



## Research Paper

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# Incidence of fruit fly (*Bactrocera* spp.) in different mango orchards and varieties

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**ABSTRACT :** Studies were made on monitoring incidence of fruit fly (*Bactrocera* spp.) using methyl eugenol traps in different mango orchards and varieties during 2008-2009 at GKVK campus, Bangalore and Srinivasapur, Kolar. Significantly highest number of *B. dorsalis* was recorded in Mallika mango orchard followed by the Mixed orchard (11.06 and 9.48 fruit flies / trap / week, respectively) while highest trap catches of *B. correcta* (12.66 fruit flies / trap / week) and *B. zonata* (7.82 fruit flies / trap / week) was recorded in Banganpalli and Alphonso orchard, respectively. When the total fruit flies were considered, highest number of fruit flies was trapped in Mallika (22.38 fruit flies / trap / week) orchard followed by Banganpalli (18.65 fruit flies / trap / week). While the lowest trap catches were recorded in Alphonso orchard. In laboratory study, evaluation on maggot emergence in different mango varieties showed highest emergence of maggot was recorded in cv. MALLIKA (1.40 maggot / fruit) followed by Amrapali (1.00 maggot / fruit).

**KEY WORDS :** Fruit fly, *Bactrocera dorsalis*, Methyl eugenol, Mango orchards

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Mango (*Mangifera indica* L.) belongs to the family Anacardiaceae and is one of the most popular fruit crops in the tropical and sub tropical region of the world. It is considered as the national fruit of India and is said to have originated in the Indo-Burma region (Mukherjee, 1958). Mango is commercially grown in more than 87 countries of the world, but India ranks first with respect to both area (10.63 million hectares) and production (10 million tones) (Cheema *et al.*, 1954). Though India is the largest producer of mango in the world, it exports less than one per cent of the produce mainly due to quarantine problems. Fruit fly is one of the important Tephritids in the tropics, which causes extensive damage to fruits. 129 species of fruit flies have been reported from India (Kapoor, 1993). Most common species of fruit fly infesting mango fruits are *Bactrocera dorsalis* Hendel, *Bactrocera correcta* Bezzi, *Bactrocera zonata* Saunders (Verghese and Sudha Devi, 1998). Early cultivars and hybrids of mango were less susceptible to fruit fly infestation, mid-maturing cultivars and hybrids were moderately susceptible and late-maturing cultivars and hybrids were most susceptible (Chatterjee *et al.*, 2006). These findings have opened new avenues in evaluating mango genotypes for

fruit fly resistance. Hence, present studies were made on incidence of fruit fly (*Bactrocera* spp.) in different mango orchards and varieties.

## RESEARCH METHODS

### Field study:

The field experiment was conducted during first fortnight of February, 2008 in mango orchard at Srinivasapur, Kolar. Four different mango orchards were selected for the experiment, which are presented below :

- Alphonso mango orchard
- Mallika mango orchard
- Baneshan / Banganpalli mango orchard
- Mixed mango orchard .

In these orchards the activity of fruit fly was monitored and recorded by placing the traps from flower initiation up to fruit harvest. The methyl eugenol imbibed traps (supplied by the Company: Bio-Pest Management Pvt. Ltd.) were used and changed at every 2 month interval. The activity of the fruit fly during different stages of flowering with respect to fruit growth was studied.

**Laboratory study:**

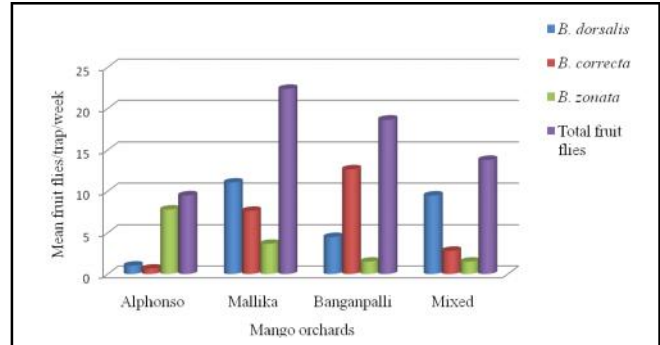
The lab experiment was conducted during first fortnight of June, 2008 at Research Laboratory, Department of Horticulture, University of Agricultural Science, Bangalore. The six mango varieties selected for the study are given below:

- Alphonso
- Mallika
- Raspuri
- Totapuri
- Dashehari
- Amrapali

The varieties are being grown in the mango orchards in a compact “A” block at G.K.V.K campus were sampled at fruit harvesting stage and observed for fruit fly infestation. The collected sample fruits under each varieties were kept in a polythene cover and observed for fruit fly maggot emergence and pupation in laboratory conditions.

