

STUDIES ON HOST PREFERENCE OF PEACH FRUIT FLY, *BACTROCERA ZONATA* SAUNDERS INFESTING FRUIT CROPS AT SHARKIA GOVERNORATE, EGYPT

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ABSTRACT: The peach fruit fly, *Bactrocera zonata* attacks many hosts in Egypt. Studies were carried out to determine host preference of *B. zonata* among different hosts (peach, apricot, apple, mango, guava and citrus) in five districts at Sharkia Governorate. The total mean numbers of captured male flies using pheromone traps (distributed in each orchard) were counted. The data obtained showed that there were highly significant variations between hosts. The apple fruits were the most preferable tested host (52.23 – 158.84 flies / 10 trap) followed by peach & mango (42.00 – 151.11 flies / 10 trap) and apricot & guava (36.9 – 147.0 flies / 10 trap). The citrus fruits recorded the least attractant host (35.31 – 80.5 flies/ 10 trap). Also, the preferability was varied significantly from one district to another, where Abo-hammad, belbeis and Faquse represented the highest district of infestation (62.36 – 158.84 flies / 10 trap), while Menia Elkamh and Elsalhia represented the lowest district of infestation (33.72 – 91.00 flies / 10 trap) on different tested hosts.

Key words: host preference, *Bactrocera zonata*, peach, apricot, apple, mango, guava, citrus.

INTRODUCTION

In Egypt, peach fruit fly, *Bactrocera zonata* saunders is considered as one of key pests of fruit crops, causing serious damage to these crops reached to 25 – 50%

in guava crop (Syed *et al.* 1970) specially during the last decade. The peach fruit fly infesting a wide range of hosts all over the world namely, mango, peach, fig, guava, citrus, apples berry, pome. stone fruits, dates, sapota, pear, grape.

apricot, papaya and certain vegetables as tomatoes, cucumber, melone, gourds, brinjals, strawberry and other crops, Naryanan and Batra (1960) Rana *et al* (1990) Allwood *et al.* (1999), White (2000). The fruit crops, mango peach and guava were the most preferred hosts for peach fruit fly, *B. zonata*, Kapoor (1989) the peach fruit fly causing heavy damage to ripe and semiripe fruits, Roomi *et al.* (1993).

In the present study, host preference as a recorded mean numbers of males captured in pheromone trap located at fruit crops orchards, peach, apple, apricot, guava citrus and mango were conducted to determine the preferability of *B. zonata* to five hosts under fruit crop orchards condition at certain districts presented different types of soil, (old and newly reclaimed) at Sharkia Governorate.

MATERIALS AND METHODS

The field experiments were carried out in orchards of six fruit crops, peach, apple, apricot, guava, citrus and mango at five districts, Abo-Hammad, Menia el-Kamh, Faques Belbes and El-Salhia in

Sharkia Governorate during the period extended from April 2001 till April 2003. the pheromonal traps, Jackson trap (a trap with based sheet coated by sticky and baited by pheromone capsule, methyl eugonol (O-methyl-eugonol) were used to determine the numbers of fly males as indicator of *B. zonata* occurrence on different tested hosts.

Ten baited traps were held each in tree center at distance of 50 m inter values in each of tested crop fruit orchards. The pheromone capsules were exchanged every two months at the winter seasons and every one month and half at summer seasons. The numbers of captured males were recorded weekly with sticky sheet exchanging.

The total mean numbers of males / traps were computed and subjected to statistical analysis to determine the most preferable hosts at different tested district.

RESULTS AND DISCUSSION

1. General Hosts Preferability :

The total numbers of caught peach fruit fly *Bactrocera zonata* by pheromone traps during the two

study years, started from April 2001 till April 2003 in different tested district are given in Table (1) cleared that, there were highly significant differences between tested hosts as captured flies.

The apple mixed with mango found more attractant and preferable host to *B. zonata* where the highest numbers were recorded, 615.4 (A) and 508.8 (A) flies during the two study years, respectively.

The other hosts could be arrange in descending orders as follows, mango 568.16 (AB), 470.94 (AB), flies; peach 520 (B), 429.8 flies; apricot 493.5 (BC), 395.8 flies; guava 405.3 (C), 356.6 flies and citrus, which considered the least attractant host recorded 287.9 (D), 283.5 flies during the two study years, respectively.

