ECOLOGICAL STUDIES ON MEDITERRANEAN FRUIT FLY, *CERATITIS CAPITATA* (WIED.) AND PEACH FRUIT FLY, *BACTROCERA ZONATA* (SAUND.) IN CITRUS ORCHARDS

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Abstract

The population dynamics of Mediterranean fruit fly (MFF), *Ceratitis capitata* (Wied.) and Peach fruit fly (PFF), *Bactrocera zonata* (Saund.) was studied in citrus orchards at Sinuris and Ibshaway districts, Fayoum Governorate during the two successive seasons, 2002/2003 and 2003/2004. In the meantime, rates of infestation in citrus fruits varieties were estimated at different locations. During the two successive seasons, MFF population was very low compared with PFF population. Captured insects per trap per day "CTD" for MFF ranged between 0.11-0.63 fly, with mean of 0.31 fly, and between 0.01-0.64 fly, with mean of 0.19 fly, during the two successive seasons, respectively. The "CTD" of PFF ranged between 5.2-108.2 flies, with mean of 37.46 flies and between 2.93-69.64 flies, with mean of 31.26 flies, during the two successive seasons, respectively.

Total percentages of infestation with MFF & PFF together were 15.86 % and 9.98 % for Navel orange, 11.06 % and 5.35 % for Baladi orangem 12.56 % and 5.89 % for Mandrin, 10.93 % and 20.47 % for Grapevine, 9.21 % and 3.33 % for Sour orange, 1.03 % and 2.65 % for Lemon, and 1.04 % for Valencia orange (1*st* season only), for the two seasons, respectively. Percentage of infestation with MFF were 0.35 % and
0.02 % for Navel orange, 0.83 % and 0.68 % for Baladi orange 3.79 % and 2.29 % for Mandrin, 0.88 % and 1.15 % for Grapefruit, 3.49 % and 3.33 % for Sour orange, 0.34 % and 0.72 % for Lemon, and 0.37 % for Valencia orange (1*st* season only), for the two seasons, respectively. Percentages of infestation with PFF were 15.51 % and 9.96 % for Navel orange, 10.23 % and 4.67 % for Baladi orange 8.77 % and 3.60 % for Mandrin, 10.05 % and 19.32 % for Grapefruit, 5.72 % and zero % for Sour orange, 0.69 % and 1.93 % for Lemon, and 0.67 % for Valenvia orange (1*st* season only), for the two seasons, respectively.

INTRODUCTION

The Mediterranean fruit fly, *Ceratitis capitata* (Wied.) (Diptera : Tephritidae) is a major pest allover the world as many as 200 tropical and subtropical fruit species (Christenson and Foote, 1960). In the Mediterranean basin, the pest attacks citrus, deciduous fruits (mainly stone fruits) and other cultivated hosts.

The pest causes considerable damage which inflicts significantly economic losses to peach, apricot, guava, mango, fig and citrus allover the governorates of Egypt (Awadallah *et al*, 1974, Saafan, 1986, Hashem *et al.* 1987 and Saafan *et al*, 1989).

During 90's of the last century, the Egyptian ecosystem was attacked by one of the most harmful pests, the peach fruit fly, Bactrocera zonata (Saund.) to be a new record in the north of Africa. Peach fruit fly was previously recorded in Egypt in 1924 (Efflatoun, 1924), but it haven't any distribution before 90's of 20*th* Century.

