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Varietal Resistance and the Effect of Number of Sprays of Dipterex 80sp Against Fruit Fly Complex on Cucumber (*Cucumis sativus* L.)

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Abstract: Few varieties of Cucumber and Number of sprays of Dipterex 80SP were evaluated against fruit fly complex on cucumber (*Cucumis sativus* L.). All the tested cucumber varieties (Local/Desi, Royal Silos and Khira L green) did not show any satisfactory resistance against *Bactrocera* spp. However, Local/Desi variety ranked first in reducing fruit fly infestation followed by Royal Silus and Khira L green, as 36.00% in Desi variety was significantly lower than 52.00 and 70.00% infestation in Royal Silus and Khira L green, respectively. Two to three sprays of Dipterex 80SP, although statistically similar in reducing the fruit fly infestation, were significantly better than one spray and the control treatment.

Key words: Cucumber, varieties, insecticides

Introduction

Cucumber (*Cucumis sativus* L.), family Cucurbitaceae is an important Kharif vegetable crop of Indo-Pak subcontinent. Cucumber is grown mostly in home gardens for salad and pickles. Cucumber of DIKhan district is popular for its fine quality and distinctive taste. Fruit fly (*Bactrocera* spp.) and red pumpkin beetle (*Aulacophora foveicollis* Lucas) are serious pests of cucumber and regular threat to discourage growers in D.I. Khan (Rehman, 1994). The fruit fly lays eggs in the tender fruit. The larvae (maggots) hatch in a week time they bore into the pulp of fruit and form larval galleries. The fruit subsequently rots. The young Cucumber fruit sometimes gets badly distorted. Larvae in the final instar, come out of the fruit and pupate in the surrounding soil. Usually the pupation occurs close to the rotten fruit, so that the pupae could remain in humid medium. Adults emerge in a week during rainy season and 3-4 weeks in the Winter. Preoviposition period lasts for 14 days (Pardhan, 1969). During the crop season, melon fruit fly causes 20-75% damage to the crop, but in epidemic form it destroys the whole crop resulting in substantial loss to the farmers (Rehman, 1994).

This insect pest is usually controlled by synthetic insecticides. The irregular use of these insecticides increase the chances of health hazards, environmental pollution and resistance development. Efforts have been made to develop resistant varieties of this vegetable to minimize the use of synthetic insecticide. Therefore, an experiment was designed to evaluate the most reasonable spray numbers of Dipterex 80SP which protect cucumber from the attack of fruit fly and to screen out the most resistant variety of cucumber against fruit fly complex in D.I. Khan (Begum *et al.*, 2000).

Materials and Methods

Two experiments were conducted in the farm of Agriculture Faculty, Gornal University, Dera Ismail Khan to evaluate; i. The most resistant variety of cucumber against the fruit fly complex and ii. To see the effect of number of sprays of Dipterex 80SP on the fruit fly infestation. Both experiments were laid under simple Randomized Complete Block design where each treatment was replicated three times. Cucumber was sown on ridges in "tar wattar" condition on February 25. The row to row and plant to plant distances were 1.5 m and 45 cm, respectively. All other agronomic

practices for both the experiments were maintained uniform. Two to three seeds per hill were sown to enhance emergence of seedling. Thinning was done soon after seedling emergence. The plot size was 5 × 3 sq.m. and the number of plants per plot were 20. The Cucumber plants of both the experiments were protected from red pumpkin beetle by dusting Sevin 10D (1.00%). The data of percent fruit infestation by the fruit fly complex were recorded at the time of fruit picking and subjected to statistical analysis.

Experiment 1

Varietal resistance: Three varieties namely Local/Desi, Indian (Khira L green) and Holland (Royal Silus) were sown. As the Cucumber crop reached maturity, the ripe fruit were picked at alternate days. The fruit were incised for the presence of maggots. The infestation percentage of Cucumber was calculated by the following formula.

Infested fruit × 100/Total fruit.

Average infestation was calculated when the crop was over. The infestation percentage data were analyzed statistically and the means were separated by using LSD test.

Experiment 2

Number of sprays of dipterex 80sp: In this experiment Holland variety (Royal Silus) was grown. All the plots except the control one were sprayed with Dipterex 80SP at its recommended dose (400 g/acre). Leaving the control arid plot assigned for one spray, the other plots were sprayed again after 14 days of the first spray. Finally, after 14 days of the second spray, the remaining plots were sprayed 3rd time.

Data of fruit infestation by fruit fly were taken at the time of fruit picking to evaluate the effect of the number of sprays of Dipterex 80SP. It was then analyzed by analysis of variance and means were separated by using LSD test.

Results and Discussion

Experiment 1

Varietal resistance: All the tested varieties did not show a satisfactory resistance against fruit fly, however, the Desi variety was less infested by fruit fly, as the 36.00% of the

Desi variety was significantly less than the 52.00% in Royal Silus (Table 1). Khira L green was the least resistant variety with 70.00% infestation which was significantly more than the other two test varieties. The resistance ability of the Desi variety may be due to more stiff hair on fruit (antixenosis) in young stage which might have inhibited the oviposition of the fruit flies.

Table 1: Percent infestation of cucumber fruit by fruit fly complex

Varieties	Percent infestation
LOCAL/DES1	36.00 C
ROYAL SILUS	52.00 B
KHIRA L GREEN	70.00 A

LSD value = 15.38 at 5% level of significance

Experiment 2

Number of sprays of dipterex 80sp: All the spray number significantly reduced the fruit fly infestation than the check plot. A single spray of Dipterex 80SP was good enough to save the Cucumber crop from the attack of fruit fly complex by 86.33%. Two times applications of the insecticide with an interval of 13 days (application given at 18th and 31st March), the infestation was reduced to 7.33%. This was significantly less than fruit infestation in the plots treated once. The Cucumber infestation by the fruit fly in the treatment treated three times with the insecticide was 6.00% and at par with that of two spray and hence third spray may not be advisable (Table 2).

Bhatti (1981) found Dipterex 80SP at 0.1% concentration better than Hostathion and Anthio on apricot against fruit fly when 1, 2 and 3 sprays at the time interval of 36, 24 and 12 days before maturity of the crop were used. Results of Begum *et al.* (2000) were also similar to the results of the present studies.

Table 2: Effect of number of sprays of dipterex 80sp on percent Infestation of cucumber by fruit fly complex

No. of sprays	Infestation of cucumber fruit (%)
0 (Control)	52.33 A
1 Spray	13.67 B
2 Sprays	07.33 C
3 Sprays	06.00 C

LSD Value = 04.14 at 5% level of significance

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