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### Effect of Fallen Fruits In Peach Orchards on the Occurrence of Fruit Flies at Gharbia Governorate

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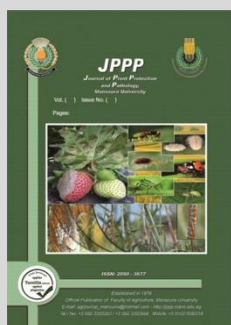


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#### ABSTRACT

This experiment was carried out in Shobra El- Namla (Tanta), Gharbia governorate on peach orchard. From this orchard were chosen four feddans, two were cleaned from fallen fruits during the season and the other two feddans were with fallen fruits. The seasonal population abundance of the Mediterranean fruit fly (MFF) adult males was the highest on peach orchards with fallen fruits 76.5 and 110.3 with an average of  $90.4 \pm 5.3$  indiv./trap/week during the first season (2017). In addition , during the second season (2018), the seasonal population abundance of the Mediterranean fruit fly (MFF) adult males was the highest on peach orchards with fallen fruits 57.5 and 105.2 with an average of  $83.8 \pm 14.4$  indiv./trap/week. The seasonal population abundance of the peach fruit fly (PFF) adult males was the highest on peach orchards with fallen fruits 44.8 and 64.7 with an average of  $53.2 \pm 3.9$  indiv./trap/week during the first season 2017. During the second season (2018), the seasonal population abundance of the peach fruit fly (PFF) adult males was the highest on peach orchards with fallen fruits 16.2 and 64.2 with an average of  $40.0 \pm 14.5$  indiv./trap/week. Statistical analysis revealed that there was a significant difference between peach orchards with and without fallen fruits during the two seasons according to the average number of the insect adult males.

**Keywords:** Peach orchards, fallen fruits, *Ceratitis capitata* , *Bactrocera zonata*.



#### INTRODUCTION

Tephritid fruit flies are among the major pests of fruit production throughout the world and represent the most economically important group of phytophagous Diptera (Robinson and Hooper, 1989, Anon 2000 and b & Anon 2003). Mediterranean fruit fly (MFF), *Ceratitis capitata* (Wiedemann) and peach fruit fly (PFF), *Bactrocera zonata* (Saunders) (Diptera: Tephritidae) are the most serious pests of fruits, causing severe losses to the fruit production and quality (Ali, 2016 and Khan & Naveed, 2017).

The attack of *B. zonata* on 173 different varieties of fruit and vegetables has been reported by Rossi (1988) as it is a destructive pest on a wide range of tropical and sub tropical fruits and vegetables To name a few, mango (*Mangifera indica* L.), guava (*Psidium guajava* L.), custard apple (*Annona squamosa* L.), apple (*Malus pumila* M.) banana (*Musa paradisiacal* L.), orange (*Citrus sinensis* L.), peach (*Prunus persica* L.), plum (*Prunus domestica* L.), and tomatoes (*Lycopersicon esculentum* L.).

Therefore, the objective of the present experiment was aimed to study the effect of fallen fruits on the occurrence of fruit flies at Gharbia Governorate.

#### MATERIALS AND METHODS

This experiment was carried out in Shobra El-Namla (Tanta), Gharbia Governorate on peach orchard. From this orchard were chosen four feddans. Two feddans were cleaned from fallen fruits during the season and the other two feddans were neglected with fallen fruits. All agriculture practices were conducted except the insecticidal treatments were neglected. In each peach feddan two

Jackson sticky traps were hanged. One baited with Methyl Eugenol (ME) as male attractant for the peach fruit fly and the other trap baited with Trimedlure (TML) to attract the Mediterranean fruit fly males. The body of Jackson trap is delta shaped made of waxed cardboard material. Inside this body there is a yellow rectangular waxed cardboard covered with thin layer of sticky material called stickum and the traps have a wire hanger placed at the top of the trap body. Traps inspected every week, also sheets and capsule changed weekly. Males were counted and recorded weekly as males/trap/week (MTW).

