GRASS-GRUB CONTROL IN CANTERBURY, 1966

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Summary

Thirteen preparations in granule and pellet form were tested at two sites in Canterbury for control of the common grass-grub (*Costelytra zealandica* White). These were the same trials reported on during the 19th Weed and Pest Control Conference in 1966, but have now been down for 74 weeks in the Timaru and 18 weeks in the Carew trials to compare residual effects of insecticides.

At Timaru none of the nine materials reached significance in reducing grub numbers; in pasture protection all four DDT preparations and the organophosphate S4400 reached significance, but none of the other four organophosphates reached significance. At Carew, in a paddock where the larvae showed strong DDT resistance by the topical testing technique, all materials except DDT and the ½ lb a.i. of heptachlor pellets reached significance in grub reduction numbers, and in pasture protection all materials except DDT and heptachlor were very highly significantly better than untreated areas.

TIMARU TRIAL

Applied: May 3 to 5, 1965. *Sampled*: October 4 to 12, 1966.
Dosages: All at 2 lb a.i. per acre.
Formulations: All as granules except drymix.
Replications: 5. *Plot size:* 16 ft 6 in.×16 ft 6 in.
Samples: Six 7 in. cubes per plot.
Reinfestation average on controls: 12 per 7 in. cube.
Pasture cover: Rated by 3 officers.

Materials	*A. Grass-grubs* Stat. Means	Signif.	*B. Pasture Cover %* Stat. Means	Signif.
DDT Ammophos	2.96	NS	92.8	***
DDT drymix	3.66	NS	73.8	**
DDT prills	3.89	NS	72.5	*
DDT (Stauffer)	4.32	NS	72.9	*
S440	5.54	NS	71.7	*
Fensulfothion	5.74	NS	66.4	NS
Methidathion	5.50	NS	56.7	NS
Trichlorphon	6.22	*–	51.2	NS
Diazinon	6.25	*–	43.8	NS
Control	4.48	—	50.6	—

Differences for significance:
NS — Not significant.

	A.	*B.*
5% (*)	1.67	17.7
1% (**)	2.23	23.0
0.1% (***)	2.92	30.1

* – significantly worse than controls.

From this table it can be seen that, though none of the materials gave significant grub reductions, all the DDT preparations and S4400 (an organophosphate), gave some measure of pasture protection 74 weeks after insecticides were applied, and against a second generation of grass-grubs. None of the other organophosphates gave good pasture protection, and trichlorphon and diazinon had infestations significantly higher at the 5% level than on controls.

CAREW TRIAL

Applied: April 14, 1966. *Sampled:* August 22 to 23, 1966.
Dosages: At 2 lb a.i. per acre unless otherwise stated.
Formulations: All granules or pellets.
Replications: 5. *Plot size:* 16 ft 6 in.×16 ft 6 in.
Samples: Eight 7 in. cubes per plot.
Pretreatment count: 25 to 86 per 7 in. cube; average 67.
Pasture cover: Rated by four officers.

Materials	*A. Grass-grubs* Stat. Means	Signif.	*B. Pasture Cover %* Stat. Means.	Signif.
Fensulfothion	3.02	***	70.0	***
Diazinon	4.06	***	64.5	***
Lindane	4.98	***	59.6	***
Trichlorphon	7.30	***	61.6	***
Fenitrothion	6.16	***	56.0	***
S4400	5.90	***	59.4	***
Heptachlor 1 lb	8.62	**	37.2	NS
Heptachlor ½ lb	10.40	NS	28.1	NS
DDT pellets	11.84	NS	15.0	NS
Control	11.14	—	23.2	—

Differences for significance:

	A.	*B.*
5%	1.57	16.4
1%	2.11	22.0
0.1%	2.77	28.9

In this trial against DDT-resistant larvae, the materials fensulfothion, diazinon, lindane, trichlorphon, fenitrothion, and S4400 significantly reduced grub numbers, and also gave pasture protection at the 0.1% level, and though heptachlor 1 lb reduced grub numbers at the 1% level it did not reach significance in protecting pasture. DDT pellets and heptachlor ½ lb a.i. per acre were ineffective both in reduction of grub numbers and in protection of pasture after 18 weeks.

None of the materials at either site at dosages used had adverse effects on earthworms.

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