Generally, the apple mixed with mango trees could be considered as the most attractive and favorable host to *B. zonata* followed by other crops as mango, peach, apricot, guava and lowest preferred host citrus. These results found in agreement with those obtained by Kapoor (1989) who reported that mango, guava, peach were the most preferred hosts for

the peach fruit fly *B. zonata* while citrus receiving low numbers of flies.

2. The Effect of Districts on Host Preference of *B. zonata* :

Data in table (1) indicated that, the highest numbers of *B. zonata* were recorded at Abo-Hammad followed by Belbes and Faques, while Menia – El Kamh and El Salhia recorded relatively low numbers, these results may be varied due to more than one reason, i.e. fruit crops composition (Areas of each host in relation to other), soil structure and other factors.

The peach fruit fly *B. zonata* total numbers recorded on all hosts at different districts were ranged between 80.5 – 158.84, 34.68 – 68.38, 62.36 – 151.3, 66.81 – 145.92 and 43.59 – 91.00 flies / 10 traps during the first year 2001 – 2002, while during the 2nd one ranged between 70.0 – 139.46, 33.72 – 74.84, 72.86 – 127.07, 71.59 – 115.23 and 35.31 – 52.23 flies/10 traps at Abo – hammad, Menia-Elkamh, Belbes, Faquse and El-Salhia districts, respectively.

Generally, the data obtained revealed that the recorded numbers of *B. zonata* differed from

districts to another appeared that different district, the apple mixed with mango trees were attracted highest numbers of *B. zonata* (91.00 – 1158.84 and 52.23 – 139.46) during the two successive seasons respectively, respectively.

The 2nd level of infestation recorded by peach at Abo Hammad and Menia-Elkamh (67.52 – 151.11) followed by mango at Belbeis, Faqus and El-Salhia (48.22 – 142.33).

The 3rd level of infestation was varied from district to other, mango recorded the third category of infestation in Abo Hammad and Menia-Elkamh ranged (62.22 – 147.0) and peach in Belbeis (103.76 – 114.88), apricot in faquse and El-Salhia (36.9 – 131.25).

The 4th level preference was recorded in apricot in Abo-Hammad and Menia-Elkamh, (61.77 – 147), and on guava in Belbeis (95.45 – 97.68), on peach in Faquse and El-Salhia (42.00 – 126.0).

The 5th level of infestation was recorded on guava at all districts except Belbeis (41.36 – 112.95) and apricot at Belbeis (89.83 – 92.9).

Citrus was the lowest preferable crops, recorded 6th level of preferability with numbers (35.31 – 80.5).

The obtained results found in agreement with those of Naryaman and Batra (1960) and Robison (1984) arranged the hosts, mango, peach, fig, guava, citrus, vegetable crops in the same trend Allwood *et al.* (1999) arranged hosts as preferability to *B. zonata*, mango, sugar apple, papaya.

Generally, it could be concluded that the apple mixed with mango trees considered as the highest preferable host to peach fruit fly *B. zonata* followed by peach and mango in one order followed by apricot and guava in one order too, while citrus tended to be less preferable specially with present of other hosts.

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Table (1): Host Preference of the peach fruit fly, *Bactrocera zonata saunders* infesting fruit crops at Sharkia Governorate, Egypt during the study period (April 2001 – Apr. 2003)