#### Data analysis:

Data were analyzed with one way analysis of variance. Comparison of means of each treatment was made with Duncan's Multiple Range Test (COSTAT SOFTWARE, 2004).

#### RESULTS AND DISCUSSION

##### 1. The Mediterranean fruit fly (MFF), *Ceratitis capitata* (Wiedemann).

Data in Fig. (1) showed the seasonal population abundance of MFF adult males in peach orchards with fallen fruits and without fallen fruits during the first season 2017 at Shobra- EL-Namla (Tanta), Gharbia Governorate. It can be noticed that, in the peach orchard with fallen fruits, the seasonal population abundance of MFF adult males ranged between 44 in the second week of September and 129 indiv./trap/week in the second week of June. Meanwhile, in the peach orchards without fallen fruits, the seasonal population abundance of MFF adult males ranged

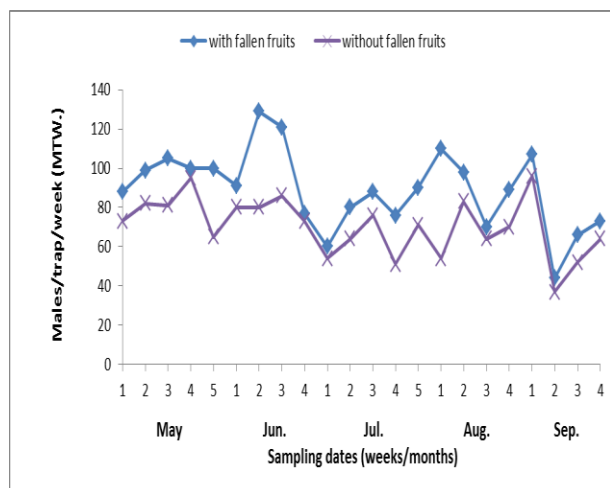
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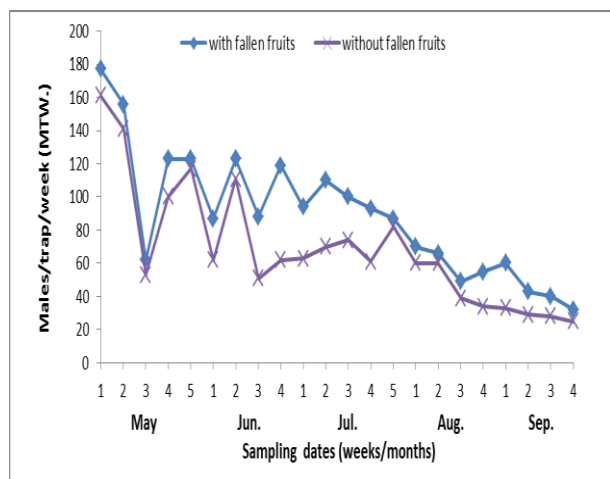
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between 44 in the second week of September and 95 indiv./trap/week in the fourth week of May.

The obtained data in Fig. (2) showed the seasonal population abundance of MFF adult males in peach orchards with fallen fruits and without fallen fruits during the second season 2018 at Shobra-EL-Namla (Tanta), Gharbia Governorate. It can be noticed that, in the peach orchard with fallen fruits, the seasonal population abundance of MFF adult males ranged between 40 in the last week of September and 180 indiv./trap/week in the first week of May. Meanwhile, in the peach orchards without fallen fruits, the seasonal population abundance of MFF adult males ranged between 40 in the last week of September and 160 indiv./trap/week in the first week of May.



