

DEPARTMENTAL RESULTS FOR CONTROL OF WISEANA Spp.

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Summary

Over the past few years, a number of trials have been laid down to field-test new materials and formulations for the control of *Wiseana* spp. The restrictions on the use of DDT has made it more important that applications of this material should be timed exactly so as to obtain maximum benefit from the formulations available. This brings to note the difficulties in forecasting potential infestations whether it be by advisory officers or by the farmers themselves. In these circumstances farmers are tending to utilize the quicker-acting organophosphate materials as soon as signs of infestations have been defined. Of these materials tested so far, trichlorfon and diazinon formulations do control *Wiseana* larvae and evidence of this is substantiated in this paper.

INTRODUCTION

MANY TRIALS have been laid down by the Department of Agriculture over the last few years for the control of *Wiseana*, one of which has already been reported by Helson *et al.* (1964). There are also several trials laid down during 1964-5 which are not reported in this paper, because of inconclusive results, particularly in the case of time of application trials where uniformity and intensity of infestations have not been sufficient for differences to show up, and because analysis and results have not yet been completed.

In the trials reported here randomization and replication have been used to limit any variations which were undesired, whether it be in application, assessment or natural conditions beyond our control. All rates mentioned are expressed in terms of lb active ingredient per acre.

RESULTS, 1964

MAKARA TRIAL

This trial was laid down at Makara Soil Conservation Area, Wellington, on June 30, 1964, and July 1, 1964. The trial area was almost entirely denuded of vegetation with the main exception of broadleaf weed species mainly catsear (*Hypochaeris* spp.). The majority of the larvae at this stage were from 1 to 2 in. long and were actively feeding. The treatments were applied by an Oxford precision sprayer and by hand in the case of the granular materials. Counts of live larvae by digging were taken 20 days after application and estimates of percentage cover of desirable species (grasses and legumes) were made by L. D. Bascand on August 25, 1964.

Results are given in Table 1.

TABLE 1: LIVE LARVAE COUNTS AND PASTURE RESPONSE, MAKARA TRIAL

Treatment (lb)	Live Larvae per sq. ft.	% Desirable Plant Spp.					
		5%	1%	5%	1%	5%	1%
1. Trichlorfon 1.5% (granule) 0.6	5	bc	ABC	13	bcd	AB	
2. Trichlorfon 1.5% (granule) 1.2	3	cd	BCD	30	ab	AB	
3. Trichlorfon 3.0% (granule) 0.6	9	ab	ABC	9	cd	B	
4. Trichlorfon 3.0% (granule) 1.2	5	bc	ABC	22	abcd	AB	
5. Trichlorfon S.P. 1	6	abc	ABC	15	bcd	AB	
6. Trichlorfon S.P. 2	2	cd	BCD	25	abcd	AB	
7. Diazinon W.P. 1	3	cd	BCD	19	abcd	AB	
8. Diazinon W.P. 2	1	d	D	28	abc	AB	
9. Diazinon 5% (granule) 1	2	cd	BCD	18	abcd	AB	
10. Diazinon 10% (granule) 1	2	cd	BCD	37	a	A	
11. Thuricide 90T 6 pt	10	ab	AB	7	d	B	
12. Control	15	a	A	6	d	B	
C.V.	43.5%			76.9%			

(Unfortunately, there was not sufficient of the 5% diazinon granules available and 10% granules were used instead in treatment 10. Also, only 1 lb instead of 2 lb was applied in this treatment.)

Subsequent Fertility Index pointings and “% desirable plant species” data carried out on December 22, 1964, showed that earlier differences in this trial had disappeared.

It can be seen from these results that all of the diazinon materials gave relatively good results. Trichlorfon also gave good control, but 0.6 lb was not quite as effective as 1.2 lb. Thuricide 90T, on the other hand, had a negligible effect.

It can be noted here that several larvae were recovered that contained the white muscardine fungus (*Beauveria bassiana*) but what effect it had on the trial is unknown. *Metarrhizium anisopliae* was also known to infect *Wiseana* spp. larvae in the Wellington area during the time of this trial.