Peach fruit fly (PFF) infested different fruit and vegetable hosts (*e.g.* mango, peach, fig, guava, apple, citrus, tomato, ... etc.) (Oakly, 1948, Narayane and Batra, 1960 and Kapoor and Agaewall 1982). El-Minshawy *et al.* (1999) mentioned that larvae of *B. zonata* were found seriously damaging guava fruits in Alexandria. Hashem and Korashy (2001) mentioned that PFF infested mango, apple, guava and citrus in Egypt, and they added that the population was increased gradually with fruiting and ripening. Saafan and korashy (2001) studied the population fluctuation of MFF in citrus orchards in relation to the neighboring guava orchards for three successive seasons. In the meantime, the percentage of infestation was estimated in citrus orchards neighboring (N) and non-neighboring (NN) to guava orchards and also in guava orchards. Data indicated that medfly population and average of percentages of infestation were higher in citrus neighboring (N) to guava orchards than those orchards for away (NN) to guava orchards through the three successive seasons. Ahmed (2000) studied the population dynamics of peach fruit fly in different plant hosts in Kalubia Governorate. He found that the "CTD" of PFF ranged between 1.5-34.6 flies on citrus plantation. Mohamed (2002) studied the seasonal fluctuation of *B. zonata* at Sohag Governorate for three successive years 1999, 2000 and 2001 by using McPhail traps baited with di-ammonium phosphate 2 %. Through the first year (1999), the caught flies were concentrated at August, September and October, while in rest of the year the flies disappeared or were found in a few numbers. The same trend mostly had occurred in the second and in the third years. Amin (2003) mentioned that the seasonal abundance of *B. zonata* was studied for two successive years 2000-2001 and 2001-2002 on different success ripen fruits at Fayoum governorate by using McPhail traps baited with d-ammonium phosphate 3 %. Weekly means of *B. zonata* were 73.82 flies and 24.79 flies for the two years.

The aim of the present studies is to gain sufficient information about :

- Population dynamics of medfly (MFF) and peach fruit fly (PFF) on citrus plantation at Sinuris and Ibshaway districts, Fayoum Governorate during the two successive seasons, 2002/2003 and 2003/2004.
- Estimate percentages of infestation with MFF & PFF together and with MFF and PFF separately in citrus varieties fruits.

MATERIALS AND METHODS

Studies were carried out on citrus plantation at Sinuris & Ibshaway districts, Fayoum Governorate during the two successive seasons, 2002/2003 and 2003/2004.

Mediterranean fruit fly will be prefix in MFF and peach fruit fly in PFF.

A- Population studies eighth citrus locations (orchards) represent concentration of citrus plantation were chosen at Sinuris & Ibshaway districts.

To study MFF and PFF population fluctuations, eight Jackson sticky traps (Harris *et al*, 1971) baited with trimedlure (pheromone of MFF), and another eight traps baited with methyl eugenol (pheromone of PFF) were distributed in the eight chosen citrus locations at a rate of one trap for MFF and one trap for PFF per one location. Traps were inspected weekly, replaced the sheets, and replenished by pheromone and counted the captured male flies. Mean catches per trap per day "CTD" calculated and recorded to compare between population fluctuations of MFF and PFF.

B- Fruit incubation and rate of infestation because the symptoms of infestation by MFF or PFF can't be detected separately, the following procedures were conducted:

Six citrus locations (orchards) were chosen in the two districts to be the orchards of gathering fallen fruits. In every location, five citrus trees (for every variety) were determined, and marked. All the fruits on every determined tree were counted. A cloth bag was hung on every determined tree for gathering the fallen fruits, also a label was hung neighbouring to the cloth bag for recording number of fallen fruits.

Weekly, fallen fruits for every variety which gathered in the five hung cloth bags were collected in one cloth bag for every location attached with label, and transferred to Plant Protection Research Institute (PPRI) at Cairo for fruit incubation in special wood cages. The produced pupae from the incubated fallen fruits counted and reserved in plastic tube until flies emergence. The emerged flies were identified to MFF (males nd females) and PFF (males and females).

The percentages of infestation in fruit citrus varieties with the two flies (MFF & PFF) can be estimated depending on the whole counted fruits on the determined trees and the fallen fruits.

Now, we had the total percentages of infestation with MFF & PFF together, but how can estimate percentages of infestation with every fly separately (MFF or PFF) ?

The data obtained from incubation fallen fruits were :

- Number of emerged adults of MFF and (or) number of emerged adults of PFF (B).
- Total percentages of infestation with MFF & PFF together (C).
- Total number of emerged adults (MFF & PFF together) (D).
- To estimate the percentages of infestation with MFF or PFF separately (A) we applied the following equation :

$$A = \frac{B \times C}{D}$$

Degrees of temperature and relative humidity for Fayoum Governorate were obtained from Central Laboratory for Agricultural Climate, ARC, and the correlation coefficient between "CTD" values for
MFF and PFF and degrees of temperature and relative humidity during population dynamics studies period on citrus plantation were calculated.

