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Research Article

Host Preference of the Peach Fruit Fly, *Bactrocera zonata* (Saunders) (Diptera: Tephritidae), under Laboratory Conditions

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Abstract

Background and Objective: Peach fruit fly (PFF), *Bactrocera zonata* (Diptera: Tephritidae) is an invasive insect species in Egypt, which is classified as a polyphagous insect-pest of horticulture crops. The objective of the present study was to determine the host preference of the PFF if given the choice between hosts. **Materials and Methods:** The host preference of the PFF among 11 available kinds of plant fruits was studied under laboratory conditions and expressed as a number of forming pupae, pupal weight, deformity and adult emergence percentage. Obtained data were tabulated and analyzed statistically using CoStat 4.2. One-way ANOVA in a completely randomized design was generated for treatments and means were by Tukey-Kramer test (q_s) at 0.05 probability. **Results:** The results revealed that mango was significantly the most preferred host among tested fruits (FG) based on the number of pupae produced/host (108.33 pupae/500 g), followed by apricot with 103.33 pupae. Significantly, the least formed rates (14.66 pupae) and weight (10.0 mg) of pupae was obtained from apple, whereas, it had the highest adult emergence percentage (95.82%). Among the tested fruits of vegetables (VG), okra was significantly the most preferable host with 38.33 pupae and adult emergence with 85.25%. In case fruits mixed with vegetables (FVG), mango fruits were statistically the highest preferred too, with 123.66 pupae, while cucumber was not infected whether in case of VG or FVG. **Conclusion:** The results revealed that mango was the most preferred host of PFF among treated fruits of FG and among FVG. Okra fruits were significantly the most preferable among tested fruits of VG, while cucumber was categorized as a non host for the PFF. This study gives important information which confirms the presence or absence of this species of fruit flies in an area, that is useful in the integrated pest management (IPM) practices.

Key words: Peach fruit fly, *Bactrocera zonata*, host plants, host preference, tephritid fruit flies

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Competing Interest: The author has declared that no competing interest exists.

Data Availability: All relevant data are within the paper and its supporting information files.

INTRODUCTION

Tephritid fruit flies (Diptera: Tephritidae) are among the important pests of fruits and vegetables in the world because they cause direct and indirect economic loss of a wide host range[1,2]. Fruit flies, such as Mediterranean fruit fly, *Ceratitis capitata* and peach fruit fly (PFF), *Bactrocera zonata* are polyphagous species, infect as many as host species grown commercially. In Egypt, they are considered serious pest species, where they cause losses of about $100 million annually[3].

The PFF is an active pest all over the year in Egypt except for cold months[4-6]. It attacks more than 40 species of fruit crops, such of peach, guava and mango as primary hosts and apricot, fig and citrus as secondary hosts, as well as it has been recorded from wild host plants[7,8].

Host plants as a food source is one of the main factors affected the insects, such as body size, which depended significantly on the host fruits[9].

A comparative host preference of the fruit flies was studied in some tephritid species, such as *B. tryoni* (Froggatt), oviposition preference and offspring performance were investigated in citrus fruits based on choice and no-choice trails[10]. In the PFF, oviposition and offspring performance were studied in mango, peach and apple based on choice experiment under laboratory conditions[11]. The oviposition preference was also investigated in guava, banana, citrus, ber, chikoo and apple under-free or no-choice conditions[12].

To the best of our knowledge, no data are available about the survey of host range and preference of the PFF among fruits, as well as vegetables in Egypt. So, the objective of the present study was to determine the host preferences of PFF if given the choice to choose between different fruits of plants.

MATERIALS AND METHODS

Mass rearing technique of the PFF: The facility of the lab strain of the PFF was obtained as pupae from the Department of Horticulture Insects, Plant Protection Institute in 2010. Pupae were maintained and reared in the Eradication of the Peach Fruit Fly Laboratory at Damanhour, El-Beheira Governorate (27±1°C, 60±5% R.H. and 14:10 L: D photoperiod) according to El-Gendy[13].

