
**EFFECTIVENESS OF SEX ATTRACTANTS IN COMBINATION WITH
VARIOUS DISPENSERS AGAINST MELON FLY IN PUMPKIN**

CHAUDHARY*, F. K. AND G. M. PATEL

Krushi Vigyan Kendra
Sardarkrushinagar Dantiwada Agricultural University
DEESA - 385 535 Dist. Banaskantha, Gujarat, INDIA

E-mail : fk_43@yahoo.co.in

ABSTRACT

Field experiment conducted to study the efficacy of Cue-lure and methyl eugenol alone and their mixture (1:1) in combination with various dispensers viz., Cotton swab and Nuwood block. Bacu-lure septa were tested as separate treatment. Nuwood block as a dispenser attracted highest number of males of *B. cucurbitae* when impregnated with Cue-lure mixed with methyl eugenol followed by Cue-lure alone as compared to cotton swab and Bacu-lure septa. The order of effectiveness was Nuwood block > Cotton swab > Bacu-lure septa. Hence, Nuwood block can be recommended as best dispenser for sex-lure. Moreover, the mixture of Cue-lure and methyl eugenol (1 : 1) attracted nearly double number of males of *B. cucurbitae* than their individual attraction which indicated that methyl eugenol might be enhancing the efficacy of Cue-lure as sex attractant. Thus, Patel Fruit Fly Trap (PFT) having Nuwood block impregnated with mixture of Cue-lure and Methyl eugenol (1 : 1) is recommended for mass trapping of male of *B. cucurbitae*.

KEY WORDS : Dispenser, Cue-lure, Nuwood block, Melon fly,

INTRODUCTION

Fruit fly belonging to family Tephritidae order Diptera is the most important pest of cucurbitaceous fruits and vegetables. Due to their close association with fruits and vegetables, these are commonly known as "Fruit fly." These are mostly dominant in tropical and sub-tropical areas. Presently, there are 199 species of fruit flies known to occur in India.

Among these melon fly, *Bactrocera cucurbitae* Coquillett is common in cucurbits and also known as cucurbit fruit fly. The female fruit fly inserts the ovipositor under the rind of the green and tender pumpkin fruit about 2 mm deep, lays the eggs singly or in a cluster of 5 to 10, which can be readily recognized by the formation of a brown resinous deposit. In India, more than 50 per cent of cucurbits were partially or completely damaged by the fruit fly (Narayanan and Batra, 1960). Patel (1974) recorded 62.50 per cent fruit damage in bitter gourd by fruit fly Junagadh district of Gujarat state. Cue lure is a sex attractant for *B. cucurbitae*. Various types of dispensers are used to be impregnated with Cue lure for trapping fruit fly. For developing suitable integrated management strategies and also to reduce the over reliance on frequent insecticidal application in cucurbits, the study was undertaken to test the different kinds of dispensers which can be effective in mass trapping of this notorious pest.

MATERIALS AND METHODS

Field experiment conducted to study the efficacy of Cue-lure and methyl eugenol alone and their mixture (1:1) in combination with various dispensers viz., Cotton swab and Nuwood block. Bacu-lure septa were tested as separate treatment. To study the effectiveness of sex attractants, Methyl eugenol (ME) and Cue lure (CL) in combination with various dispensers, seven treatments were selected as T1 : Bacu-lure septa (BLS), T2 : CL (4 drops) impregnated cotton swab (CLCS), T3 : CL (4 drops) impregnated Nuwood block (CLNB), T4 : ME (4 drops) impregnated cotton swab (MECS), T5 : ME (4 drops) impregnated Nuwood block (MENB), T6 : CL + ME (4 + 4 drops) impregnated cotton swab (CLMECS) and T7 : CL + ME (4 + 4 drops) impregnated Nuwood block (CLMENB). Each treatment was replicated four times. The dispensers impregnated with different sex attractants were placed in Patel Fruit Fly Traps (Patel and Patel, 1996). The traps were hanged in pumpkin field (1.4 ha.) at the time of 50 per cent flowering one feet above the crop canopy during *rabi*, 2002 and 2003. The traps were charged with Cue-lure and Methyl eugenol after one month as the case may be. The Bacu-lure septa were also replaced at same interval. Total number of fruit fly entrapped in different traps was recorded at week interval in each trap. The male flies entrapped were sorted out. The data were subjected to statistical analysis to draw a valid conclusion.