Host	Year	Abo hammad	Maina- El Kamb	Bel bes	Faquse	EL-Salhia	F. LSD _{0.05}	Total	Ran.
Peach	2001-2002	151.11 ± 8.12	67.52 ± 4.45	114.88 ± 10.49	126.0 ± 8.23	60.52 ± 7.78	*** 22.01	520.05 ± 31.20	B
	2002-2003	120.64 ± 8.49	67.52 ± 4.36	103.76 ± 8.87	95.94 ± 6.29	42.00 ± 3.30	*** 16.40	429.88 ± 25.39	BC
Apricot	2001-2002	147.0 ± 9.66	60.08 ± 5.3	89.83 ± 12.48	131.25 ± 9.79	65.33 ± 9.20	*** 28.79	493.50 ± 37.14	BC
	2002-2003	113.27 ± 10.56	61.72 ± 5.42	92.90 ± 11.03	91.0 ± 8.19	36.90 ± 4.10	*** 19.62	395.81 ± 31.56	C
Apple	2001-2002	158.84 ± 9.28	68.38 ± 5.09	151.30 ± 11.99	145.92 ± 9.41	91.00 ± 8.9	*** 19.52	615.46 ± 35.68	A
	2002-2003	139.46 ± 9.71	74.84 ± 4.99	127.07 ± 10.15	115.23 ± 7.54	52.23 ± 3.77	*** 15.14	508.84 ± 29.04	A
Mango	2001-2002	147.0 ± 7.89	62.22 ± 4.24	142.33 ± 10.19	138.44 ± 7.99	78.16 ± 7.56	*** 16.29	568.16 ± 30.33	AB
	2002-2003	126.38 ± 8.25	65.72 ± 4.24	121.33 ± 8.62	109.27 ± 6.4	48.22 ± 3.2	*** 14.61	470.94 ± 24.68	AB
Guava	2001-2002	112.95 ± 7.14	50.59 ± 3.91	97.68 ± 9.22	89.40 ± 7.23	54.72 ± 6.84	*** 25.60	405.36 ± 27.43	C
	2002-2003	88.13 ± 7.47	48.68 ± 3.84	95.45 ± 7.8	83.04 ± 5.79	41.36 ± 2.90	*** 20.99	356.68 ± 22.32	CD
Citrus	2001-2002	80.50 ± 7.14	34.68 ± 3.91	62.36 ± 9.22	66.81 ± 7.23	43.59 ± 6.84	*** 19.12	287.95 ± 27.43	D
	2002-2003	70.00 ± 7.47	33.72 ± 3.84	72.86 ± 7.8	71.59 ± 5.79	35.31 ± 2.90	*** 18.83	283.50 ± 22.32	D
F	2001-2002	***	***	***	***	***		***	
	2002-2003	***	***	***	***	***		***	
LSD _{0.05}	2001-2002	23.49	12.88	30.34	23.79	22.51		90.27	
	2002-2003	24.57	12.62	25.66	19.06	9.53		73.45	

دراسات على التفضيل العوائلي لذبابة الخوخ التي تصيب

محاصيل الفاكهة فى محافظة الشرقية - مصر

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تصيب ذبابة الخوخ العديد من العوائل فى جمهورية مصر العربية، وأجريت هذه الدراسة لتحديد التفضيل العوائلي لهذه الحشرة من بين كل من الخوخ والمشمش والتفاح والمانجو والجوافة والموالح. أوضحت النتائج المتحصل عليها من مجموع متوسط تعداد الذكور التى تم اصطيادها باستخدام المصائد الهرمونية أن هناك اختلافات معنوية جداً بين العوائل من حيث جذبها لهذه الحشرة. سجل التفاح أعلى جذب (تراوح التعداد ما بين ٥٢,٢٣ - ١٥٨,٨٤ ذبابة/ ١٠ مصائد) وتلاه كلاً من الخوخ والمانجو فى مجموعة واحدة (تراوح التعداد ما بين ٤٢,٠٠ - ١٥١,١١ ذبابة / ١٠ مصائد) وتعاقب بعد ذلك كل من المشمش والجوافة فى مرتبة واحدة أيضاً (تراوح التعداد ما بين ٣٦,٩ — ١٤٧,٠٠ ذبابة/ ١٠ مصائد) بينما سجلت الموالح أقل جذب للذباب (تراوح التعداد ما بين ٣٥,٣١ - ٨٠,٥ ذبابة / ١٠ مصائد). واختلفت القدرة التفضيلية لهذه الحشرة معنوياً من مكان لآخر حيث تم وضع المواقع المختبرة فى مجموعتين تمثل الأولى كلاً من أبو حماد وبلبيس وفاقوس (تراوح التعداد ما بين ٦٢,٣٦ - ١٥٨,٨٤ ذبابة/ ١٠ مصائد) بينما يمثل المجموعة الثانية منيا القمح والصالحية (تراوح التعداد ما بين ٣٣,٧٢ - ٩١,٠٠ ذبابة/ ١٠ مصائد) للعوائل المختلفة.