RESULTS AND DISCUSSION

A- Population fluctuations population fluctuations for MFF & PFF represented by the mean male catch per trap per day "CTD" was studied on citrus plantation at eight orchards distributed in Sinuris and Ibshaway districts during the two successive seasons, 2002/2003 and 2003/2004.

1) The first season (2002/2003) :

* **MFF population fluctuation** data in table 1 indicated that, MFF population was very low compared with PFF population. Mean of "CTD" ranged between 0.11-0.63 fly with grand mean of 0.31 fly during the inspection periods. It is noticed that the population was low during October and November, 2002 (CTD : 0.11-0.21 fly), then increased during December, 2002 and early January, 2003 (CTD : 0.23-0.63 fly). During late January, 2003 to mid-February, 2003, the population was low (CTD : 0.11-0.31 fly) then increased during late February until the end of March (CTD : 0.34-0.63 fly).

*** PFF population fluctuation** data in Table 1, shows that PFF population was very high compared with MFF population. During the inspection periods, mean of "CTD" ranged

Table 1. Mean captured males per trap per day "CTD" for Mediterranean fruit fly (MFF) and Peach fruit fly (PFF) by distributed pheromone traps at Sinuris and Ibshaway districts, Fayoum Governorate, during the two successive seasons, 2002/2003 and 2003/2004.

Date of inspection		*1st* season (2002/2003)				*2nd* season (2003/2004)			
				Average of				Average of	
Month	Week	MFF	PFF	Temp. (°C)	R.H. (%)	MFF	PFF	Temp. (°C)	R.H. (%)
Sept.	*1st*	-	-	-	-	0.02	69.64	31.8	51.6
	2nd	-	-	-	-	0.07	67.86	26.4	54.3
Oct.	*1st*	0.13	108.2	26.3	55.5	0.02	58.04	28.7	55.6
	2nd	0.14	99.99	28.5	55.5	0.12	53.57	27.3	43.4
	3rd	0.13	94.50	25.7	53.5	0.09	49.13	26.4	56.2
	4th	0.11	90.40	25.7	58.0	0.11	45.54	24.2	55.0
Nov.	*1st*	0.09	77.90	23.6	55.0	0.05	47.32	23.4	54.5
	2nd	0.14	73.90	21.9	53.5	0.01	40.18	24.5	56.5
	3rd	0.21	71.10	24.1	56.5	0.16	14.02	21.2	58.0
	4th	0.18	71.10	20.6	58.0	0.07	15.00	19.3	55.0
Dec.	*1st*	0.36	60.20	18.6	54.5	0.30	43.75	19.4	54.2
	2nd	0.30	45.50	19.2	53.0	0.64	44.64	18.7	60.0
	3rd	0.59	33.80	18.2	61.0	0.55	49.98	17.4	61.0
	4th	0.63	23.80	13.6	60.0	0.63	13.12	17.2	58.0
Jan.	*1st*	0.41	12.60	17.1	57.0	0.57	6.79	16.5	58.0
	2nd	0.23	11.60	17.2	58.0	0.21	6.35	15.4	56.5
	3rd	0.11	12.90	18.2	58.0	0.19	2.63	14.3	56.0
	4th	0.13	18.00	15.4	58.0	005	9.11	15.1	55.5
Feb.	*1st*	0.12	17.30	17.7	55.5	0.07	2.93	15.3	53.4
	2nd	0.31	16.00	14.6	52.5	0.03	8.62	17.4	52.0
	3rd	0.46	9.70	15.7	51.5	0.01	8.21	23.5	52.5
	4th	0.46	6.60	16.5	53.0	-	-	-	-
Mar.	*1st*	0.34	6.80	16.3	54.5	-	-	-	-
	2nd	0.49	10.70	17.7	55.5	-	-	-	-
	3rd	0.57	9.80	18.4	53.5	-	-	-	-
	4th	0.63	13.10	15.1	54.5	-	-	-	-
April	*1st*	0.11	5.20	19.1	56.0	-	-	-	-
	2nd	0.34	16.10	19.7	56.0	-	-	-	-
	3rd	0.48	16.20	20.3	56.0	-	-	-	-
	4th	0.43	16.00	20.8	56.0	-	-	-	-
Mean		0.31	37.46			0.19	31.26		
MFF "r"		-0.46	0.04			0.460	0.760		
PFF "r"		0.79	0.07			0.799	-0.057		

between 5.2-108.2 flies, with grand mean of 37.46 flies. The highest population occurred during October-December, 2002 (CTD : 23.8-108.2 flies), then the population decreased during January-April, 2003 (CTD : 5.2-18.0 flies).

