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A DIPPING TRIAL WITH LARVAE OF THE GRAPE VINE MOTH (PHALAENOIDES GLYCINE LEW.)

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Summary

Azinphos-ethyl, used at 0.05%, was better for rapid killing of grape vine moth larvae in a dipping trial than carbaryl, DDT, parathion and phosalone.

Introduction

The grape vine moth (*Phalaenoides glycine* Lew.) is a potentially serious pest of grape vines in the Stanthorpe district of south-eastern Queensland. Its larvae are voracious feeders and even low numbers are capable of defoliating vines. The larvae may also damage developing bunches. Populations are markedly influenced by parasites and predators but under conditions of population upsurges insecticidal control is also required.

Various authors in Australia have suggested that the larvae may be controlled by applications of lead arsenate 3 lb/100 gal before vines flower and DDT 0.1% after flowering (Officers of the Department of Agriculture and Stock 1951; Bengston 1961; Anon. 1966*a*; Anon. 1966*b*).

Lead arsenate is less detrimental to parasites and predators than alternative materials, but it is slow in action and toxic residues may remain if spray applications are made to developing bunches. These disadvantages, together with the fact that alternative materials may still be required for the control of other species of the grape pest complex (Bengston 1961), prompted the work reported here.

As field infestations of the grape vine moth are variable both from season to season and from vineyard to vineyard, making field testing of insecticides uncertain, the work was performed under laboratory conditions.

Methods and Materials

Larvae for the trial were collected from Muscat Hamburg vines in a commercial vineyard in January 1966. They were actively feeding in the final instar.

The experiment was in the form of a randomized block with 10 larvae as the unit plot. Each larva was dipped in one of the range of insecticide solutions, surface-dried and placed in a covered container for the test period. Dead larvae were counted at 4, 24, 48, 72 and 96 hr after treatment.

The materials used and the percentages of active constituents in prepared solution were as follows:

Azinphos-ethyl.—An emulsifiable concentrate containing 40% w/v active constituent: 0.05%.

Carbaryl.—A dispersible powder containing 50% w/w active constituent: 0.1%.

DDT.—An emulsion concentrate containing 25% w/v active constituent: 0.2 and 0.1%.

Parathion.—An emulsifiable concentrate containing 50% w/v active constituent: 0.02%.

Phosalone.—An emulsifiable concentrate containing 30% w/v active constituent: 0.056%.

Results and Discussion

Results given as larval mortalities are presented in Table 1.

Under the conditions of the trial, azinphos-ethyl 0.05% was the best insecticide for rapid control of grape vine moth larvae. Carbaryl 0.1% provided more than 90% kill in 24 hr, but its kill at 4 hr was only 78.5%. DDT 0.2% and parathion 0.02% required between 1 and 2 days to give a kill of over 90%, while DDT 0.1% and phosalone 0.056% required between 2 and 3 days.

Should an upsurge in populations of this pest occur, as it may sometimes, and quick control is the primary consideration, azinphos-ethyl (emulsifiable concentrate) and carbaryl (wettable powder) are recommended materials. The azinphos-ethyl as an emulsifiable formulation does not involve a visible residue but health considerations must be fully recognized.

TABLE 1

LARVAL MORTALITIES AFTER VARIOUS TIME INTERVALS

Treatment	Larval Mortalities									
	4 hours		24 hours		48 hours		72 hours		96 hours	
	Trans. Mean*	Equiv. Mean	Trans. Mean*	Equiv. Mean	Trans. Mean*	Equiv. Mean	Trans. Mean*	Equiv. Mean	Trans. Mean*	Equiv. Mean
DDT 0·1%	0·570	29·1	0·806	52·0	1·084	78·1	1·349	95·2	1·349	95·2
DDT 0·2%	0·619	33·6	0·848	56·2	1·257	90·5	1·385	96·6	1·505	99·6
Parathion 0·02%	0 389	14·4	1·044	74·7	1·275	91·5	1·455	98·7		100†
Carbaryl 0·1%	1·089	78·5	1·262	90·8	1·349	95·2		100†		100†
Azinphos-ethyl 0·05%	1·326	94·1	1·505	99·6		100†		100†		100†
Phosalone 0·056%	0·743	45·8	0·963	67·4	1·184	85·8		92†		96†
Water		0†	0·129	1·6	0 399	15·1	0·587	30·7	0·765	48·0
Untreated		0†	0 064	0·4	0·180	3·2	0·458	19·6	0·531	25·0
Necessary differences for significance 5%	0·240		0·239		0·323		0·321		0·233	
Necessary differences for significance 1%	0 327		0·322		0·438		0·442		0·327	

* Inverse sine.

† Mean excluded from analysis.

REFERENCES

ANON. (1966*a*).—Vine moth. *Bull. Div. Sci. Serv. N.S.W. Dep. Agric.* No. IP 132C, 2nd Ed.

ANON. (1966*b*).—Pest of grape vines. *Fr. Mark. Grow.* 67:12-3.

BENGSTON, M. (1961).—Grape pest control in the Granite Belt. *Qd Agric. J.* 87:255-6.

OFFICERS OF THE DEPARTMENT OF AGRICULTURE AND STOCK (1951).—"The Queensland Agricultural and Pastoral Handbook, Vol. III, Insect Pests and Diseases of Plants". (Government Printer: Brisbane.)

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