CONTROL OF PORINA CATERPILLAR

R. L. TAYLOR

Farm Chemicals Company, Mapua, Nelson

Summary

Results are given for the more effective insecticides against porina caterpillar (*Wiseana* spp.) used in trials 1965-69. Cyanofenphos and tetrachlorvinphos were more effective than fenitrothion as sprays but not as granules. Parathion-methyl sprayed and parathion granules were more effective than fenitrothion used at a lower rate to give similar cost per acre. Trichlorfon, sprayed at similar cost per acre, gave control equal to fenitrothion in March, but inferior in August.

EXPERIMENTAL

IN all trials reported here plots 10 ft square were used, usually ten for each treatment. With this degree of replication, trials have often allowed a confident estimate of porina caterpillar (*Wiseana* spp.) control from pasture appearance only.

In the tables caterpillar numbers are in good agreement with pasture improvement.

Plots were given points on a 0 to 10 scale by observers experienced in porina damage to pasture, but ignorant of treatments. Points were averaged for each treatment in a trial, then reduced by the mean for untreated plots, to give a figure for mean "pasture improvement" for each treatment. Such figures appear in parentheses in the tables. All rates are expressed in pounds active ingredient/acre.

RESULTS AND DISCUSSION

Table 1 lists results of trials in Golden Bay comparing fenitrothion at 1 lb when applied as coated granules of 10% or 5%, respectively. No important difference in performance between these formulations was revealed — an unexpected result in view of emphasis placed on coverage of granules. In three trials not reported, diazinon granules of 10% outperformed similar coated granules of 5% by weight. Fenitrothion 10% granules were adopted commercially in 1968 with useful savings in cost/acre.

Table 1 lists also the performance of fenitrothion 10% granules when one-quarter of the fenitrothion was replaced by lindane. Much better control of caterpillars up to 1¼ in. long was obtained. Fenitrothion/lindane granules would have been advantageous in treating heavy infestations where too many small caterpillars were likely to survive, or alternatively in treating early lighter infestations at lower rates than those used in the trials.

Consultation with the Agricultural Chemicals Board led to the abandonment of fenitrothion/lindane granules. Hardening attitudes towards in-

TABLE 1: TRIALS COMPARING GRANULES OF FENITROTHION 10%, FENITROTHION 5% AND FENITROTHION 7.5% PLUS LINDANE 2.5% AT 1 LB

Surviving caterpillars/sq. ft and (pasture improvement)

<i>Treated</i>	<i>Assessed</i>	<i>F10</i>	<i>F5</i>	<i>F/L</i>	<i>Untreated</i>
13/7/66	26/9/66	0.6 (2.3)	0.3 (2.4)	0.2 (2.8)	3.6 (0.0)
19/7/66	26/9/66	0.5 (2.5)	0.5 (2.7)	0.2 (3.5)	3.4 (0.0)
17/8/66	21/9/66	0.3	0.2	0.3	1.0
8/9/66	25/10/66	0.2 (2.0)	0.4 (1.8)	0.0 (2.7)	1.3 (0.0)
14/9/66	11/10/66	0.6 (2.7)	0.6 (2.3)	0.3 (2.9)	3.5 (0.0)
25/9/66	27/10/66	0.5 (3.0)	0.6 (2.4)	—	5.3 (0.0)
27/9/66	27/10/66	0.5 (2.0)	1.0 (1.3)	0.8 (1.8)	2.9 (0.0)
(large caterpillars)					
6/8/69	29/8/69	(1.1)	(1.2)	—	(0.0)

secticidal residues in meat made the prospects for lindane poor, even at 4 oz, for a use for which residue-safe chemicals were usually effective enough.

Table 2 shows parathion granules to be at least as effective as fenitrothion when used at comparable cost per acre (1½ lb and 1 lb, respectively). Tetrachlorvinphos granules did not perform quite as well as fenitrothion. Cyanofenphos granules were disappointing.

The reason for the poorer performance of tetrachlorvinphos and cyanofenphos as granules than as sprays is not known, but could be that they are solids whereas the chemicals fully effective as granules — diazinon, fenitrothion and parathion — are liquids.

Table 3 shows that diazinon, fensulfothion, B5860 and "Mocap" can be expected to control porina well enough when used for grass grub (*Costelytra zealandica*) control at 2 lb. Insufficient performance of chlorfenvinphos is confirmed (Taylor, 1966). Lindane granules are much more effective applied to small caterpillars than large (Taylor, unpubl.). In the last trial of Table 3 lindane has controlled caterpillars 1 to 1½ in. long more slowly but more completely than fenitrothion.

All trials in which chemicals were sprayed are listed in Table 4. Important results are the discovery of cyanofenphos as a very effective chemical against porina, and the confirmation of high activity already reported for tetrachlorvinphos (SD 8447) (Allen, 1968) and parathion-methyl (Kelsey, 1965; Perrott, 1966). Trichlorfon gave good control in March but poor control in August. In these trials parathion-methyl and trichlorfon were used at 1 lb and fenitrothion at ½ lb to allow comparison at similar cost per acre.

Other organophosphorus insecticides tried with varying degrees of failure are omitted. Formparanate, a highly poisonous carbamate, has performed extremely well as a spray, but is omitted from Table 4 because development of the chemical is held up on account of residues. Other carbamates, including carbofuran, were ineffective.