Host preference of the PFF: Host preference of the PFF of 11 host kinds of fruits of plants, which were available at the same time, was studied during 2016 using host free-choice experiments. The host choice experiments were divided into 3 groups, the 1st group was specific with fruits namely fruit group, (FG), the 2nd group was vegetables group (VG) and the 3rd group was fruits mixed with vegetables group (FVG). The 1st group (FG) contained 5 kinds of fruits zebda mango (*Mangifera indica*), Hollyuood plum (*Prunus persica*), Florida prince peach (*Prunus persica*), Balady apple (*Malus domestica*) and Hamawy apricot (*Prunus armeniaca*), the 2nd group (VG) contained 6 kinds of vegetables Ismaily okra (*Abelmoschus esculentus*), Calefornia pepper (*Capsicum annuum*), Nancy squash (*Cucurbita pepo*), Melana eggplant (*Solanum melongena*), Alesa tomatoes (*Lycopersicon esculentum*) and Amera cucumber (*Cucumis sativus*). The 3rd group (FVG) contained 11 hosts mango, pear, peach, apple, apricot, okra, pepper, squash, eggplant, tomatoes and cucumber. Each kind (≈500 g) of the tested plant fruits was exposed to the mature PFF females in a testing cage (40×40×60 cm) for 24 h to allow the natural infection as a free choice of the PFF for oviposition. The testing cage includes a source of water and an adult flies' diet (sugar and protein hydrolysate, 3:1 v:v). Two sides of each cage were made of glass, one side has a sleeve for inspection, front side has muslin cloth, floor is made of wood and ceiling of fiber wire 0.2 mm, as well as a rack of mesh metal (1 cm in diameter) was in the mid height of the cage. The infection treatments were repeated thrice for all tests. The tested fruits of each kind were kept separately in plastic jars (12.5×30 cm) containing fine sand at the bottom for pupation and covered with blotting paper (to absorb excess moisture). After the 7th day, the sand was sieved and the newly formed pupae of each host was obtained. The total number of produced pupae was counted and weighted and then kept in petri dishes until the emergence of adult flies. Deformity and emergence of adult flies were counted and recorded. The number of producing pupae and percentage of emerging of adult flies from each kind of fruits were considered as an index for the preferred host to the PFF.

Data analysis: Obtained data were tabulated and analyzed statistically using CoStat 4.2[14] (CoHort Software, Berkeley, CA, USA). Analysis of variance (one-way ANOVA) in a completely randomized design was generated for treatments and means were compared (LSD) by Tukey-Kramer test (q_s) at 0.05 probability. Spearman's of rank correlation was used for non-parametric data and Pearson for parametric data.

RESULTS

Results of host preference of the PFF of the tested FG, VG and FVG were presented in Table 1-3. The results (Table 1 and 4) of exposed FG to the PFF revealed highly significant differences (F = 662.10, df = 4, p = 0.000) among treatments in the number of producing pupae. The highest number of the formed pupae was obtained from mango fruits

Table 1: Biological measurements of PFF, *B. zonata* resulted from exposure to some fruits group (FG) to adult flies

	Biological measurements (S.E)			
Fruits	No. recovered Pupae/fruit	Pupal weight (mg/pupae)	Deformity (%)	Adult emergence (%)
Mango	108.33±02.52[a]	14.00±0.21[a]	01.53±00.51[b]	92.34±01.05[ab]
Apricot	103.33±02.08[a]	11.37±0.60[b]	04.19±00.49[a]	87.41±01.04[b]
Peach	55.33±03.51[b]	10.98±0.42[b]	00.00±00.00[c]	90.53±03.90[ab]
Plum	44.00±02.64[c]	10.48±1.441[b]	00.00±00.00[c]	94.05±03.26[ab]
Apple	14.66± 02.51[d]	10.08±0.71[b]	00.00±00.00[c]	95.82±03.64[a]
$LSD_{0.05}$	4.90	1.45	0.58	5.40

Means followed by the same letter(s) are not significantly different according to $LSD_{0.05}$, r: Spearman correlation, S.E. (±): Standard error, $LSD_{0.05}$: Least significant differences

Table 2: Biological measurements of PFF, *B. zonata* resulted from exposure to some vegetables group (VG) to adult flies

	Biological measurements (S.E)			
Fruits	No. recovered Pupae/fruit	Pupal weight (mg/pupae)	Deformity (%)	Adult emergence (%)
Okra	38.33±01.52[a]	07.47±00.10[bc]	1.71±01.47[a]	85.25±03.81[ab]
Pepper	33.33±01.0.04[b]	08.49±00.06[b]	0.00±00.00[b]	84.79±00.67[ab]
Squash	25.66±01.98[c]	08.16±00.35[bc]	0.00±00.00[b]	83.21±03.83[ab]
Eggplant	25.33±02.08[c]	06.34±00.59[c]	0.00±00.00[b]	76.63±06.12[b]
Tomatoes	11.33±01.29[d]	11.60±01.51[a]	0.00±00.00[b]	88.51±03.40[a]
Cucumber	00.00±00.00[e]	0.000±00.00[d]	0.00±00.00[b]	0.00±00.00[c]
$LSD_{0.05}$	2.874	1.21	1.07	6.45

