Relative Toxicity of some Synthetic Organic Insecticides to the Banana Aphid *Pentalonia Nigronervosa* Coq.

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Received for publication June 15, 1964

The 'bunchy top' disease is a major limiting factor in the production of banana in Kerala State. The banana aphid *Pentalonia nigronervosa* Coq. has been established as the vector which transmits the virus causing the 'bunchy top' disease (Magee 1927; Hutson and Park, 1930). Tobacco decoction (25 lbs. in 72 gallons of water) and nicotine sulphate (one pint 40% nicotine sulphate in 75 gallons of water) were found to control the aphid (Zeck and Eastwood, 1929) It could also be controlled by half pint of kerosine oil applied to the crown of the infested plants (Parham, 1938). Dusts containing D. D. T. and B. H. C gave better control of the aphid than nicotine dust or H. E. T. P. sprays (Smith 1948).

The present paper reports the results of studies made to evalute the relative toxicity of five common synthetic organic insecticides (D. D. T., dieldrin, aldrin, endrin and parathion) to *P. nigronervosa* under laboratory conditions.

Materials and Methods

All the insecticides were tested as sprays prepared from proprietory emulsifiable concentrates. Following are the details of the form and source of the materials: (i) D. D. T. — 20% E. C. supplied by Messrs Geigy Insecticides, Bombay. (ii) Dieldrin - 'diedrex 18' (18% E. C.) supplied by Messrs Burmah Shell Chemicals. (iii) Aldrin — 'Aldrex 30' (30% E.C Supplied by Messrs Burmah Shell Chemicals. (iv) Endrin -'Endrex 20' (20% E. C) supplied by Messrs Burmah Shell Chemicals (v) Parathion — 'Folidol E. 605' (47.5% E. C.) supplied by Messrs Bayer of Germany.

The test insects were collected from the field three to four hours before spraying. Only wingless adults were used in the experiments.

Relative toxicity of the various insecticides was estimated following the method of Pradhan and Satpathy (1953). Sprayings were done under a spraying tower based on the model of Potter's tower. Each insecticide was sprayed at four concentrations. Mortality counts were taken forty eight hours after treatment. The mortality values were adjusted for mortality in control, if any, using Abbott's formula. Temperature during the experiments was 85°F and relative humidity 74%.

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Results and Discussion

The results are represented on log concentration— probit mortality scale in Fig. 1 The median lethal concentrations determined graphically for the different insecticides are also shown in the figure. The M. L. Cs of the different insecticides and their relative toxicity taking the M. L. C. of D. D. T. as one are given in Table I. Parathion appears to be the most toxic followed in the descending order by endrin, dieldrin, D. D. T. and aldrin.

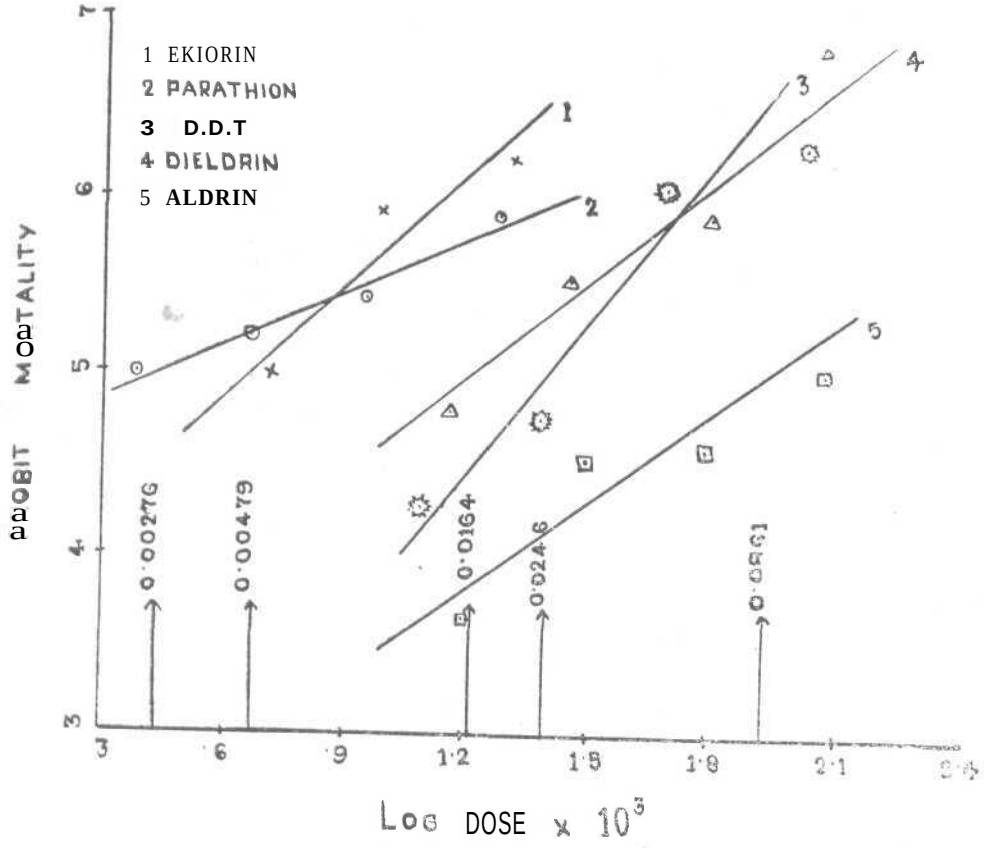

Fig. I. Relative toxicity of five insecticides to *pentalonia nigronervosa* Coq.

TABLE I

Relative toxicity of different insecticides to *Pentalonia nigronervosa* Coq.

Sl. No.	Insecticide	L. D. 50	Relative toxicity
1.	Parathion	0.00276	8.9
2.	Endrin	0.00479	5.1
3.	Dieldrin	0 01640	1.5
4.	D. D. T.	0.02460	1.0
5.	Aldrin	0.08610	0.29

Table II gives a comparison of the order of toxicity of the five insecticides under test to three species of aphids viz. *Apois craccivora* (source: Sarup *et. al.* 1960) *A. gossypii* (source: Jotwani *ct. al.* 1960) and *P. nigronervosa.* It is observed that the relative toxicity of parathion and endrin is of the same order for *P, nigronervosa* and *A. gossypii,* while that of the insecticides dieldrin, D. D. T. and aldrin is the same for *P. nigronervosa* and *A. craccivora.*

TABLE II

Relative order of toxicity of different insecticides to three species of aphids

Sl. No.	Insecticides	*Aphis craccivora*	*Aphis gossypii*	*Pentalonia nigronervosa*
1	D. D, T.	1.0	1.0	1.0
2	Endrin	68.5	3.18	5.1
3	Parathion	28.8	22.4	8.9
4	Dieldrin	10.3	0.48	1.5
5	Aldrin	0.74	1.62	0.29

Acknowledgement

The author is greateful to Dr. M. R. Gopalakrishnan Nair, Professor of Entomology, Agricultural College, Vellayani, for valuable suggestions and guidance and to the University of Kerala for affording facilities for the work.

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