TABLE 2: TRIALS COMPARING GRANULES OF FENITROTHION, PARATHION, TETRACHLORVINPHOS AND CYANOFENPHOS
Surviving caterpillars/sq. ft and (pasture improvement)

Location	Treated	Assessed	fenitrothion 1 lb	parathion 1½ lb	tetrachlorvinphos 1 lb	cyanofenphos 1 lb	Untreated
Motunau	24/9/68	22/10/68	0.3	—	0.3	0.3	1.2
Ashburton	18/3/69	6/6/69	(3.4)	(3.0)	(3.0)	(1.4)	(0.0)
Methven	20/3/69	5/6/69	(0.7)	(1.0)	(1.0)	(0.5)	(0.0)
Methven	24/3/69	10/6/69	(1.6)	(2.0)	(1.3)	(0.6)	(0.0)
Marion	29/4/69	3/7/69	(3.0)	(3.5)	(2.8)	(0.9)	(0.0)
Dannevirke	30/4/69	30/6/69	(1.3)	(1.3)	(0.9)	(0.3)	(0.0)
Tennyson Inlet	8/8/69	30/9/69	(1.0)	(1.5)	—	—	(0.0)
Tennyson Inlet	25/8/69	10/10/69	(1.8)	—	(1.3)	—	(0.0)

TABLE 3: TRIALS COMPARING GRANULES NOT INCLUDED IN TABLE 2
Surviving caterpillars/sq. ft and (pasture improvement)

Location	Treated	Assessed	fenitrothion 1 lb	diazinon 1 lb	diazinon 2 lb	fensulfothion 1 lb	B 5860 2 lb	"Mocap"	chlorfenvinphos 2 lb	indane 2 lb	Untreated
Takaka	11/5/65	9/6/69		2.0						0.7 (1 lb)	4.5
Wainui	21/5/65	14/6/65		0.3						0.8 (1/2 lb)	2.0
Takaka	13/7/66	26/9/66		1.0							3.6
Takaka	25/9/66	27/10/66	0.5 (1.3)	(0.6)							(0.0)
			0.6 (2.8)	1.7 (2.0)							5.3
Awatere Valley	11/5/67	16/8/67	(3.8) (2 lb)		(2.7)	(1.7)			(2.0)	(1.1)	(0.0)
Blenheim	12/5/67	4/7/68			0.4	1.6			1.6	1.4	(0.0)
Marion	1/4/68	21/5/68			3.3 (1.9)		4.0 (1.5)				3.0
Dannevirke	3/4/68	24/6/68			0.8 (1.0)		0.8 (0.9)				(0.0)
Takaka	9/7/68	4/10/68					2.3 (1 lb) (0.3)				3.6
			1.3 (0.9)	2.6 (0.6)							3.4
Blenheim	11/4/69	21/5/69					0.4 (1 1/2 lb)		0.4 (2 lb)		(0.0)
Takaka	6/8/69	29/8/69	(1.2)							(0.7)	(0.0)
		30/9/69	(1.3)							0.9 (2.4)	3.8 (0.0)

TABLE 4: TRIALS SPRAYED
Surviving caterpillars/sq. ft and (pasture improvement)

Location	Treated	Assessed	fenitrothion		trichlorfon		parathion-methyl		tetrachlorvinphos		cyanofenphos		Untreated
			1/2 lb	1 lb	1 lb	1 lb	1 lb	1 lb	1/2 lb	1/2 lb	1/2 lb	1/2 lb	
Motunau	24/9/68	22/10/68	0.7						0.2		0.3		1.2
Ashburton	19/3/69	11/6/69	0.6		0.5				0.3		0.1		2.0
			(1.9)		(1.5)			(2.1)	(2.1)		(2.4)		(0.0)
Methven	19/3/69	5/6/69	(1.7)		(1.5)			(2.5)	(2.3)		(2.3)		(0.0)
Methven	25/3/69	5/6/69	1.6		1.3		0.4		1.2		0.4		3.2
			(1.0)		(1.4)		(1.8)		(1.4)		(2.1)		(0.0)
Marton	4/7/69	22/7/69			1.6		1.4				2.0		3.5
Takaka	1/8/69	29/9/69	2.9		4.9				2.8		2.3		5.8
			(2.0)		(0.1)				(2.1)		(2.2)		(0.0)
Takaka	6/8/69	1/10/69	1.4		3.6				0.7		0.4		3.8
			(2.2)		(1.2)				(2.9)		(2.8)		(0.0)
Tennyson Inlet	8/8/69	30/9/69	2.9		6.5				2.8		2.3		5.1
			(1.3)		(0.3)				(2.0)		(1.0)		(0.0)
Tennyson Inlet	25/8/69	30/9/69	0.3		1.5						0.9		4.8
			(1.2)		(0.8)						(1.2)		(0.0)
Leeston	30/3/70	26/5/70	(9.0)		(8.7)			(9.2)			(8.9)		(6.0)
Methven	2/4/70	26/5/70	1.6		2.6		0.3				0.5		6.0
			(6.3)		(5.4)		(7.5)				(7.9)		(3.1)

At Motunau, treatment was done just after the first caterpillars pupated. A count of pupae one month later showed no reduction in their numbers from any treatment, supporting the belief that caterpillars do not feed much the month before pupating.

REFERENCES

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