Means followed by the same letter(s) are not significantly different according to $LSD_{0.05}$, r: Spearman correlation, S.E. (±): Standard error, $LSD_{0.05}$: Least significant differences

Table 3: Biological measurements of PFF, *B. zonata* resulted from exposure to some fruits mixed with vegetables group (FVG) to adult flies

	Biological measurements (S.E)			
Fruits	No. recovered pupae/fruit	Pupal weight (mg/pupae)	Deformity (%)	Adult emergence (%)
Mango	123.66±02.51[a]	13.04±00.30[a]	00.00±00.00[b]	98.66±00.43[a]
Peach	105.0± 04.35[b]	9.28±00.40[c]	00.00±00.00[b]	96.35±05.51[a]
Apricot	105.0± 04.16[b]	07.43±00.31[d]	02.19± 01.03[ab]	92.75±02.13[a]
Pepper	68.66±02.08[c]	4.17±00.18[e]	00.00±00.00[b]	78.65±3.81[ab]
Squash	60.00±01.02[d]	7.33±00.40[d]	02.77±00.96[ab]	89.99±1.50[a]
Apple	42.33±02.51[e]	11.10±00.09[bc]	00.00±00.00[b]	100.00±00.00[a]
Plum	14.00±01.41[f]	12.49±01.01[a]	05.13±02.44[a]	90.43±03.98[a]
Eggplant	14.00±01.01[f]	09.30±00.71[c]	00.00±00.00[b]	83.44±3.03[ab]
Okra	11.33±01.53[f]	10.89±00.12[b]	00.00±00.00[b]	93.63±5.52[a]
Tomatoes	00.33± 00.57[g]	00.00±00.00[f]	00.00±00.00[b]	33.33±02.73[bc]
Cucumber	00.00±00.00[g]	00.00±00.00[f]	00.00±00.00[b]	00.00±00.00[c]
$LSD_{0.05}$	7.99	0.74	2.38	30.01

Means followed by the same letter(s) are not significantly different according to $LSD_{0.05}$, S. E. (±): Standard error, $LSD_{0.05}$: Least significant differences

with 108.33 pupae/500 g, followed by apricot with 103.33 pupae, accompanied by a non-significant difference. Peach and plum fruits ranked significantly in the 2nd level with 55.33 and 44.00 pupae, respectively, while apple came the third with 14.66 pupae. Besides, a moderate positive correlation (r = 0.69) was obtained between the number of formed pupae and the host kind. The determination coefficient (R^2) revealed that the host kind affected significantly by 55% of the total factors affected the formation of PFF pupae. In addition, the highest pupal weight (14.0 mg/pupae) produced from mango fruits too, which was significantly higher than those produced from apricot, peach, plum and apple fruits (F = 98.49, df = 4, p = 0.000). On the other hand, the pupal weight was not significantly correlated with the host kind. The deformed percentages were significantly different (F = 98.49, df = 4, p = 0.000) among the tested kinds of FG, the highest percentage was obtained from apricot fruits with 4.19%, followed by mango with 1.53%, while no deformity was recorded from peach, plum and apple fruits. However, correlation analysis showed a significant correlation (r = 0.7) between host kind and deformed percentages, which affected the deformity percentages by 51% according to R^2 value. The adult emergence percentage was higher in pupae obtained from apple (95.82%) than plum (94.05%), mango (92.34%) and peach (90.53%), accompanied

Table 4: Correlation and regression coefficients of biological measurements of PFF, *B. zonata* and tested fruits (FG), vegetable (VG) and fruits mixed with vegetable (FVG)