RESULTS, 1965

This year work has been continued along two lines:

- (1) To substantiate evidence already gained of materials that control the larvae of *Wiseana* spp.
- (2) To test new prospective chemicals against those already employed.

The results of this work have not yet been completed or statistically analysed and can be regarded only as preliminary.

MANGAKINO: TRIAL A

This trial has been laid down in the Whakamaru area on dairy pasture with an infestation of 1 to 3 larvae per square foot. They were 1½ to 2 in. long.

The treatments were applied with an Oxford precision sprayer or in the case of the granular materials by hand. All granular preparations were mixed with sawdust to facilitate an even spread.

The results in Table 2 are counts of dead larvae recovered from a plot of 1/160 acre on 1 and 2 days following applications. There were 10 replications but only 5 were counted on the first day and 4 on the second.

TABLE 2: COUNTS OF DEAD CATERPILLARS

<i>Treatment (lb)</i>	<i>1st Day Avg. per Plot</i>	<i>2nd Day Avg. per Plot</i>
1. Diazinon 5% (granules) $\frac{1}{2}$	3	2
2. Diazinon 5% (granules) 1	12	3
3. Diazinon 40% W.P. $\frac{1}{2}$	22	5
4. Diazinon 40% W.P. 1	45	9
5. Trichlorfon 3% (granules) $\frac{1}{2}$	3	2
6. Trichlorfon 3% (granules) 1	4	2
7. Trichlorfon 50% S.P. $\frac{1}{2}$	7	1
8. Trichlorfon 50% S.P. 1	6	1
9. DDT 20% prills 2	2	1
10. Control	0	0

MANGAKINO: TRIAL B

This trial was also laid down on May 5 and 6, 1965, in the Whakamaru district on dairy pasture, using the same application methods as in Trial A. The plot size was 1/160 acre with 6 replications and caterpillars averaged about 2 in. Results are given in Table 3.

TABLE 3: COUNTS OF DEAD CATERPILLARS

<i>Treatment (lb)</i>	<i>1st Day Avg. per Plot</i>	<i>2nd Day Avg. per Plot</i>
Diazinon 40% W.P. 1	3.7	1.5
Diazinon 40% W.P. $\frac{1}{2}$	0.3	3.7
Diazinon 5% (granules) 1	1.0	0.5
Trichlorfon 80% S.P. 1	0	0.5
Trichlorfon 80% S.P. $\frac{1}{2}$	0	0.3
Trichlorfon 3% (granules) 1	1.5	1.2
Thuricide 90T 6 pt	0	0.5
"Supracid" (G.S. 13005) W.P. 1	0.5	6.0
Fenitrothion W.P. 1	4.2	2.0
Control	0	0

WELLINGTON TRIAL

TABLE 4: COUNTS OF DEAD CATERPILLARS AND PASTURE RESPONSE

<i>Treatment (lb)</i>	<i>Counts, 1 day Avg. per Plot</i>	<i>Pasture Response (2 mon.)</i>
Diazinon 40% W.P. 1	185.5	Excellent
Diazinon 5% granules 1	1.2	Fairly poor
Trichlorfon 50% S.P. 1	55.0	Excellent
Trichlorfon 3% granules 1	11.8	Fair
Phosalone 35% E.C. 1	54.0	Very good
Control	0	Nil

This trial was laid down by T. M. Patterson on March 11 and the counts of dead or dying larvae were made on the following morning. The plot size was 1/160 acre with 6 replications. The caterpillars were 1 to 1¼ in. long and the average numbers present were 1 to 3/sq. ft.

CONCLUSIONS

With the results so far received, it appears that diazinon and trichlorfon are giving some measure of control, but the formulations and rates still have to be substantiated.

Of the new materials tested, "Supracide" (GS.13005) fenitrothion, and phosalone have all given excellent preliminary results.

With these results on the control of *Wiseana* caterpillars in pasture, there is an indication that a single application of an organophosphate material at the right time of the year will give control. It must be realized that these materials, although quick acting, produce side-effects which in some cases are undesirable. To study these side-effects is another project in itself, but it must be carried out so as not to defeat the purpose of applying the chemical.

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