RESULTS AND DISCUSSION

The results pertaining to the number of male flies of *B. cucurbitae* attracted in different treatments differed significantly during 2002, 2003 and also in pooled analysis (Table 1).

During *rabi* 2002, maximum number of male flies (1778) were attracted to the treatment of CLMENB and it was followed by CLMECS (1118 males), CLNB (902 males) and CLCS (594 males). The treatment of BLS attracted minimum (561) males of *B. cucurbitae* but remained at par with CLCS. Similarly, during second year maximum number of male flies (1418) was trapped in the trap having CLMENB treatment, which was followed by CLMECS (920 males), CLNB (722 males) and CLCS (493 males). The treatment BLS attracted minimum number of male flies (455) of *B. cucurbitae*, however, it was at par with CLCS. The pooled results of two years experiment exhibited the same trend. Treatment of CLMENB attracted maximum number of male flies (1593), which was followed by CLMECS (1017), CLNB (810) and CLCS (542). The treatment of BLS attracted minimum number of male flies (507) of *B. cucurbitae* and remained at par with CLCS. The Y x T interaction was non-significant indicating consistency of efficacy of treatments over year.

From the overall results, it can be inferred that Nuwood block as a dispenser attracted higher number of males of *B. cucurbitae* when impregnated with Cue-lure alone or in combination with methyl eugenol as compared to cotton swab and Bacu-lure septa. The order of effectiveness was Nuwood block > Cotton swab > Bacu-lure. Hence, Nuwood block can be recommended as the best dispenser for Cue-lure. Moreover this, mixture of Cue-lure and methyl eugenol in the ratio of 1 : 1 attracted the males of *B. cucurbitae* nearly more than double to its individual attraction which indicated that methyl eugenol might be enhancing the efficacy of Cue-lure as sex attractant. Patel Fruit Fly Trap (PFT) having Nuwood block impregnated with mixture of Cue-lure and Methyl eugenol (1 : 1) is recommended for mass trapping of male of *B. cucurbitae*. In past, Liu (1993) tested the mixture of Cue-lure with various ratios of methyl eugenol against fruit fly in sponge gourd and observed higher catches of males of *B. cucurbitae* as compared to Cue-lure alone. Similarly, significantly higher catches of male flies of *B. cucurbitae* were observed when Cue-lure and methyl eugenol were used together in the ratio of 1:1 than its individual catches at Sardarkrushinagar, north Gujarat conditions (Anon., 2003).

Thus, the results of present investigations are in accordance with that reported by earlier workers.

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Table 1. Number of males of *B. cucurbitae* attracted to different combinations of sex attractants and dispensers

Sr. No	Treatments	Number of males attracted*		
		2002	2003	Pooled
1.	Bacu-lure septa (BLS)	23.69** (561)	21.34 (455)	22.51 (507)
2.	Cue-lure in cotton swab (CLCS)	24.37 (594)	22.21 (493)	23.29 (542)
3.	Cue-lure in Nuwood block (CLNB)	30.04 (902)	26.88 (722)	28.46 (810)
4.	Methyl eugenol in cotton swab (MECS)	00.71 (00)	00.71 (00)	00.71 (00)
5.	Methyl eugenol in Nuwood block (MENB)	00.71 (00)	00.71 (00)	00.71 (00)
6.	Cue-lure + Methyl eugenol in cotton swab (CLMECS)	33.44 (1118)	30.34 (920)	31.89 (1017)
7.	Cue-lure + Methyl eugenol in Nuwood block (CLMENB)	42.17 (1778)	37.66 (1418)	39.91 (1593)
	S. Em. $\pm$ T	0.79	0.87	0.84
	Y x T	-	-	0.83
	C. D. at 5 % T	2.33	2.59	2.89
	Y x T	-	-	NS
	C. V. %	7.09	8.74	7.88

- Total of 8 observations

** Figures are $\sqrt{X + 0.5}$ transformed values, while those in parentheses are retransformed values