		Coefficients					
		Correlation		Simple regression			
Host	Biological measurements	r	p	R^2	a	b	P
Fruits	No. recovered pupae/fruit	0.69	0.004 **	0.55	18.86	8.53	0.002 **
	Pupal weight (mg/pupae)	0.38	0.157 ns	0.075	0.0105	3e-4	0.320 ns
	Deformity (%)	0.70	0.003 **	0.51	-1.37	0.83	0.002 **
	Adult emergence (%)	0.65	0.007 **	0.57	98.12	-2.033	0.001 ***
Vegetable	No. recovered pupae/fruit	0.88	0.000***	0.82	-1.93	6.93	0.000***
	Pupal weight (mg/pupae)	0.28	0.252ns	0.17	0.004	8.66	0.089 ns
	Deformity (%)	0.64	0.004 **	0.57	-0.57	0.24	0.027 *
	Adult emergence (%)	0.37	0.123 ns	0.41	27.89	11.96	0.003 **
Fruits mixed	No. recovered pupae/fruit	0.72	0.000 ***	0.53	-7.86	9.27	0.000 ***
with vegetable	Pupal weight (mg/pupae)	0.74	0.000 ***	0.59	0.001	9.78	0.000 ***
	Deformity (%)	0.38	0.03 *	0.26	0.20	0.12	0.26 ns
	Adult emergence (%)	0.67	0.000 ***	0.41	26.51	7.17	0.000 **

r: Spearman correlation, R^2: Determination coefficient, P: p-value a: Intercept, ns: Non significant, *: Low significant, **: Medium Significant, ***: High significant

by non-significant differences, except apricot (87.41%) which was significantly differed from apple (F = 3.57, df = 4, p = 0.0464). Additionally, a significant correlation (r = 0.65) was obtained between the host tested kind of fruits and adult emergence percentages, where the host kind affected emergency of adult flies by 57%.

The results in Table 2 and 4, revealed that okra fruits produced the highest number of pupae (38.33 pupae) among the tested kinds of VG, followed by pepper, squash, eggplant and tomatoes with values of 33.33, 25.66, 25.33 and 11.33 pupae, respectively, whereas, no pupae were obtained from cucumber fruits. The statistical analysis revealed highly significant differences (F = 233.66, df = 5, p = 0.000) in the formed pupae among the tested kinds of VG, beside a highly positive correlation (r = 0.88) with host kind. Results revealed highly effects of the host kinds of VG on the formed pupae of the PFF of about 82% according to R^2 value. The pupal weight obtained from tomatoes (11.60 mg) was significantly higher (F = 73.83, df = 5, p = 0.000) than those produced from pepper, squash, okra and eggplant, which was not related to host kind. The deformity percentages were recorded only from okra fruits, with 1.71% (F = 3.99, df = 5, p = 0.02*). Additionally, it was positively correlated (r = 0.64) with host kind which affected by 57%. On the other side, the highest adult emergence ratio of the PFF was obtained from tomato fruits with 88.51%, followed by okra, pepper, squash, eggplant with 85.25, 84.79, 83.21 and 76.63%, respectively. Statistically, the results revealed significant differences in the adult emergence (F = 269.70, df = 5, p = 0.000) among the tested hosts, whereas no correlation was obtained with host kind.

The results in Table 3 and 4 of exposing FVG to the PFF adults revealed that the highest number of producing pupae was obtained from mango fruits (123.66 pupae), followed by peach, apricot, pepper, squash, apple, plum, eggplant, okra and tomatoes with values of 105.0, 105.0, 68.66. 60.0, 42.33, 14.0, 14.0, 11.33 and 0.33 pupae, respectively. While, no pupae were obtained from cucumber fruits. The statistical analysis showed significant differences among the tested hosts in pupal number (F = 890.94, df = 10, p = 0.000). A high positive correlation (r = 0.72) was obtained between the host kind and the formed pupae, addition to, the host kind affected significantly the formed pupae by 53%. Significantly (F = 260.37, df = 10, p = 0.000), a higher pupal weight was obtained from mango fruits (13.04 mg), followed by plum, apple, okra, peach, squash, eggplant, apricot and pepper fruits. Results showed a high correlation (r = 0.74) between the host kind and pupal weight. The host kind effects reached 59% on pupal weight according to R^2 value. The highest percent of deformity of the PFF (5.13%) was recorded on plum fruits, followed by 2.77 and 2.19% for squash and apricot, respectively, while, no deformity percentages were recorded on the other tested hosts (F = 22.23, df = 10, p = 0.000). A weak positive correlation (r = 0.38) was recorded between deformity percentages and host kind, while no statistical affecting was recorded of the host kind of FVG on the deformity of PFF. The highest adult emergence percentage was obtained from pupae produced of apple fruits with 100%, followed by mango, peach, okra, apricot, plum, squash, eggplant, pepper and tomatoes fruits, with corresponding statistically significant differences (F = 13.49, df = 10, p = 0.000). A highly positive correlation (r = 0.67) was obtained between the tested hosts and percentages of the adult emergence and about 41% effecting of the host kind on adult emergence percentages was recorded according to R^2 value.