**Fig. 1. The seasonal population abundance of MFF, *C. capitata* adult males in peach orchards with and without fallen fruits during season 2017 at Shobra EL-Namla (Tanta), Gharbia Governorate.**



**Fig. 2. The seasonal population abundance of MFF, *C. capitata* adult males in peach orchards with and without fallen fruits in season 2018 at Shobra EL- Namla (Tanta), Gharbia Governorate.**

The obtained results in Table (1) showed the effect of fallen fruits on the seasonal population abundance of the MFF, *C. capitata* during the two successive seasons, 2017 / 18 at Shobra-EL-Namla (Tanta), Gharbia Governorate. The monthly average number of MFF adult males ranged between 76.5 indiv. /trap/week in July and 110.3 indiv./trap/week in June on peach orchards with fallen

fruits, while it was ranged between 63.6 indiv. /trap/ week in July and 84.2 indiv./trap/week in September on peach orchard without fallen fruits during the first season 2017.

Moreover, during the second season (2018), the obtained results in Table (1) revealed that, the monthly average number of MFF adult males ranged between 57.5 indiv. /trap/ week in September and 105.2 indiv./trap/week in June on peach orchards with fallen fruits, while it was ranged between 37.3 indivi./trap/week in September and 91 indiv. /trap/week in May on peach orchard without fallen fruits during the second season 2018.

As a conclusion, the obtained data illustrated in Figs. (1 and 2)and Table (1) showed that, the seasonal population abundance of The Mediterranean fruit fly (MFF) adult males was the highest on peach orchards with fallen fruits and ranged between 76.5 and 110.3 with an average of  $90.4 \pm 5.3$  indiv./trap/week during the first season 2017. Also during the second season 2018 the seasonal population abundance of The Mediterranean fruit fly (MFF) adult males on peach orchards with fallen fruits ranged between 57.5 and 105.2 with an average of  $83.8 \pm 14.7$  indiv./trap/week. Statistical analysis revealed that, there is a significant difference between peach orchards with and without fallen fruits during the two seasons according to the average number of the insect adult males.

**Table 1. Effect of the fallen fruits on the seasonal population abundance of MFF, *Ceratitis capitata* (Wiedemann) during the two successive seasons, 2017 and 2018 at Shobra-EL- Namla(Tanta), Gharbia Governorate.**

Months	The first season (2017)		The second season (2018)	
	With fallen fruits	Without fallen fruits	With fallen fruits	Without fallen fruits
May	78.4	66.2	103.6	91.0
Jun.	110.3	77.7	105.2	85.2
Jul.	76.5	63.6	84.6	53.8
Aug.	92.0	68.0	68.0	60.3
Sep.	94.7	84.2	57.5	37.3

Mean± SE 90.38± 5.3 a 72.0±5.7 b 83. 8±14.7 a 65.5±17.2 b  
Means followed by the different letters are significantly different at 5%level of probability.

These results are in agreement with those of Liquido (1993) and Hasyim and Muryatikogel (2008) who found that, the seasonal population abundance of the Mediterranean fruit fly adult males was the highest on peach orchards with fallen fruits.

**2. The peach fruit fly (PFF), *Bactrocera zonata* (Saunders)**

Data in Fig. (3) showed the seasonal population abundance of PFF adult males in peach orchards with fallen fruits and without fallen fruits during the first season 2017 at Shobra- EL-Namla (Tanta), Gharbia Governorate. It can be noticed that, in the peach orchard with fallen fruits, the seasonal population abundance of PFF adult males ranged between 20 in the last week of September and 99 indiv./trap/week in the last week of June. Meanwhile, in the peach orchards without fallen fruits, the seasonal population abundance of PFF adult males ranged between 32 in the first week of May and 65 indiv./trap/week in the last week of June.

The obtained data in Fig. (4) showed the seasonal population abundance of PFF adult males in peach

orchards with fallen fruits and without fallen fruits during the second season 2018 at Shobra-EL-Namla (Tanta), Gharbia Governorate. It can be noticed that, in the peach orchard with fallen fruits, the seasonal population abundance of PFF adult males ranged between 22 in the second week of September and 143 indiv./trap/week in the first week of May. Meanwhile, in the peach orchards without fallen fruits, the seasonal population abundance of PFF adult males ranged between 5 in the third week of August and 91 indiv./trap/week in the first week of May.

