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## Effect of Cucurbit Intercropping and the Number of Sprays of Dipterex 80sp Against Fruit Fly Complex on Bittergourd (*Momordica charantia* L.) at D.I. Khan District

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**Abstract:** Squash and bittergourd intercropping significantly reduced the attack of fruit fly on bittergourd as compared to the control. Other cucurbits (musk melon and cucumber) when intercropped with bittergourd had no negative effect on the bittergourd infestation by fruit fly, as 71.65 and 75.00 percent infestation was statistically similar to 78.33 percent. Considering all aspects, two sprays of Dipterex 80SP at an interval of 14 days, proved to be the best number for controlling the bittergourd infestation by the fruit fly.

**Keywords:** Bittergourd, Intercropping, Fruit fly, Spray Number, Dipterex 80SP

### Introduction

Bittergourd/Balsam pear (*Momordica charantia*), family: Cucurbitaceae, is one of the most popular vegetables of Pakistan. It is rich in iron and Vitamin C content. The fruit is considered vermifugal and a cure for stomach disorders. Extracts are used to cure rheumatism and disorders of liver and spleen and also control diabetes (Marwat and Baloch, 1986).

Fruit fly complex is very important because it inflicts heavy loss to this crop. The fruit is attacked in the early stage of maturity which fails to develop. The larvae/maggots feed inside the fruit, pollute the pulp and render it unfit for human consumption. Adults feed on honey dew and other resinous material. They lay eggs just underneath the skin of the fruit (Paradhan, 1969).

Intercropping, a useful cultural practice, is usually employed for minimizing the attack of insect to the major crop. The non judicious use of agrochemicals has lead to a number of problems viz. the environmental pollution, development of pest biotypes, pest resurgence, and secondary pest outbreak, etc. So it is a common trend these days to minimize the number of sprays and utilize the host plant resistance in crop management.

### Materials and Methods

Two experiments to evaluate the effect of cucurbits intercropping with bittergourd on fruit fly complex, and the number of sprays of Dipterex 80SP on bittergourd infestation by fruit fly were conducted at the farm of Agriculture Faculty, Gomal University, D.I. Khan during Kharif season 1999. Both the trials were laid under simple Randomized Complete Block Design (RCBD). Each treatment was replicated three times. All the agronomic practices for both the experiments were maintained uniform. Total number of plants per plot were 20. Plants of both the trials were protected from the attack of red pumpkin beetle by dusting Sevin 10D. The data were recorded at the time of picking and converted to percent infestation of bittergourd by fruit flies as:

No. of infested fruitx100/Total fruit of bitter gourd. Data were analyzed statistically and treatment means separated by LSD test.

**Experiment no. 1 Intercropping:** Bittergourd was intercropped with squash, sponge gourd, and cucumber to see the cucurbit intercropping had any effect on fruit fly attack on bittergourd. In this trial, there were four treatments i.e. Bittergourd alone, Bittergourd + Musk melon, Bittergourd + Cucumber and Bittergourd + Squash. The cucurbits were distributed randomly. Each treatment was replicated three times.

**Experiment no. 2 Number of sprays:** In this experiment Dera Local/Desi variety of bitter gourd was sown. All the bittergourd plants except those in the check plots were given 1 spray of Dipterex 80SP at the appearance of fruit fly. Spraying was

conducted at fruiting stage of the bitter gourd. The presence of fruit fly in the field was confirmed by installing pheromone traps of Methyl eugenol and Cue lure in the vicinity of the field. After 14 days of spray, the plots except the check and the plots assigned for 1st. spray were sprayed again. Finally, only the plots with 3rd spray were treated with Dipterex 80SP. The recommended dose of Dipterex was followed in this experiment.

### Treatments

First spray = After fruit setting and fruit fly sight  
Second spray = 14 days after the first spray  
Third spray = 14 days after the second one  
Check plot = Without any spray  
No. of replications = 3  
Design = RCBD (Simple)

### Results and Discussion

The attack of fruit fly on the bittergourd was significantly reduced when squash was intercropped with bittergourd (Table 1). The infestation of bittergourd by fruit fly in other treatments was almost similar to that of the control, as 78.33 percent infestation in control plot was statistically non significant to 75.00 and 71.67 percent in the plots where cucumber + bittergourd and musk melon + bittergourd, respectively, were intercropped. These results are in line with those of Khan *et al.* (1989).

Table 1: Effect of Cucurbit Intercropping on the Bittergourd Infestation by Fruit Fly Complex in D.I.Khan District

Treatments	Percent Infestation of Bittergourd
Bittergourd Alone (Control)	78.33 a
Musk Melon + bittergourd	75.00 a
Cucumber + bittergourd	71.67 a
Squash + bittergourd	30.00 b
LSD value = 9.418	

Means with similar letters are not significantly separated at alpha = 0.050 percent

Table 2: Effect of Different Spray Number of Dipterex 80sp on the Bittergourd Infestation by Fruit Fly Complex in D.I.khan District

Spray No. of Dipterex 80SP	Percent Bittergourd Infest
No Spray (Control)	78.33 a
One Spray	31.67 B
Two Sprays	05.00 C
Three Sprays	04.66 C
LSD value = 11.18	

Means with similar letters are not significantly separated at alpha = 0.050 percent

**Begum *et al.*: Bittergourd fruit fly, Intercropping, Control.**

Dipterex 80SP efficiently reduced the fruit fly infestation as 4.66, 5.00 and 31.67 percent infestation in the plots treated with three, two, and one sprays, respectively, were significantly lower than 78.33 percent infestation in the control (Table 2). Two sprays and three sprays were almost identical in their effect, but significantly better than one spray. Considering all aspects (economics involved, environmental pollution, health hazards, and biotypes development), two sprays were better than all the other spray numbers.

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