Table 1 shows the correlation coefficient between values of "CTD" and temperatures & relative humidity during studies on citrus plantation, there were insignificant negative correlation between "CTD" values of MFF and the degrees of temperature and between "CTD" values of MFF and R.H. %. For PFF, there were significant positive correlation between "CTD" values of PFF and the degrees of temperature, and also there were insignificant positive correlation between "CTD" values of PFF and R.H. %.

2) The second season (2003/2004) :

* **MFF population fluctuations** data in Table 1 shows that, MFF population was very low compared with PFF population. Mean of "CTD" ranged between 0.01-0.64 fly with grand mean of 0.19 fly during the inspection periods. It is noticed that the population was low during September-November, 2003 (CTD : 0.02-0.16 fly), then it increased during December, 2003 until mid-January, 2004 (CTD : 0.21-0.63 fly). From the 3*rd* week of January until the 3*rd* week of February, 2004, the population was low (CTD : 0.01-0.19 fly).

* **PFF population fluctuations** Data in Table (1), indicated that PFF population was very high compared with MFF population. Mean of "CTD" ranged between 2.63-69.64 flies, with grand mean of 31.26 flies. The highest population occurred during September-December, 2003 (CTD : 13.12-69.64 flies), while the lowest population occurred during January until the 3*rd* week of February, 2004 (CTD : 2.63-8.62 flies).

Table 1 xhibit also the correlation coefficient between values of "CTD" and temperatures & relative humidity during studies on citrus plantation. There was insignificant positive correlation between "CTD" values of MFF and the degrees of temperature, while positive significant correlation was obtained between "CTD" values and R.H. %. On the other hand positive significant correlation between "CTD" values of PFF and the degrees of temperature was observed. In the mean time, negative insignificant correlation was obtained between "CTD" values and R.H. %.

B- Fruit sampling and rate of infestation Fallen citrus varieties fruits were gathered weekly from six citrus locations (orchards) distributed at Sinuris and Ibshaway districts during the two successive seasons (2002/2003 and 2003/2004) to estimate the percentages of infestation. However, these percentages came from mixed

infestation with MFF and PFF together. So, the gathered fallen fruits incubated at PPRI laboratory to produce the pupae and emerged MFF and PFF flies in purpose of estimating infestatu\ion percentages to the two insect species separately.

1) The first season (2002/2003) Table 2 illustrate data about incubation of fallen citrus varieties fruits. Total number of fruits on five trees at the six orchards were 3165, 5760 and 6210 fruits for Navel orange, Balady orange and Mandarin, respectively. For Grapefruit, Sour orange and Lemon at one orchard, its were 430, 380 and 290 fruits, respectively. For Valencia orange at three orchards, it was 3830 fruits. Total number of fallen fruits were 502, 637, 780, 47, 35, 3 and 40 fruits for Navel orange, Baladi orange, Mandarin, Grapefruit, Sour orange, Lemon and Valencia orange, respectively. Total percentages of infestation with MFF & PFF together were 15.86 % for Navel

orange, 11.06 % for Baladi orange, 12.56 % for Mandarin, 10.93 % for Grapefruit, 9.21 % for Sour orange, 1.03 % for Lemon and 1.04 for Valencia orange. Total number of produced pupae, emerged flies and percentages of emergence were 3897 pupae, 1727 flies (44.32 %) for Navel orange, 878 pupae, 335 flies (38.15 %) for Baladi orange, 1682 pupae, 878 flies (52.20 %) for Mandarin, 657 pupae, 174 flies (26.48 %) for Grapefruit, 556 pupae, 288 flies (51.80 %) for Sour orange, 23 pupae, 15 flies (65.22 %) for Lemon, and 30 pupae, 17 flies (56.67 %) for Valencia orange. Total number of MFF and PFF were 38 flies and 1689 flies for Navel orange, 25 flies and 310 flies for Baladi orange, 265 flies and 613 flies for Mandarin, 14 flies and 160 flies for Grapefruit, 190 flies and 179 flies for Sour orange, 5 flies and 10 flies for Lemon, and 6 flies and 11 flies for Valencia orange.

