Control of the Sweet Potato Weevil, *Cylas formicarius* Fb. with some of the newer synthetic insecticides

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Sweet Potato is an important tuber crop cultivated in Kerala. Among the various insect pests affecting this crop the weevil *Cylas formicarius* Fb. is the most destructive in this State as it is elsewhere. Sherman (1953) reported from Hawaii that dipping the slips in 0.2% DDT emulsion followed by two sprayings during the season or soil treatment with aldrin at 5 pounds per acre gave significant reduction in the pest infestation, Wolcott (1955) found in Puerto Rico that spraying with aldrin, dieldrin or heptachlor gave effective control of the pest. Kantack (1956) observed in Louisiana that aldrin and dieldrin when applied to the soil as granules gave good protection of the crop from the weevil attack. Rhodes (1959) reported from Fiji that the slips of a resistant variety dipped for three minutes in 1% suspension of dieldrin followed by three sprayings at 6, 12 and 20 weeks after planting, at the rate of 1.5 pounds per acre, gave complete control of the insect. In India it was found that the application of 5-7 % BHC dust or 0.15 % DDT or BHC sprays gave encouraging results against the pest (Trehan 1953). Six foliar applications of aldrin, dieldrin or endrin at fortinightly intervals (Ananthanarayanan and Subramonian, 1958) monthly application of parathion or dieldrin emulsion sprays (Satpathy, 19.56) and application of toxaphane, heptachlor, chlordane or DDT ac the time of tuber formation (David, 1960) were found effective against this pest in India.

The present paper embodies the results of experiments on the relative effect of nine insecticides in controlling *C. formicarius.* Seven of these nine insecticides are being tried for the first time, DDT is taken as the standard for comparison.

Materials and Methods

A highly susceptible local variety of sweet potato was used for the experiments. Planting was done on mounds with a diameter of two feet on the upper surface. Five uniform cuttings of vines were planted on each mound. Proprietory formulations of different insecticides were used, the details of which are given in Table I.

The sprayings were done with a pneumatic sprayer. Each insecticide was sprayed on eight mounds and eight mounds were left untreated as control. Thus there were a total of eighty mounds for nine insecticides and one control and these were randomised. While spraying, a tall basket open at both ends was used to prevent drifting. It was ensured that all the foliage

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TABLE I

Details of insecticides used

Insecticides	Formulation	Source
1. DDT	25% E. C.	Mysore Insecticides Co., North Beach Road, Madras-1.
2. Trithion (0, 0-dimethyl SP-chlorophenyl thiomethyl phosphoro diothioate)	20% E. C.	do.
3. Dipterex (Dimethyl trichloro hydroxy ethyl phosphamate)	80% S P.	Bayer (India) Ltd., Bombay-1.
4. Folidol (0, 0-Diethyl-0-p-nitro phenyl thiophosphate)	47.3% E. C.	do.
5. Dimecron (2-chloro 2-diethylcarbamyl 1-methyl vinyl-dimethyl phosphate), Phosphamidon	100% Conc.	Ciba of India Ltd., Bombay-1.
6. Malathion (0, 0, dimethyl phosphorodiothioate of diethyl mercapto succinate)	50% E. C.	Cynamid India Ltd., Bombay-1.
7. Imidan 3 E. V. (0, 0-dimethyl (N-phthalimido methyl)phosphorodithioate,	30% E. C.	Mysore Insecticides Co., North Beach Road, Madras-1.
8. Roger 40 (0-0 dimethyl S (N-methyl carbamoyl methyl) phosphoro dithioate)	30% E. C.	Tata Fission Pvt. Ltd., Dalai Street, Bombay-1.
9. Nuvan (0-0-dimethyl 2:2 dichlyro vinyl phosphate)	100% Conc.	Ciba of India Ltd. Bombay-1.

and the soil surface were thoroughly covered by the spray. Six sprayings were given in each season, the first three at tri-weekly intervels after planting and the next three at biweekly intervels. The experiment was repeated during three seasons of 1964-'65. Results were assessed by taking precentage weight of whole tubers or parts of tubers damaged by the weevil and its grubs.

Observations and Discussion

Data on the precentage weight of the tubers damaged by the pest in various treatments during the three seasons are given in Table II.

TABLE II

Percent damage in weight of Sweet Potato tubers caused by C. *formicarius* under various treatments

Insecticide and concentration		I crop	II crop	III crop
1, DDT	0.2%	34 5	51.5	42.3
2. Trithion	0.1%	6.6	10.2	5.7
3. Dipterex	0.1%	22.7	34.4	29,2
4. Folidol	0.05%	6.5	6.8	4.9
5, Dimecron	0.03%	4.4	17.9	12.1
6. Malathion	0.1%	28.2	35,5	34,0
7. Imidan	0.1%	29.1	23.7	23.1
8. Roger	0.05%	39.5	14.3	6.8
9. Nuvan	0.1%	30.4	25.7	39.5
10. No treatment		41.2	53.9	44.5
Effect of treatments		significant.	significant.	significant.

inference of combined analysis for three seasons:

S. E. 12.4 C. D. 7.0364

4 2 5 8 7 6 3 9 1 10

Note : Concentrations given are of active ingredients.

Analysis of the data shows that there is significant difference in the effect of different insecticides in each season. It is found that parathion 0.05%, phosphamidan 0.03% and trithion 0.1% are significantly better for the control of the weevil than the other insecticides, there being no significant difference among themselves. These three insecticides are followed in the descending order by roger, imidan, malathion, dipterex, nuvan and DDT. The effect of nuvan and DDT are not significant.

Summary

Among nine insecticides tried for controlling the Sweet Potato Weevil *C. formicarius*, parathion 0.05%, dimecron (phosphamidon) 0.03% and trithion 0.1% were the best, when sprayed at triweekly intervels at the early stages and at biweekly intervels subsequently. These were followed in the descending order by roger, imidan, malathion and dipterex. Nuvan and DDT had no effect in controlling the weevil.

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