Table 5: Correlation and regression coefficients of adult emergence (%) and other biological measurements of PFF, *B. zonata*, produced from fruits (FG), vegetable (VG) and fruits mixed with vegetable (FVG)

			Coefficients					
			Correlation		Simple regression			
Host	Biological measurements		r	p	R^2	a	b	p
Fruits	Adult emergence (%)	No. recovered pupae/fruit	0.53	0.042*	0.35	96.11	-0.06	0.019*
		Pupal weight (mg/pupae)	0.053	0.849 ns	1.88^{e-4}	91.64	33.65	0.961ns
		Deformity (%)	-0.33	0.216 ns	0.36	93.60	-1.37	0.017*
Vegetable	Adult emergence (%)	No. recovered pupae /fruit	0.32	0.188 ns	0.538	30.24	1.769	0.000***
		Pupal weight (mg/pupae)	0.84	0.000***	0.845	12.88	8061.83	0.000***
		Deformity (%)	0.36	0.136ns	0.022	68.08	5.90	0.549ns
Fruits mixed with vegetable	Adult emergence (%)	No. recovered pupae /fruit	0.42	0.014*	0.157	53.61	0.349	0.349ns
		Pupal weight (mg/pupae)	0.66	0.000***	0.48	23.68	6108.63	0.000***
		Deformity (%)	00.16	0.3695ns	20.26	71.150	-0.289	0.933ns

r: Pearson correlation, R^2: Determination coefficient, P: P-value a: Intercept, ns: Non significant, *: Low significant, **: Medium significant, ***: High significant

The results in Table 5 revealed that adult emergence of PFF was positively related to the number of forming pupae in case FG (r = 0.53) and FVG (r = 0.42), not in case VG (r = 0.32). Moreover, R^2 values revealed that the number of formed pupae affected significantly the adult emergence percentage of the PFF in the case of FG and VG by 35 and 54%, respectively, not in case of FVG. Regard to pupal weight, the adult emergence was highly positively correlated with it in case both VG (r = 0.84) and FVG (r = 0.66). Moreover, the pupal weight was affected significantly the adult emergence by 85 and 48% (R^2 values), while no significant effect was found in case of FG. On the other side, adult emergence wasn't related significantly to deformity percentages of the PFF.

Generally, the results revealed that formed pupae were related to the host kind, it increased in case VG and reached its impact to 82% on the pupal formation. On the other side, the adult emergence was related to the number of formed pupae in case FG and FVG, not to VG.

DISCUSSION

The host preference of PFF among 11 types of plant fruits was tested under lab conditions. The present findings showed highly differences in the PFF selectivity among the tested fruits of plants according to their effects on the biology of its immature stages, highly-, moderately- and least-preference and non-hosts. Mango fruits were significantly the most preferred host of the PFF whether among FG or FVG according to the number of formed pupae. Apricot was the second most preferred among the tested FG, followed by peach and plum, while apple was the least one. However, apple had the highest value of adult emergence, followed by plum, mango, peach and apricot fruits, respectively. Supported results revealed that mango was the most hosts preferred of the PFF, followed by peach and apple[11]. Analogous to these findings, apple was the least preference than other tested hosts under both the choice- and no choice-test [15]. Also, in another study apple was the least preference, it wasn't infected, among citrus, chikoo, banana, ber and guava fruits under- free-choice test, however, it had the highest adult emergence under no choice test.

Present results indicated that okra was significantly the most host preference among VG according to number of producing pupae, followed by pepper, squash, eggplant and tomatoes, respectively. On the other hand, the highest percentage of adult emergence of the PFF was obtained from tomato fruits followed by okra, pepper, squash and eggplant. Yet, no results are available about PFF hosts of vegetables. Moreover, the present results did not emphasize that the tested vegetables are primary or secondary hosts of the PFF. However, the potential hosts did not infest under the field but infested under control conditions, as well as able to sustain the larval cycle[16]. In contrast to the present results, Rizk *et al.*[17] mentioned that the cucumber had a moderate level of attraction to the PFF.