Table 3 clarify the percentages of infestation with MFF & PFF together, total number of emerged flies and the emerged MFF and PFF flies separately. By using the forementioned equation, the percentages of infestation with MFF was 0.35 % and with PFF was 15.51 % for Navel orange, 0.83 % and 10.23 % for Baladi orange, and 3.79 and 8.77 % for Mandarin, 0.88 % and 10.05 % for Grapefruit, 3.49 % and 5.72 % for Sour orange, 0.34 % and 0.69 % for Lemon and 0.37 % and 0.67 % for Valencia orange.

2) The second season (2003) Table 4 shows the data about incubation of fallen citrus varieties fruits. Total number of fruits on five trees at the six orchards were 5600, 6090 and 8680 fruits for Navel orange, Balady orange and Mandarin, respectively. For Grapefruit, Sour orange and Lemon at one orchard, its were 430,

360 and 340 fruits, respectively. Total number of fallen fruits were 559, 326, 511, 88, 21 and 9 fruits for Navel orange, Baladi orange,
Mandarin, Grapefruit, Sour orange, and Lemon, respectively. Total percentages of infestation with MFF & PFF together were 9.98 % for Navel orange, 5.35 % for Baladi orange, 5.89 % for Mandarin, 20.47 % for Grapefruit, 3.33 % for Sour orange, and 2.65 % for Lemon. Total number of produced pupae, emerged flies and percentages of emergence were 2471 pupae, 1240 flies (50.18 %) for Navel orange, 483 pupae, 197 flies (40.79 %) for Baladi orange, 773 pupae, 492 flies (63.65 %) for Mandarin, 571 pupae, 338 flies (59.19 %) for Grapefruit, 23 pupae, 17 flies (73.91 %) for Sour orange, 20 pupae, 11 flies (55.0 %) for Lemon. Total number of MFF and PFF were 2 flies and 1238 flies for Navel orange, 25 flies and 172 flies for Baladi orange, 191 flies and 301 flies for Mandarin, 19 flies and 319 flies for Grapefruit, 17 flies and zero flies for Sour orange, and 3 flies and 8 flies for Lemon.

Table 5 illustrate data about percentages of infestation with MFF & PFF together, total number of emerged flies and the emerged MFF and PFF flies separately. By using the forementioned equation, the percentages of infestation with MFF was 0.02 % and with PFF was 9.96 % for Navel orange, 0.68 % and 4.67 % for Baladi orange, 2.29 and 3.60 % for Mandarin, 1.15 % and 19.32 % for Grapefruit, 3.33 % and zero % for Sour orange and 0.72 % and 1.93 % for Lemon.

From the forementioned data, MFF population was very low compared with PFF population during the two seasons. In the same time, MFF population and PFF population were relatively low during the 2*nd* season than the 1*st* season. Percentages of infestation with MFF & PFF together were low during the 2*nd* season than the 1*st* season in Navel orange, Baladi Orange, Mandarin and Sour orange, but percentages of infestation was high during the 2*nd* season than the 1*st* season in Grapefruit and Lemon. Percentages of infestation with MFF were relatively higher during the 1*st* season than the 2*nd* season in all citrus varieties fruits (except Grapefruit and Lemon), also, percentages of infestation with PFF were higher during the 1*st* season than the 2*nd* season in Navel orange, Mandarin and Sour orange, while in Grapefruit and Lemon, percentages of infestation were opposite.

Table 2. Data for incubation fallen fruits which were gathered from different citrus orchards at Sinuris and Ibshaway districts, Fayoum Governorate, during the 1*st* season, 2002/2003.

Citrus varieties	No.of orchards	Total No. of fruits on five trees	Total No. of fallen fruits	Total % of infestation (MFF & PFF)	Total No. of produced pupae	Total No. of emerged flies	% Emergence	Total No. of MFF			Total No. of PFF		
								Male	Female	Total	Male	Female	Total
Navel orange	6	3165	502	15.83	3897	1727	44.32	15	23	38	873	816	1689
Baladi orange	6	5760	637	11.06	878	335	38.15	11	14	25	150	160	310
Mandarin	6	6210	780	12.56	1682	878	52.20	114	151	265	325	288	613
Grapefruit	1	430	47	10.93	657	174	26.48	4	10	14	87	73	160
Sour orange	1	380	35	9.21	556	288	51.80	58	51	109	71	108	179
Lemon	1	290	3	1.03	23	15	65.22	2	2	5	4	6	10
Valencia orange	3	3830	40	1.04	30	17	56.67	1	5	6	3	8	11

Table 3. Percentages of infestation with MFF & PFF together and separately in citrus varieties fruits during the 1*st* season, 2002/2003.

