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Chemical Control of Melon Fruit Flay (*Bactrocera cucurbitae*) (Coq) on Muskmelon (*Cucumis melo* L.) by Malathion and Dipterex in D.I. Khan

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Abstract: The results reveal that Dipterex with molasses was found most effective, followed by Malathion with molasses, Dipterex alone and Malathion alone at all of the three tested concentrations in the reduction of muskmelon fruit fly infestation. These treatments were found non significantly different from each others at all of the test concentrations, but were found significantly different from the control. High concentration of insecticides was found significantly more effective against melon fruit fly than low concentration. Lowest percent of infested muskmelon fruits were recorded in plots treated with three sprays of Malathion and Dipterex, while two sprays of these insecticides were also found significantly better in the reduction of the infestation at 1% concentration compared to one spray.

Key words: Muskmelon, fruit fly, *Bactrocera cucurbitae*, chemical control

Introduction

Muskmelon is mostly grown in kulachi, Tank and kacha areas (under river indus belt) of D.I. Khan Division. The area under melon crop during 1994 was 7978 hectares with production of 94139 tones. In NWFP the area under this crop during 1994 was 11725 hectares with production 140126 tones (Anonymous, 1994).

The crop is attacked by many insect pests namely, fruit flies, red pumpkin beetle, field crickets and aphids etc. Out of all these pests, melon fruit fly *Bactrocera cucurbitae* (Coq.) is the serious menace and regular threat to discourage the growers as it causes 20-75% damage to the crop and deprives the growers of their only source of income.

Keiser (1968) evaluated insecticides as foliar sprays for the control of melon fly *Dacus cucurbitae* in Hawaii between 1952 to 1960. According to him Fenthion, Parathion, Dieldrin, Dimethoate, Azinphosmethyle, Malathion, D. D. T., Ethane, Isodrin and Methoxychlor at appropriate rates were found most effective.

Manan and Khan (1970) stated that Dipterex 80 sp. was more effective, followed by Dimecron, Malathion and Anthio in the control of fruit fly on muskmelon.

Harris *et al.* (1971) applied Malathion, Nailed against melon fruit fly. They reported that Nailed caused more immediate mortality, while Malathion had longer residual effect against this pest.

Nawaz (1976) conducted a control trial against melon fruit fly at Dera Ismail Khan and found that three sprays of Dipterex (Trichlorfon) at the rate of 6% a.i. at the time of fruit first sight and subsequently at ten days interval, significantly reduced the pest infestation.

Hussain and Khan (1980) stated that Trichlorfon was the most effective insecticide in suppressing the pest infestation in muskmelon crop, followed by Malathion, Endosulfan and Dimethoate.

Chughtai *et al.* (1984) reported that out of eight tested insecticides, Carbicron at 600 g a.i./ha and Dipterex 1930 g a.i./ha were found most effective in the control of fruit fly *Dacus cucurbitae* larvae in muskmelon crop.

Agarwal *et al.* (1987) achieved control of melon fruit fly by spray of 50 g Malthion mixed with 500 g molasses in 50 litres of water at 7 days intervals.

Chughtai and Baloch (1988) reported that Carbicron and Dipterex gave significantly better control of melon fruit fly larvae under D.I. Khan conditions.

Qureshi *et al.* (1997) stated that two and three sprays were found significantly more effective compared to one spray in the control of fruit fly infestation of cucumber.

Materials and Methods

The experiment was conducted at the farm of Agricultural Faculty, Gomal University, D.I. Khan, during 1994, using Malthion, Malathion mixed with molasses, Dipterex and Dipterex mixed with molasses in three concentrations. The experiment was laid out in Randomized Complete Block design having three replications. Two seed of bukhara variety of muskmelon was sown per hill in sub-plot size 4 × 5 m², with row to row and plant to plant distance 180 and 60 cm, respectively. The plot size as kept 1020 m². All agronomic practices were done as per requirement equally in each treatment. The data were recorded on the basis of 20 fruits which were collected randomly at the harvesting stage. These fruits were dissected to determine the infested ones on the basis of presence/absence of fruit fly maggots in the pulp. The data were subjected to the statistical analysis and significance of differences among the treatments were tested by LSD test. An experiment was also conducted to determine the effect of different number of sprays of Malathion and Dipterex at 1% concentration on fruit fly infestation in the same manner as described in the above mentioned experiment. For this purpose different number (one, two and three) sprays were given to the muskmelon crop. The first spray of insecticides were done at the fruit setting time and the rest two sprays were applied at 10 days intervals. The data were analyzed statistically and significance of differences among the treatments were tested by LSD test.

Results and Discussion

The results (Table 1) recorded at low concentration show that Dipterex with molasses was found most effective in the control of muskmelon fruit fly. This was followed by Malathion with molasses, Dipterex alone and Malathion alone. All of the treatments were found non-significantly different from each others and were found significantly effective in the control of the pest compared to control plots.

The data obtained at medium concentration reveal that Dipterex with molasses reduced the fruit fly infestation in muskmelon crop to the extent of 5.33% followed by Dipterex alone, Malathion with molasses and Malathion alone. All of the treatments were found non-significantly different

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Table 1: Mean percent infestation of muskmelon by fruit fly at different concentration of insecticides applied alone and in combination with molasses

Insecticides	Concentrations		
	Low	Medium	High
Malathion	23.00 B	8.33 B	4.33 B
Malathion + Molasses	19.67 B	7.00 B	2.33 B
Dipterex	21.33 B	7.00 B	3.33 B
Dipterex + Molasses	19.00 B	5.33 B	1.00 B
Control	67.00 A	61.67 A	65.67 A

Mean followed by same letter(s) do not differ significantly from each other at 5% level of probability

Table 2: Mean percent infestation of muskmelon by fruit fly in the plots treated with one, two and three sprays insecticides (at 1% conc.)

Insecticides	Number of sprays		
	One	Two	Three
Malathion	66.33 A	44.67 B	26.00 C
Dipterex	54.67 A	41.00 B	21.67 C

Means followed by same letter(s) do not differ significantly from each other at 5% level of probability.

from the Check in the control of the pest.

At high concentration Dipterex with molasses was found most effective in the control of fruit fly infestation in muskmelon crop, followed by Malathion with molass, Dipterex alone and Malathion alone. All of these treatments were found non significantly different from each other and were significantly different from the check.

Over all results of the experiment reveal that dipterex with molasses was found most effective in the control of the pest, followed by malathion with molasses, Dipterex alone and Malathion alone. All of these treatments were found non significantly different from each other and were found effective in the control of the pest compared to the check.

As far as concentrations of the insecticides are concerned all the three tested concentrations were found significantly different from each other. High concentrations was found more effective than medium and medium was found better in the reduction of pest infestation than low concentration. These results are in accordance to those of Agarwal *et al.* (1987) who obtained more or less similar results.

The results presented in Table 2 reveal that three sprays of Dipterex and Malthion at 1% concentration suppressed the infestation of fruit fly to the extent of 21.67 and 26.00% respectively. Two sprays of these insecticides reduced the

infestation to 41.00 and 44.67% respectively, while one spray reduced the infestation to 54.67 and 66.33% respectively. All of the three sprays were found significantly different from each others at 1% level of probability. At all of the tested three sprays Dipterex was found more effective than Malathion against the pest. Three spays of the insecticides were found significantly more effective than two and one sprays while two sprays were also found significantly effective in the reduction of pest infestation compared to one spray of the insecticides.

Qureshi *et al.* (1997) also obtained significantly good control of fruit fly in cucumber with three and two sprays of Dipterex 80 sp compared to one spray of the insecticide.

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