some plant species and plant parts than the others, among these factors components, concentration, acidity of the plant sap and the smoothness of the tissue surface which may affect the fixation of the insect body and feeding process.

Table (2): Fecundity of *I.seychellarum* on 4 mango cultivars during 2005.

Host plant	Number of eggs/ female						Overall Mean
	August			October			
	Min.	Max.	Mean+S.E	Min.	Max.	Mean+S.E	
Baladi	35.0	50.0	42.3+2.7	68.0	82.0	75.8+3.2	59.1
Hendi	28	40	33.9+2.1	41.0	55.0	44.3+2.7	39.1
Ewasi	20	30	25.4+1.8	35	45	38.9+2.1	32.2
Ahphonso	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Timour	15	20	17.4+1.6	18	25	22.1+2.9	19.8
Mean			32.0			37.6	

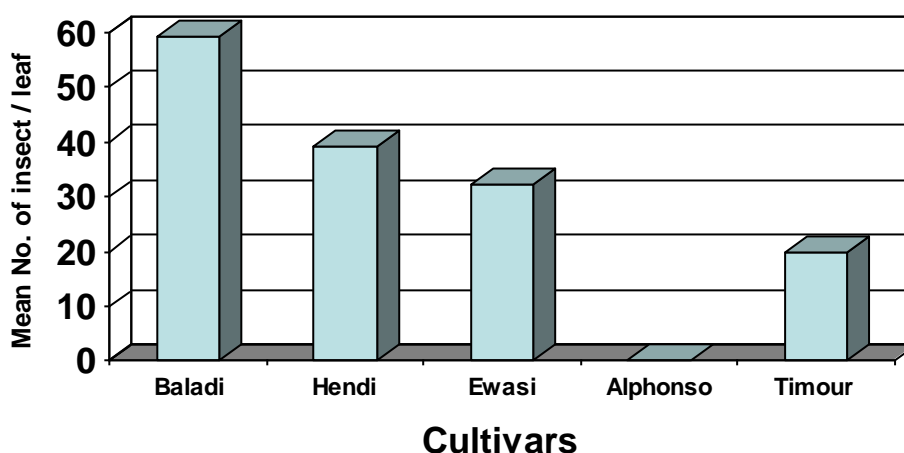


Fig. (2) : Mean No. of eggs / female *I. seychellarum* on five mango cultivars.

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دراسة التفصيل العوانلي لحشرة البق الدقيقي (Westwood) *Icerya seychellarum* (Homoptera, Margarodidae) وتأثيرها علي أعداد الحشرة وخصوبتها.

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أثبتت الدراسة التي تمت خلال عامين 2005، 2006 علي 5 أصناف من المانجو (بلدي - هندي - عويسى - الفونسو- تيمور) انه يمكن ترتيب هذه العوائل النباتية حسب أفضليتها للإصابة بحشرة البق الدقيقي *I. seychellarum* كالآتي: الصنف بلدي- هندي - عويسى - تيمور حيث وجد ان الصنف الفونسو منيع ويقاوم الإصابة بالحشرة.

تأثر متوسط عدد البيض الذي تنتجه الانثى باختلاف العائل النباتي فأكبر متوسط سجل في الإناث التي ربيت علي الصنف بلدي واقلها في تلك الإناث التي ربيت علي الصنف تيمور وذلك في دراسة تمت علي 5 أصناف من المانجو حيث وجد أن الصنف الفونسو منيع ومقاوم للإصابة بالحشرة.