

ON CONTROL OF THE MELON FLY *DACUS CUCURBITAE* COQUILLET WITH SOME NEWER SYNTHETIC INSECTICIDES APPLIED AS COVER SPRAYS

N. M. DAS, K. S. REMAMONY and M. R. G. K. NAIR

Agricultural College, Vellayani

The melon fly *Dacus cucurbitae* is the most serious and destructive pest of cucurbitaceous crops in Kerala. It is difficult to obtain a satisfactory control of this pest since the destructive larval stages are protected from insecticides applied externally. Insecticidal control of fruit flies in general involves directing the insecticides against the adult flies by applying them on the foliage of the crop or of the surrounding vegetation, if any, so that the flies which rest or move on them are killed. South cover sprays using DDT (Holdaway 1942, Nishida & Bees 1950, Ebeling 1953, Ebeling, Nishida & Bees 1953) Crude oil emulsion (Cherian 1942) EPN, dieldrin (Ebeling 1953) endrin (Sreenivasan & Narayana Swami 1960) parathion (Ebeling 1953, Sreenivasan & Narayana Swami 1960 and 1962) malathion (Chen 1960) and nicotine sulphate (Sreenivasan and Narayana Swami 1960) have been found effective in controlling the pest to various extents.

The present paper embodies the results of a series of field experiments conducted in the Agricultural College Farm, Vellayani, to study the relative effect of five of the modern synthetic insecticides in controlling

D. cucurbitae on bitter gourd (*Mimordia charantia*) when applied as cover sprays.

Materials and Methods

The insecticides used are given in Table I. They were prepared from proprietary formulations- The sprays were applied on the foliage of the crop so as to give a thorough coverage 4 times at biweekly intervals commencing from the time of flowering. A random block design was adopted in the experiments. A plot consisted of six bittergourd plants spaced 5 feet by 4 feet and trained together on a single 'pandal'. Each treatment was replicated thrice. The control plot did not receive any insecticidal treatment.

Results were assessed by finding out the percentage of fruits damaged by the maggots of the fruit fly- The experiment was repeated during three seasons of 1966-'67, ie. June-September, November-January and January-April.

Results

The results of the experiments as well as their analysis are given in Table I.

TABLE 1

Percentage of fruits damaged by the maggots of *D. cucurbitae* under various treatments and the results of the analysis of the data

Treatments	1st. crop	2nd. crop	3rd. crop	mean
T1 Malathion 0.1%E.	36.81	25.89	60.81	40.12
T2 Parathion 0.05%E.	43.36	29.59	65.05	48.64
T3 Carbaryl 0.1%SS.	28.78	30.02	41.55	36.17
T4 Dipterex 0.1%SN.	51.53	41.69	53.36	45.26
T5 Diazinon 0.05%E.	40.70	37.02	74.28	56.68
To Control (no treatment)	70.83	48.86	74.07	57.56

Inference of combined analysis for three seasons:

G.D. for comparison between means 11.38

S. E. for mean values 5.59

Ranking of treatments To T5 T2 T4 T1 T3

E • emulsion

SS • suspension

SN • solution.

Rainfall during the 3 seasons : 2888, 489 and 24? mm respectively

Analysis of the data shows that there is significant difference in the effect of different insecticides in each season. It is found that carbaryl 0.1 percent, malathion 0.05 percent and dipterex 0.1 percent sprays are effective in significantly reducing the pest infestation, there being no significant differences among themselves. Parathion 0.05 percent and diazinon 0.05 percent are found to have no effect in controlling the pest. The analysis has also, *inter alia*, shown that there exists very high variations among the results of the experiments conducted in the different seasons of the year. This may be due to the effect of climatic variations and the time of application of insecticides. Further, even the best treatment viz. carbaryl gives only 40 to 60 percent control of the pest and hence for a more effective control an integrated approach supplementing the cover sprays with the application of aldrin or heptachlor

in the soil, to destroy the maggots falling for pupation (Dale, Das & Nair 1966) and prompt destruction of affected fruits may have to be adopted.

Acknowledgements

Thanks are due to the Principal and Additional Director of Agriculture (Research), Agricultural College, Vellayani, for providing necessary facilities for conducting the experiments.

References

- Cherian, M. 1942. On present position with regard to the control of fruit flies. *Madras Agric. J.*, 30: 14-17.
- Chen, K. H. 1960 Studies on the melon fly control. *Agric. Res.*, 9: 43-51

Dale, D., Das, N. M., and Nair, M. R. G. K. 1966 Studies on the residual effect of some insecticides in soil to the maggots of the melon fly *Dacus cucurbitae* Coq. *Agric. Res. J. of Kerala*, 4: 85-88.

Ebeling, W. 1953 Laboratory experiments for the control of three species of fruit flies. *Hilgardia*, 21 : 515-561:

Ebeling, W., Nishida, T. and Bres, H. A; 1953 Field experiments for the control of the melon fly *Dacus cucurbitae*. *Ibid.*, 21 : 562-592.

Holdaway, F. G. 1942 Entomological problems. *Rep. Hawaii Agric. Exp. Sta.*, 59-67.

Nishida, T. and Bees, H. A., 1950 Applied ecology in melon fly control. *J. econ. Ent.*, 43 : 877-883.

Sreenivasan and Narayana Swamy, 1960 Beating the pests of bittergourd. *Indian Fmg.*, 10 : 17.

Sreenivasan and Narayana Swamy, 1962 Insecticidal control of the fruit fly *Dacus cucurbitae* on snake gourd. *Madras Agric J.*, 49 : 309-310.

(Accepted: 14-8-1968)