Citrus varieties	Total % of infestation (MFF& PFF)	Total no. of emerged flies	% Emergence	MFF		PFF		% infestation with MFF	% infestation with PFF
				No. flies	% Emergence	No. flies	% Emergence		
Navel orange	15.86	1727	44.32	38	2.20	1689	97.80	0.35	15.51
Baladi orange	11.06	335	38.15	25	7.46	310	92.54	0.83	10.23
Mandarin	12.56	878	52.20	265	30.18	613	69.82	3.79	8.77
Grapefruit	10.93	174	26.48	14	8.05	160	91.95	0.88	10.05
Sour orange	9.21	288	51.80	109	37.85	179	62.15	3.49	5.72
Lemon	1.03	15	65.22	5	33.33	10	66.67	0.34	0.69
Valencia orange	1.04	17	56.67	6	35.29	11	64.71	0.37	0.67

Table 4. Data for incubation of fallen fruits gathered from different citrus orchards at Sinuris and Ibshaway districts, Fayoum Governorate, during the 2*nd* season, 2003/2004.

Citrus varieties	No.of orchards	Total No. of fruits on five trees	Total No. of fallen fruits	Total % of infestation (MFF & PFF)	Total No. of produced pupae	Total No. of emerged flies	% Emergence	Total No. of MFF			Total No. of PFF		
								Male	Female	Total	Male	Female	Total
Navel orange	6	5600	559	9.98	2471	1240	50.18	1	1	2	610	628	1238
Baladi orange	6	6090	326	5.35	483	197	40.79	10	15	25	82	90	172
Mandarin	6	8680	511	5.89	77.3	492	63.65	93	98	191	138	163	301
Grapefruit	1	430	88	20.47	571	338	59.19	10	9	19	154	165	319
Sour orange	1	360	21	3.33	23	17	73.91	10	7	17	0	0	0
Lemon	1	340	9	2.65	20	11	55.0	1	2	3	5	3	8

Table 5. Percentages of infestation with MFF & PFF together and separately in citrus varieties fruits during the *2nd* season, 2003/2004.

Citrus varieties	Total % of infestation (MFF&PFF)	Total no. of emerged flies	% Emer-gence	MFF		PFF		% infestation with MFF	% infestation with PFF
				No. flies	% Emer-gence	No. flies	% Emer-gence		
Navel orange	9.98	1240	50.18	2	0.16	1238	99.84	0.02	9.96
Baladi orange	5.35	197	40.79	25	12.69	172	87.31	0.68	4.67
Mand-arin	5.89	492	63.65	191	38.82	301	61.18	2.29	3.60
Grape-fruit	20.47	338	59.19	19	5.62	319	94.38	1.15	19.32
Sour orange	3.33	17	73.91	17	100.0	0	2.00	3.33	0.00
Lemon	2.65	11	55.00	3	27.27	8	72.73	0.7?	1.93

The fore-mentioned results are in agreement with the findings of Ahmed (2000) who mentioned that the "CTD" of PFF was ranged between 1.5-34.6 flies on citrus plantation at Kalubia Governorate. Also, in agreement with the findings of -Amin (2003) who mentioned that the weekly mean of *B. zonata* at Fayoum Governorate was 73.82 flies and 24.79 flies for the two seasons 2000/2001 and 2001/2002, respectively.

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دراسات إيكولوجية على ذبابة فاكهة البحر المتوسط وذبابة ثمار الخوخ فى حدائق الموالح بمحافظة الفيوم

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تعتبر ذبابة فاكهة البحر الأبيض المتوسط من الافات الخطيرة فى العالم نظراً لتعدد عوائلها والمدى الواسع لانتشارها. وفى مصر تسبب هذه الافة خسائر لثمار الموالح بالاضافة إلى الخوخ والمشمش والمانجو والجوافة والتين. وفى التسعينات ظهرت حشرة جديدة تسمى بذبابة ثمار الخوخ وهى افة تصيب كل عوائل ذبابة الفاكهة وبدرجة أكثر خطورة.

