

## Field Evaluation of Methyl Eugenol Traps for Controlling Mango Fruit Flies [*Bactrocera dorsalis* (Hendel)] in Homesteads

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### INTRODUCTION

Mango (*Mangifera indica*) is the most common popular fruit tree in homesteads of Kerala especially Alleppey district. The State owns certain traditional varieties with good aroma and taste. The fruit crop is infested by more than forty five insect pests (Nair, 1999). Fruit fly, [*Bactrocera dorsalis* (Hendel)] is the major pest, attacking fully matured and ready to ripe fruits. 20–30% loss to produce was recorded due to fruit fly attack (Kalloo, 2005). The adult female flies oviposit their eggs just underneath the skin of fruits and developing maggots will feed on the sweet pulp remaining within. Fully matured maggots pupate in soil. Spraying chemicals on trees, standing near to residence and water bodies is difficult as it will cause direct contamination. The botanical method of management was also found difficult as raw material availability is very scarce during the flowering/fruited period.

Testing of different fruit fly control measures was done during 2005-06 in Chingoli Panchayath through a farmer participatory approach under technical supervision of KVK-Alleppey. A preliminary study was conducted to record the present status of pest attack, damage and other socio-economic status of the participants. Fifteen farm families were selected in a ward comprising of 5 ha land and different management packages were followed. Spraying the trees with Malathion 0.1% + 2% sugar/jiggery, setting up of Ocimum and Methyl eugenol traps (ME) were adopted. ME trap was prepared by impregnating plywood blocks of size 5 × 5 × 0.9 cm in a solution of ethyl alcohol, methyl alcohol and

malathion in a ratio of 6:4:1 for two weeks and shade dried for another two weeks. The treated blocks were hung inside a plastic bottle with 5 × 5 cm size windows on opposite sides and one trap was set for 3-4 trees. 20 g *Ocimum* leaves were crushed to extract juice and the juice + waste were taken in a coconut shell to which 3 g carbofuran 3 G and 10 g jaggery/sugar were added. Four traps were tried per fruiting tree.

The study showed that ‘Kilichundan’ variety recorded 75.25% damage by fruit fly followed by Neelum (67.67) and Moovanadan (60.88) (Table 45.1). The local traditional variety (‘Nadan’) characterized by peculiar aroma, taste, high fibre content and thick fruit rind showed least damage percentage by the pest (25.5). Eleven different varieties of mangoes were selected from the study area, each having its own taste and aroma. The variation in damage on different varieties may be due to sweetness, fruit rind thickness and fibre content of fruit.

**Table 45.1.** Fruit fly damage on different varieties recorded in participatory appraisal

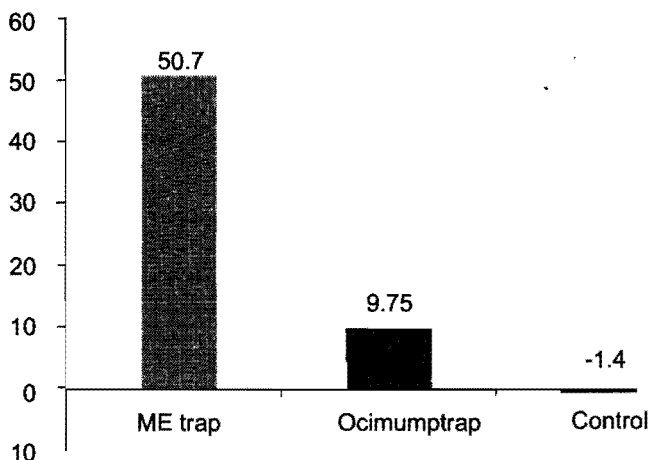
Sl. No.	Variety	Average percentage of damage
1.	Vellari	63.0
2.	Moovanadan	60.88
3.	Pandi	30.0
4.	Nadan	25.5
5.	Neelum	67.67
6.	Kilichundan	75.25
7.	Appies	30.0
8.	Karpooram	50.0
9.	Perakka	25.0
10.	Salem	35.0
11.	Kappa	40.0

It was found that ME trap caught maximum number of flies (26.55) compared to *Ocimum* trap (6.45) (Table 45.2). ME trap persisted in the field for 90 days where as *Ocimum* traps lasted for only 4.5 days. ME traps lasted for one mango season and hence replenishing of traps could be avoided.

Plots with ME trap recorded 51.42% fruit damage before the treatment which got reduced to 25.46% after the treatment (Table 45.3). ME traps showed 50.27 % reduction in attack (Fig. 45.1). *Ocimum* trap plots recorded 52.8 and 47.65% damage before and after the treatments respectively, while control plots showed an increase in damage (1.4%).

**Table 45.2.** Average fruit fly catch in different traps

Treatments	1MAS	2MAS	3MAS	Average fly/trap/week
M.E. trap	6613	2502	1400	26.55
<i>Ocimum</i> trap	1808	1330	343	6.45

**Fig. 45.1.** Percentage reduction in fruit damage after the trial**Table 45.3.** Effect of different treatments on fruit damage by fruit fly, *Bactrocera dorsalis* in mango

Treatments	Percentage of fruit damage	
	Before	After
ME trap	51.42	25.46
<i>Ocimum</i> trap	52.80	47.65
Control	57.30	58.10

The reduction in fruit damage was more with ME traps when compared to *Ocimum* traps. It may be due to the strong male annihilation by the ME traps and its persistency over the other traps tested. Similar observations were recorded by Thomas *et al.*, (2005) and Patel *et al.*, (2005).

The farmers were given a chance to appraise the effect and various aspects of the test traps. They ranked various aspects like the cost effectiveness, availability, efficacy, etc. based on their experience (Table 45.4). Farmers gave top rank for ME trap in their catching ability, followed by the efficacy of ME traps. The last rank was given to the cost of traps and availability of ME traps.

## CONCLUSIONS

The study on fruit fly management using ME traps showed that use of one ME trap in homesteads with 3-4 mango trees is sufficient in reducing fruit damage. Festival season coupled with summer which coincides with flowering season of mango cuts the availability of *Ocimum* leaves. Use of ME traps along with other cultural measures of pest control such as raking up of soil and proper sanitation/disposal of affected fruits will lead to a non chemical alternative for fruit fly management in mango. The use of traps was found to be a farmer friendly, eco-safe method which suitably fit into the eco-friendly pest management practice against fruit fly.

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## *References*

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