The present results showed that no pupae were obtained from cucumber fruits, this may be attributed not only to the female ability to penetrate the fruits, but also their suitability for its immature stages. Supported results to our postulate showed differences of the wild flies of *B. dorsalis* in their ability to penetrate the hosts for oviposition[18]. Additionally, *C. capitata* showed discrimination capability in oviposition preference among the tested fruits[19]. Moreover, the oviposition of fruit flies depends upon their decision to select the suitability hosts that enhances their offsprings[20]. Where, there is a link between adult oviposition preference and offspring performance[18], the insect females will evolve to oviposit on hosts on which their offspring fare best[21].

The findings showed that pupal weight was significantly different among the tested host fruits. It was significantly related to the host kind in case of FVG, not in case of FG or VG. Parallel results revealed significant differences among tested fruits in pupal weight of the PFF[11,12,15,22].

The adult emergence percentages were higher in pupae obtained from apple than those of other tested fruits of FG. On the other side, the highest adult emergence percentage of the PFF of VG was obtained from tomato fruits, followed by okra, pepper, squash and eggplant. Similarly, the results of Darwish[15] revealed that the lowest adult emergence percentage was achieved with apple of the tested fruits under both choice and non-choice tests.

The results presented here show some changing in the host prefer of the PFF by changing the available hosts FG, VG or FVG. In case of exposure FG, mango was the most preferred host of PFF, followed by apricot, peach, plum and apple. Among FVG, mango was also the highest preferred host with highly significant difference than the other, followed by peach and apricot, apple and plum, respectively. With regard to VG, okra was the highest preferrerd host of PFF, followed by pepper, squash, eggplant and tomatoes. On the other hand, pepper was the highest preference among FVG, followed by squash, eggplant, okra and tomatoes. It's clear that differences in the host preferred may differ under different conditions, the natural fruit hosts can be used by PFF depending upon their availability[11]. Darwish[15] revealed that apricot was the most preferable hosts of the PFF followed by peach, plum and apple under no choice test, whereas, apricot was the most preferred followed by peach, plum and apple under choice test. In another study, guava was the most preferred for of PFF, followed by ber, banana, apple, chikoo and citrus, respectively under non choice test. Guava was also the most preferred host under-free choice, followed by banana, citrus, ber and chikoo, while there was not a recorded infected on apple fruits[12].

Fruits characters such as odor, size, color and shape are the main factors enhanced the oviposition preference and influenced the response of female fruit flies[23-26]. It is worthwhile to mention that fruit flies use their odor receptors to find food sources from a distance. Accordingly, in the present study, the free-choice test of the PFF under laboratory conditions may be eliminating the odor effect. On the other side, mango color was close to squash and cucumber, as well as the squash shape was looked like the cucumber, however, mango was the most preferred host, squash was in the 4th and 1st groups of preference according to number of producing pupae and the adult emergence, respectively, whereas cucumber was not infect. Hence, the differences between the tested hosts in the preference might be due to the host quality nutritional content that is considered the main factor affected the flie's progeny. Supported results to this hypothesis revealed that many host plants can sustain the full development of different tephritid species, whereas, the host quality causes the most important differences in the survival rate of the larvae[11]. So, insects glean important information about the quality and nutritive value of food sources using their taste system, i.e., the fly makes physical contact with food for tasting for suitability nutrition and toxicity[27]. Many studies reported that pericarp toughness might play a dominant role in oviposion preference of female tephritids[18,28]. The total soluble solid (TSS) of mango may also be affected the adult preference, *B. dorsalis*[22]. As well as, Phenolic compounds in apple carp have been reported as a toxic to the larvae of *Rhagoletis pomonella* (Wash) (Diptera: Tephritidae)[29], or death to the eggs or larvae of *B. dorsalis*[18]. This may be interpreted the lower number of the formed pupae of the PFF in apple fruits in the present study.

CONCLUSION

The present results elucidated that mango fruits was the most preferable among tested hosts and okra fruits was the most preference among tested vegetables. Anyway, these results suggest that fruits may be the favorite hosts and vegetables are secondary hosts, or the PFF is specific to fruits, which needs further studies.

SIGNIFICANCE STATEMENT

This study screened the most commonly planted fruits and vegetables to identify the host preference of the peach fruit fly, *Bactrocera zonata.* Mango and okra were the preferred hosts among the tested fruits of fruits and vegetables, while cucumber categorized as a non host. This study gives important information on presence or absence of this species of fruit flies in an area based on the present vegetation. This study will help the pest management researchers and practitioners to start the suitable control practices at early time.

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