IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

STUDIES ON OVIPOSITION, FECUNDITY AND LONGIVITY OF FRUIT FLY *BACTROCERA ZONATA* ON MANGO

[1]Dr.N.S.Dale, [2]Prof.S.N.Varpe and [3]Prof.G.B.Labade

[1]Associate professor of Entomology, [2]Assistant professor of Entomology and [3]Assistant professor of Agril. Botany

College of Agriculture, Loni, Tal. Rahata, Dist.Ahmednagar (M.S.)

Abstract: The pre- oviposition period of *B. zonata* varied from 10 to 14 days with an average of 13.20 ± 0.84 ^{O}C days at an average room 28.60 ± 0.84 ^{O}C and an average relative humidity of 76.60 ± 4.88 per cent. The oviposition period of *B. zonata* varied from 13 to 18 days with an average of 15.00 ± 1.87 days at an average room temperature of 28.60 ± 2.39 ^{0}C with an average relative Humidity of 76.60 ± 4.88 Per cent. The post-oviposition period of *B. zonata* varied from 21 to 26 days with an average of 22.81± 1.93 days at an average room temperature of 28.60 ± 2.39 °C with an average relative humidity of 76.60 ± 4.80 per cent. The egg delaying capacity of female varied from 121 to 146 eggs with an average of 132.6±1.93 eggs at an average room temperature of 28.60 ± 2.39 °C with an average relative humidity of 76.60 ± 4.88 Per cent .The male longevity varied from 37 ± 42 days (Av. 39.4 ± 1.82 days) While, it was 48 to 55 days (Av. 51.00 ± 2.65 days) in case of female when reared at an Average temperature of 28.60 ± 2.39°C and an average relative humidity of 76.60 ± 4.88 per cent.

Index Terms: *Bactrocera zonata*, , Oviposition, Fecundity and Longevity.

INTRODUCTION

Fruit fly is an important pest of mango belongs to family Tephritidae and order Diptera. These are commonly called “Fruit fly” due to their close association with fruits. Kapoor (1970) listed 128 species of fruit flies and out of these, eight species are found infesting mango fruit in India. These species are *Bactrocera zonata* (Saunders), *Bactrocera dorsalis* Hendel, *Bactrocera correctus* (Bezzi), *Bactrocera diversa* (Coquillet), *Bactrocera hageni* De majiere, Bactrocera cucurbitae (Coq.), *Dacus incises* Walker and *Dacus tau* (Walker).

The adult female fruit flies insert the ovipositor inside the fruits and eggs are deposited in clusters. Dark puncture caused due to the oviposition. Maggots on hatching, feed on the pulp and brown patches appear on the fruit surface. Later on the fermenting organisms like bacteria and fungi gain entry through the oviposition puncture and fruit start rotting. Due to this, mesocarp become dirty brown and finally fruit drop down. Pupation took place in soil. The fruit fly species is active throughout the year except colder months i.e. December to middle of February. Maximum population of fruit fly was recorded in summer season and slowly decline in winter season.

Looking to the apparent importance of the pest the investigation was carried out to study oviposition period, fecundity and longevity of fruit fly *Bactrocera zonata* on mango.

REVIEW OF LITERATURE

Pre-oviposition period of *D. Zonatus* was found to be 20 days (Atwal, 1976).According to Rana *et al*. (1992), pre-oviposition,-oviposition and post oviposition periods of *B. Zonata* on guava were 14 to 17 days, 12 to 17 days and 16 to 43 days, respectively at the temperature of 26 ^{0}C to 30 ^{0}C and relative humidity of 70 to 75 per cent at Haryana. Whereas, Kapoor (2000) mentioned Pre-oviposition period of *B. Zonata* ranging from 16 to 25 days.

According to Atwal (1976), single female of *D.Zonatus* laid 137 eggs in her life time, while, Rana *et al*,(1992) reported that single female of *B. Zonata* laid 191 to 259 eggs at an average temperature of 28 ±2 ^{O}C when reared on guava. Kapoor (2000) mentioned that the female of *B. Zonata* laid upto 150 eggs in her life time on guava fruits.

The average longevity of male and female of *D. Zonatus* was reported to be one to four months (Butani, 1979 and Butani and Srivastava, 1999).According to Rana *et al*, (1992), male longevity of *B. Zonata* varied from 36 to 53 days with an average of 44.3 days, while it was 47 to 72 days with an average of 58.2 days in case of female when reared at 28 ± 2^{O}C temperature at Haryana.

RESEARCH METHODOLOGY

To study the oviposition periods , freshly emerged male and female adults were paired and confined in iron wire cage (Height 30 cm ; Breadth 30 cm) covered with black cloth bag .