**RESEARCH FINDINGS AND DISCUSSION**

Highest number of *B. dorsalis* was recorded in Mallika mango orchard followed by the Mixed orchard with the mean trap catches of 11.06 and 9.48 fruit flies / trap / week, respectively, while highest trap catches of *B. correcta* (12.66 fruit flies / trap / week) and *B. zonata* (7.82 fruit flies / trap / week) was recorded in Banganpalli and Alphonso orchard, respectively. When the total fruit flies were considered, highest number of fruit flies were trapped in Mallika orchard followed by Banganpalli with the mean trap catches of 22.38 and 18.65



**Fig. 1 : Monitoring the incidence of fruit fly using methyl eugenol traps in different mango orchards**

fruit flies / trap / week, respectively. The next best higher trap catches were found in mixed orchard. While lowest number of trap catches were recorded in Alphonso orchard (Table 1 and Fig. 1).

Present results endorse the findings of Kalia and Srivastava (1992) who concluded that fruits of ‘Amrapali’ were less susceptible to *Bactrocera dorsalis* than those of ‘Mallika’ in the field. Highest damage (56.6 %) was recorded in fully ripe, dropped fruit of ‘Mallika’ followed by ‘Totapari’ (37.8 %) by Singh *et al.* (2008). The present results are also in line with the findings of Abraham Verghese *et al.* (2002) who observed that fruit fly infestation were significantly higher in cultivar Banganpalli and Totapuri.

However, Godse and Bhole (2002) and Sushil Kumar *et*

Table 1 : Monitoring the incidence of fruit fly using methyl eugenol traps in different mango orchards				
Mango orchards	Mean trap catches/week			Total fruit flies
	Species			
	<i>B. dorsalis</i>	<i>B. correcta</i>	<i>B. zonata</i>	
Alphonso	1.02 (1.21)	0.66 (1.05)	7.82 (2.83)	9.5 (3.65)
Mallika	11.06 (3.25)	7.66 (2.80)	3.66 (2.01)	22.38 (4.52)
Banganpalli	4.49 (2.10)	12.66 (3.58)	1.50 (1.41)	18.65 (4.38)
Mixed	9.48 (3.15)	2.82 (1.72)	1.50 (1.41)	13.80 (3.80)
S.E. ±	0.52	0.70	0.60	0.82
C.D. (P=0.05)	1.02	1.63	1.08	1.22

Figures in parentheses indicates transformed value ( $\sqrt{X+0.5}$ )

Table 2 : Evaluation on maggot emergence in different mango varieties	
Mango varieties	Mean no. of maggot emergence / fruit
Alphonso	0.60 (1.03)
Mallika	1.40 (1.36)
Raspuri	0.60 (1.03)
Totapuri	0.40 (0.95)
Dashehari	0.00 (0.05)
Amrapali	1.00 (1.20)
S.E. ±	0.21
C.D. (P=0.05)	0.62

Figures in parentheses indicates transformed value ( $\sqrt{X+0.5}$ )

al. (2002a) observed highest infestation of fruit fly in cultivar 'Alphonso'. Similarly Kumar *et al.* (1994) found that 'Alphonso' suffered the most significant damage due to the infestation of fruit fly (*Bactrocera correcta*).

Highest emergence of maggot was recorded in cv. Mallika (1.40 maggot / fruit) followed by Amrapali (1.00 maggot / fruit). The cultivar Alphonso and Raspuri recorded equal number of maggot and the lowest emergence of maggot was found in Totapuri. While there was no emergence of maggot in Dashehari (Table 2 and Fig. 2).

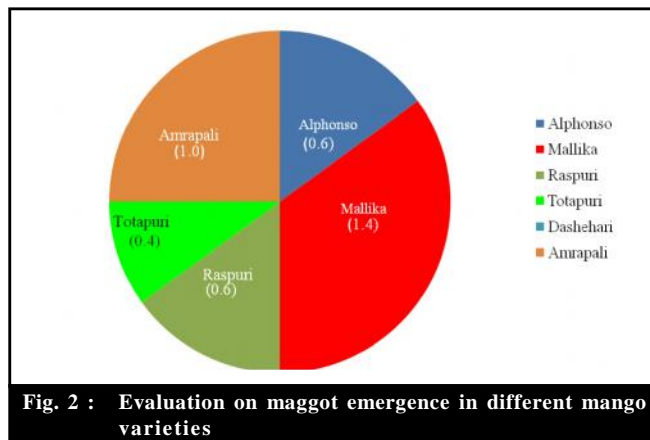


Fig. 2 : Evaluation on maggot emergence in different mango varieties

The present results are in conformity with the reports of Kalia and Srivastava (1992) who observed that number of oviposition punctures per fruit was highest in 'Mallika' and 'Bangalora' followed by 'Amrapali' and 'Dashehari'. The average number of eggs oviposited per ovipuncture was highest in 'Mallika' followed by 'Bangalora' 'Amrapali' and 'Dashehari'.

Highest number of fruit flies were trapped in Mallika orchard followed by Banganpalli with the mean trap catches of 22.38 and 18.65 fruit flies / trap / week, respectively. While the lowest trap catches were recorded in Alphonso orchard. Evaluation on maggot emergence in different mango varieties showed highest emergence of maggot was recorded in cv. Mallika (1.40 maggot / fruit) followed by Amrapali (1.00 maggot

/ fruit).

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