وهذا البحث ضمن سلسلة أبحاث أجريت فى محافظة الفيوم فى حدائق المانجو والموالح والمشمش خلال المواسم ٢٠٠٢، ٢٠٠٣، ٢٠٠٤.

وهذا البحث هو الثانى فى سلسلة الأبحاث والذى أجرى لدراسة تذبذب تعداد ذبابة فاكهة البحر المتوسط وذبابة ثمار الخوخ فى حدائق الموالح بمركزى سنورس وإبشواى بمحافظة الفيوم وذلك فى موسمين متتاليين (٢٠٠٢/٢٠٠٣، ٢٠٠٣/٢٠٠٤)، وفى نفس الوقت تم تقدير نسبة الإصابة بالحشرتين معا (ذبابة الفاكهة وذبابة الخوخ) فى ثمار الموالح للأصناف المختلفة، وكذلك نسبة الإصابة بكل حشرة على حدة.

أظهرت النتائج أن تعداد ذبابة الفاكهة قليل جداً إذا ماقورن بتعداد ذبابة الخوخ فى كلا الموسمين. تراوحت قيم الـ "CTD" (عدد الذباب المنجذب للمصيدة الواحدة فى اليوم الواحد) لذبابة الفاكهة مابين ٠,١١ – ٠,٦٣ ذبابة، بمتوسط قدره ٠,٣١ ذبابة، مابين ٠,٠١ – ٠,٦٤ ذبابة بمتوسط قدره ٠,١٩ ذبابة وذلك خلال الموسمين على التوالى. وقد تراوحت قيم الـ "CTD" لذبابة الخوخ فى الموسم الأول مابين ٥,٢ – ١٠٨,٢ ذبابة بمتوسط ٣٧,٤٦ ذبابة، وفى الموسم الثانى تراوحت قيم الـ "CTD" مابين ٢,٩٣ – ٦٩,٦٤ ذبابة بمتوسط بمتوسط قدره ٣١,٢٦ ذبابة.

كان مجموع النسبة الكلية للإصابة بالحشرتين معاً فى ثمار البرتقال بسرة ١٥,٨٦ % – ٩,٩٨ %، وفى البرتقال البلدى ١١,٠٦ %، ٥,٣٥ %، وفى اليوسفى ١٢,٥٦ %، ٥,٨٩ %، وفى الجريب فروت ١٠,٩٣ %، ٢٠,٤٧ %، وفى النارنج ٩,٢١ %، ٣,٣٣ %، وفى الليمون ١,٠٣ %، ٢,٦٥ %، وفى البرتقال الصيفى ١,٠٤ % (فى الموسم الأول فقط) وذلك فى الموسمين على التوالى. نسبة الإصابة بذبابة فاكهة البحر الأبيض فقط كانت ٠,٣٥ %، ٠,٠٢ % فى البرتقال بسرة، و ٠,٨٣ %، ٠,٦٨ % فى البرتقال البلدى، و ٣,٧٩ %، ٢,٢٩ % فى اليوسفى، و ٠,٨٨ %، ١,١٥ % فى الجريب فروت، و ٣,٤٩ %، ٣,٣٣ % فى النارنج، و ٠,٣٤ %، ٠,٧٢ % فى الليمون، و ٠,٣٧ % فى البرتقال الصيفى (فى الموسم الأول فقط) وذلك فى الموسمين على التوالى. نسبة الإصابة بذبابةالخوخ فقط كانت ١٥,٥١ %، ٩,٩٦ % فى البرتقال بسرة، و ١٠,٢٣ %، ٤,٦٧٠,٦٨ % فى البرتقال البلدى، و ٨,٧٧ %، ٣,٦٠ % فى اليوسفى، و ١٠,٠٥ %، ١٩,٣٢ % فى الجريب فروت، و ٥,٧٢ %، صفر % فى النارنج، و ٠,٦٩ %، ١,٩٣ % فى الليمون، و ٠,٦٧ % فى البرتقال الصيفى (فى الموسم الأول فقط) وذلك فى الموسمين على التوالى.