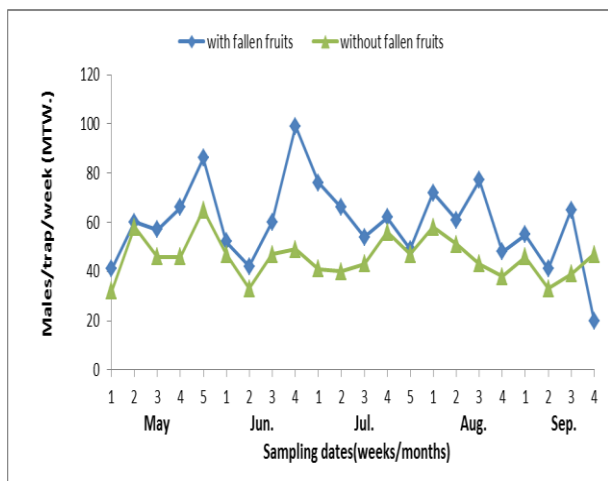


Fig. 3. The seasonal population fluctuation of PFF, *B. zonata* adult males in peach orchards with and without fallen fruits during season 2017 at Shobra EL-Namla (Tanta), Gharbia Governorate

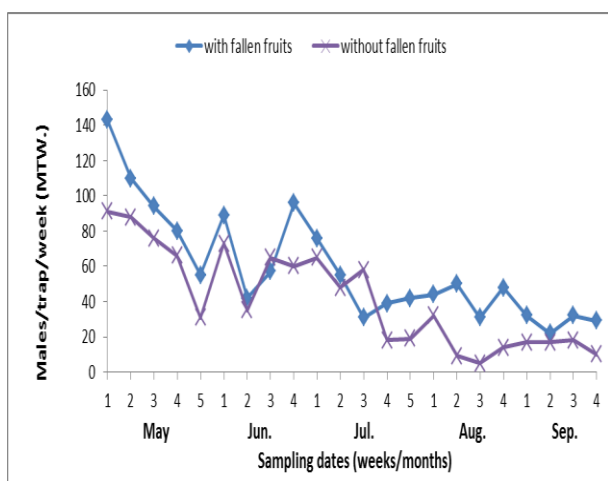


Fig. 4. The seasonal population fluctuation of PFF, *B. zonata* adult males in peach orchards with and without fallen fruits during season 2018 at Shobra EL-Namla (Tanta), Gharbia Governorate.

The obtained results in Table (2) showed the effect of fallen fruits on the seasonal population abundance of the peach fruit fly (PFF), *B. zonata* (Saunders) during the two successive seasons, 2017 /18 at Shobra-EL-Namla (Tanta), Gharbia Governorate. The monthly average number of PFF adult males ranged between 44.8 indiv. /trap/week in May and 64.7 indiv./trap/week in August on peach orchards with fallen fruits, while it was ranged between 36.4 indiv. /trap/ week in May and 50.7 indiv./trap/week in September on peach orchard without fallen fruits during the first season 2017.

Moreover, during the second season 2018, the obtained results in Table (2) revealed that the monthly average number of PFF adult males ranged between 16.2 indiv. /trap/ week in August and 64.2 indiv./trap/week in May 2018 on peach orchards with fallen fruits, while it was ranged between 40.7 indiv./trap/week in September and 85.4 indiv. /trap/week in May 2018 on peach orchard without fallen fruits during the second season 2018.

