GRASS GRUB CONTROL BY CHEMICALS 1969

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Summary

This paper describes a trial laid down in May 1969 against a topically-tested, DDT-resistant grass grub (*Costelytra zealandica* White) at Carew, Ealing in Canterbury. On the basis of pasture recovery three months after treatment, the most outstanding treatments (*i.e.*, those which reached significance at the 0.1% level) were parathion formulation A 3 lb, "Mocap" 2 lb, fensulfothion 1 lb, and trichloronate, "Bayrusil", trichloronate formulation B, and diazinon, all at 2 lb active ingredient per acre. On the basis of grub reduction three months after treatment, the above materials also gained significance at the 0.1% level, except for the 2 trichloronate formulations.

INTRODUCTION

CONTINUING this substation's routine policy of the annual testing of all promising materials against the common grass grub (*Costelytra zealandica* White), this trial records results against a topically tested, DDT population at Carew, Ealing in Canterbury.

EXPERIMENTAL

All the materials were granular and were applied on May 2, 1969, to dry, close-grazed ryegrass/white clover pasture by hand shaker two ways at right-angles, on plots of 1/160 acre (16 ft 6 in. × 16 ft 6 in.), there being five replicates of each treatment.

Superphosphate was applied to all but the DDT plots at the rate of 1½ cwt per acre. The wind speed was between 4 and 8 mph during the application period, and the soil moisture was high. The average pre-treatment population was 80 per square foot with a range from 18 to 156. Visual assessments and grub counts were done in absence of plot plans.

The visual assessment was carried out on August 8, 1969, and the figures in Table 2 are based on the mean of three officers independently rating materials, on a basis of 0 to 100 in steps of 5, for cover of sown components.

Larval counts were done from August 4 to 8, 1969, and the figures in Table 2 are based on the mean of the square root of the total live grubs per replicate (six 7 in. cubes per plot).

The total rainfall from treatment until sampling was 3.33 inches (Table 1).

TABLE 1: RAINFALL IN MONTH OF APPLICATION

Date May 1969	*Days after Treatment*	*Rainfall (in.)*
6	4	0.12
13	11	0.08
19	17	0.23
20	18	0.08
23	21	0.46
27	25	0.05
28	26	0.04
29	27	0.03
30	28	0.21
		Total 1.30

RESULTS

Results of the trial are given in Table 2.

TABLE 2: 1969 GRASS GRUB CONTROL TRIAL

Treatment (lb a.i./acre)	*Visual Assessment Pasture Assessment (Mean)*	*Signif. cf. Control*	*Soil Sampling Live Grub No. (Mean √ n)*	*Signif. cf. Control*
parathion form. A 3	63.0	***	6.52	***
"Mocap" 2	60.7	***	4.18	***
fensulfothion 1	58.3	***	5.16	***
trichloronate form. A 2	58.0	***	7.54	**
"Bayrusil" 2	57.0	***	6.84	***
trichloronate form. B 2	56.3	***	7.88	*
diazinon 2	56.0	***	5.04	***
phoxim form. B 2	54.3	**	7.66	**
parathion form. A 1	53.7	**	8.32	NS
parathion form. B 2	52.7	**	7.80	*
phoxim form. A 2	52.3	**	7.80	*
parathion form. A 2	50.0	*	7.60	**
"Dursban" 2	49.3	*	8.76	NS
B6189 2	47.7	NS	7.98	*
parathion-methyl 2	47.0	NS	9.02	NS
lindane 2	41.7	NS	10.06	NS
DDT granulated super. 2	36.7	NS	10.16	NS
Control	38.3	—	9.56	—
NS = Not significant.				
Differences for significance				
5% (*)	10.1		1.40	
1% (**)	13.4		1.86	
0.1% (***)	17.5		2.42	
Standard error of treatment mean	3.57		0.495	

CONCLUSIONS

The treatments which have shown promise in this trial the year of application, and warrant further testing, are as follows: "Mocap", fensulfothion, trichloronate, "Bayrusil", diazinon and phoxim. DDT gave the expected poor result against this topically-tested, DDT-resistant population, and lindane gave a similar result owing to the lateness of application.

All treatments will be further sampled, and assessed for pasture response this year, for second-year effects.

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