The period between the emergence of female flies and commencing the egg laying and stopping of egg laying was considered as pre-oviposition period. Period between starting of egg laying and stopping of egg laying by individual female was noted as oviposition period , while period between stopping of egg laying and death of female was considered as post-oviposition period. The number of eggs laid by each female was recorded daily till the stopping of egg laying and average fecundity was calculated. longevity of male and female was calculated separately from the date of emergence and date of death of the adults.

RESULTS AND DISCUSSION

Pre-oviposition period-

Data presented in Table 1 indicated that the pre- oviposition period of *B. zonata* varied from 10 to 14 days with an average of 13.20 ±0.84 ^{0}C days at an average room 28.60 ± 0.84 ^{0}C and an average relative humidity of 76.60 ± 4.88 per cent. Rana *et al*. (1992) mentioned the Pre-oviposition period as 14 to 17 days on guava fruit. The slight variation in pre Oviposition period may be due to different food material used for feeding.

Oviposition period-

The oviposition period of *B. zonata* varied from 13 to 18 days with an average of 15.00 ± 1.87 days at an average room temperature of 28.60 ± 2.39 ^{0}C with an average relative Humidity of 76.60 ± 4.88 Percent. The above findings are in concurrence with the report of Rana *et al*. (1992), who showed the oviposition period as 10 to 17 days.

Post-oviposition period-

The data presented in Table 1. Showed that the post-oviposition period of *B. zonata* varied from 21 to 26 days with an average of 22.81± 1.93 days at an average room temperature of 28.60 ± 2.39 °C with an average relative humidity of 76.60 ± 4.80 per cent. The above Findings are in concurrence with the report of Rana *at al.* (1992), who noted it as 16 to 43 Days. The variation found in post-oviposition period may be due to various climatic conditions at different localities and food material used for feeding the adults.

Table: 1 Oviposition Period, fecundity and longevity of *B. Zonata*

Sr.No.	Particulars	Min.	Max.	AV. ± S.D
1.	Pre-oviposition Period (Days)	12	14	13.20 ± 0.84
2.	Oviposition Period (Days)	13	18	15.00 ± 1.87
3.	Post-oviposition Period (Days)	21	26	22.8±1.93
4.	Fecundity	121	146	132.6±9.71
5	Longevity (Days)-Male	37	42	39.4±1.82
	Longevity (Days) -Female	48	55	51.0±2.65
6.	Temperature (^{o} C)	26	31	28.60±2.39
7.	Relative Humidity	70.00	83.50	76.60±4.88

Fecundity-

Data presented in Table 1 revealed that the egg delaying capacity of female varied from 121 to 146 eggs with an average of 132.6±1.93 eggs at an average room temperature of 28.60 ± 2.39 °C with an average relative humidity of 76.60 ± 4.88 Per cent. Atwal (1976) recorded 137 eggs per female, which is more or less similar, with the present investigation.

Longevity-

The data presented in Table 1 showed the longevity of male and female separately. It can be Seen from the data that the male longevity varied from 37 ± 42 days (Av. 39.4 ± 1.82 days) While, it was 48 to 55 days (Av. 51.00 ± 2.65 days) in case of female when reared at an Average temperature of 28.60 ± 2.39°C and an average relative humidity of 76.60 ± 4.88 Per cent. Rana *et al*. (1992) reported the longevity of male and female of *B. zonata* varied From 36 to 53 days and 47 to 72 days respectively, when reared at 38 ± 2°C temperature and 70 to 75 per cent relative humidity. The above reports are agreed closely with the Present findings. Further, the data in the table highlighted that male longevity was slightly Shorter than the female. The average longevity of male and female of *B. zonata* varied from one to four month (Butani, 1979; Butani and Srivastava, 1999). The variation in adult Longevity might be attributed to different food materials utilized for feeding, climatic conditions localities at various localities and other laboratory factors.

REFERENCES

[1] Atwal, A.S. 1976. Agricultural pest of India and south –East Asia. Kalyani Publisher, Ludhiana: 189-190.
[2] Butani, D.K.1979. Insect and fruits. Periodical Expert Book Agency, Delhi: 297-299.
[3] Kapoor, V.C.2000. IPM system in Agriculture, Fruit flies (Diptera: Tephritidae) : Status, Bioecology and management strategies (Vol. 7). Aditya Book Pvt.Ltd. New Delhi: 123-142.
[4] Rana, J.S. ; Prakash, O and Verma, S.K.1992. Biology of guava fruit fly infesting guava fruits in Haryana and influence of temperature and relative humidity on its incidence. Crop Res., 5 (3):525-529.
[5] Butani, D.K. and Srivastava, K.P.(1999). Citrus Entomology, Pest Management in Citrus.research Periodical and Book Publishing House,New Delhi :118.