As a conclusion, the obtained data illustrated in Figs. (3 and 4)and Table (2) showed that, the seasonal population abundance of the peach fruit fly (PFF) adult males was the highest on peach orchards with fallen fruits and ranged between 44.8and 64.7 with an average of  $53.2 \pm 3.9$  indiv./trap/week during the first season 2017. Also during the second season 2018 the seasonal population abundance of the peach fruit fly (PFF) adult males on peach orchards with fallen fruits ranged between 16.2 and 64.2 with an average of  $40.0 \pm 14.5$  indiv./trap/week. Statistical analysis revealed that, there is a significant difference between peach orchards with and without fallen fruits during the two seasons according to the average number of the insect adult males.

Table 2. Effect of the fallen fruits on the seasonal population abundance of PFF, *Bactrocera zonata* (Saunders) during the two successive seasons, 2017 and 2018 at Shobra-EL-Namla (Tanta), Gharbia Governorate.

Months	The first season (2017)		The second season (2018)	
	With fallen fruits	Without fallen fruits	With fallen fruits	Without fallen fruits
May	44.8	36.4	64.2	85.4
Jun.	48	48	51	60.7
Jul.	51.4	45.8	49.8	51.6
Aug.	64.7	49.7	16.2	41.7
Sep.	57.2	50.7	19	40.7

Mean± SE 53.22±3.9 a 46.12±4.5 b 40.04±14.5 a 56.02±14.3 b  
Means followed by the different letters are significantly different at 5%level of probability.

These results are in agreement with those of Liquido (1993) and Hasyim and Muryatikogel (2008) who found that, the seasonal population abundance of the peach fruit fly (PFF) adult males were the highest on peach orchards with fallen fruits.

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تأثير الثمار المتساقطة في حدائق الخوخ علي تواجد ذباب الفاكهة في محافظة الغربية  
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اجريت هذه التجربة في شبراويل (السنطة) بمحافظة الغربية في حدائق الخوخ. وقد تم اختيار اربعة افدنة من الخوخ وتم تنظيف فدانين من الثمار المتساقطة خلال الموسم اما الفدانين الاخرين فقد تركت باثمار المتساقطة. كانت الوفرة الموسمية لتعداد ذكور حشرة ذبابة فاكهة حوض البحر الابيض المتوسط اعلي في حدائق الخوخ التي بها ثمار متساقطة حيث تراوح التعداد بين ٧٨.٤ ، ١١٠.٢٥ ، بمتوسط  $90.38 \pm 5.2$  فردا/مصيدة/اسبوع خلال الموسم الأول ٢٠١٧ . خلال الموسم الثاني ٢٠١٨ كانت الوفرة الموسمية لذكور الحشرة في حدائق الخوخ المحتوية علي ثمار متساقطة تتراوح بين ٥٧.٥ ، ١٠٥.٢ ، بمتوسط  $83.78 \pm 14.4$  فرد/مصيدة/اسبوع. اوضح التحليل الاحصائي ان هناك اختلاف معنوي بين حدائق الخوخ التي بها ثمار متساقطة والخالية من الثمار المتساقطة خلال الموسمين طبقا لمتوسط تعداد ذكور الحشرة . كانت الوفرة الموسمية لتعداد ذكور حشرة ذبابة الخوخ اعلي في حدائق الخوخ التي بها ثمار متساقطة حيث تراوح التعداد بين ٤٤.٨ ، ٦٤.٧ ، بمتوسط  $53.22 \pm 3.9$  فرد/مصيدة/اسبوع خلال الموسم الأول ٢٠١٧ . خلال الموسم الثاني ٢٠١٨ كانت الوفرة الموسمية لتعداد ذكور الحشرة في حدائق الخوخ المحتوية علي ثمار متساقطة تتراوح بين ١٦.٢ ، ٦٤.٢ ، بمتوسط  $40.04 \pm 14.5$  فرد/مصيدة/اسبوع. اوضح التحليل الاحصائي ان هناك اختلاف معنوي بين حدائق الخوخ التي بها ثمار متساقطة والخالية من الثمار المتساقطة خلال الموسمين طبقا لمتوسط تعداد ذكور الحشرة .