

## Estimation on Yield Losses in Cucumber Due to Fruit Fly, *Bactrocera cucurbitae* (Coquillet)

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### SUMMARY

Studies on estimation of yield losses of cucumber due to fruit fly, *Bactrocera cucurbitae* revealed that 13.20 per cent fruit infestation was recorded in treated plots while untreated plots recorded 25.73 per cent fruit infestation. The fruit yield obtained from the treated plots was 7414.67 kg/ha, while in untreated plots, it was only 4545.93 kg/ha. The results clearly indicated that the effective insecticides (fenthion 0.1% and malathion 0.1%) against the fruit fly, *B. cucurbitae* infesting cucumber, 2868.74 kg/ha fruit yield with 38.69 per cent avoidable yield loss can be saved by application of these insecticides applied alternatively starting from fruit formation to the fruit maturity.

### Key words :

Yield losses, cucumber, Fruit fly, *Bactrocera cucurbitae*

Fruit fly, *Bactrocera cucurbitae* is one of the important insect pest of Cucurbitaceae vegetables throughout India. It has been found to cause 30 to 100% loss in yield. Cucurbitaceous fruits are severely damaged either partially or totally rendering them unfit for human consumption by the pest. The fruits are damaged by the maggots as the female fly lay eggs in the tissues of fruits. The maggots feed on flesh and look like rotten fruits. The fruit fly also oviposits in tender plant tissues such as terminals, unopened flowers, young stems, roots, and seedling. This may result in the death of the plant. Due to the heavy damage caused by this pest, attempts were therefore, made to estimate the yield losses caused due to infestation of fruit fly on cucumber during summer season in Gujarat State as such type of work had been not carried out in this State.

### MATERIALS AND METHODS

The studies on estimation of yield losses due to infestation of fruit fly, *B. cucurbitae* on cucumber cv. Green gold was carried out in the field condition at Research Farm, College of Agriculture, Junagadh Agriculture University, Junagadh (Gujarat) during summer season of 2007 in a randomized block design. The seeds were sown in a plot size (gross) 6.00 m x 4.50 m with a spacing 1.50 m x 60 cm. All the recommended agronomic practices were also adopted. Two treatments (treated and

untreated) were replicated fifteen times. In untreated plots, the crop was kept free from insecticides and subjected to the natural infestation of the pest, while the crop was protected against the cucumber fruit fly by application of fenthion 0.1% and malathion 0.1% alternatively at weekly interval starting from fruit formation to fruit maturity as they are recommended by the various workers at various places for the control of this pest. The yield of cucumber fruits obtained from treated and untreated plots was recorded. Similarly, number of infested and uninfested fruits was also recorded.

The yield increased in treated plots over the untreated (control) and avoidable loss was worked out by using the formula given by Pradhan (1969).

$$\text{Yield increased (\%)} = 100 \times \frac{T - C}{C}$$

$$\text{Avoidable yield loss (\%)} = 100 \times \frac{T - C}{T}$$

where,

T = Yield from treated plots (kg/ha)

C = Yield from control plot (kg/ha)

### RESULTS AND DISCUSSION

The yield loss studies were carried out by using the method that basically involved a comparison of two plots. In one set of

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**Table 1 : Loss of yield in cucumber due to fruit fly, *B. cucurbitae***

Sr. No.	Treatments	Fruit infestation (%)	Fruit yield (kg/ha)	Yield loss (kg/ha)	Avoidable yield loss (%)	Yield increased over control (%)
1.	Untreated (Unprotected)	30.47* (25.73)	4545.93	2868.74	38.69	-
2.	Treated (protected)	21.27 (13.20)	7414.67	-	-	63.10
	S. E. $\pm$	0.43	77	-	-	-
	C. D. (P=0.05)	1.32	236	-	-	-
	C. V. %	8.67	5.04	-	-	-

\* Arcsin transformed value.

Figures in the parentheses are retransformed values.

treatment, the crop was protected from the fruit fly by applying fenthion 0.1% and malathion 0.1%, whereas in another set the crop was allowed to the attack by fruit fly. The data on infested fruits, healthy fruits and yield of cucumber were recorded from protected and unprotected plots (Table 1).

#### ***Fruit infestation and yield loss***

The data (Table 1) revealed that 13.20 per cent fruit infestation was recorded from treated (protected) plots. While, in case of untreated plots, significantly higher fruit infestation (25.73 per cent) was recorded. The data also revealed that a significantly higher fruit yield of 7414.67 kg/ha was recorded from protected plots, while the fruit yield of 4545.93 kg/ha was recorded from unprotected plots. The yield increase in protected plots over unprotected plots was 2868.74 kg/ha (63.10%) and the avoidable loss was 38.69 per cent.

Borah (1996) reported that the highest yield of cucumber (87.4 q/ha) with 27.6% fruit damage was

observed by giving the insecticidal treatment in hill zone of Assam.

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#### **REFERENCES**

- Borah, R. K.** (1996). Influence of sowing seasons and varieties on the infestation of fruit fly, *Bactrocera cucurbitae* (Coquillett) [*Dacus cucurbitae* (Coquillett)] in cucumber in the hill zone of Assam. *Indian J. Ent.*, **58**(4): 382-383.
- Pradhan, S.** (1969). *Insect Pests of Crops*. National Book Trust. New Delhi, India. pp. 80.

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