

CANTERBURY FIELD TRIALS ON WISEANA CONTROL

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Summary

The trials reported on indicate that the organophosphates trichlorphon, diazinon, and methyl parathion were good substitutes for DDT pellets and DDT wetmix superphosphate for controlling *Wiseana* species in Canterbury. Diazinon sprays were better than diazinon granules at the 1% level on percentage pasture cover. In the Shand's Track trials, trichlorphon and methyl parathion were not significantly better than DDT wetmix superphosphate, but trichlorphon was significantly better than the American DDT pellets in superphosphate at the 1% level by assessments on live larvae and on pasture cover. In a series of DDT trials using attractants and an inert core, all materials were better than controls at the 1% level: the ½ lb a.i. per acre of DDT on kibbled wheat plus attractants was as good as the higher DDT rates of the same formulations and as good as Ammophos DDT prills containing 2 lb a.i. DDT per acre.

THE TRIALS summarized in the following three tables give results of tests laid down from March 21 to 26, 1964, in two paddocks near Lincoln, Canterbury. Pre-treatment sampling was carried out and final assessment was on the basis of living larvae and percentage pasture cover in August-September, 1964. Assessments were made in absence of treatment plans by two officers working independently.

SERIES I

Applied: March 21-2, 1964

Sampled: August 24-5, 1964

Tre-treatment sampling (70 spade square samples):

	<i>Range</i>	<i>Average</i>
Grass-grubs	0-1	0
<i>Wiseana</i>	0-12	1.9

Application by hand, two ways at right-angles. All at 2 lb (all rates in a.i./acre) to 1 in. long, dry pasture in absence of stock. Same amount of superphosphate on all plots. *Wind:* Range 0-5, Average 3 m.p.h. *Replications:* 5. *Plot size* ½ ch × ½ ch. *Rain* since application 7.22 in. Larval counts on basis of 6 spade square samples per plot.

TABLE 1: TANCREDS ROAD TRIALS

Materials	A		B	
	Live <i>Wiseana</i> Statistical Means	Significance c.f. Controls	% Cover Statistical Means	Significance c.f. Controls
1. Trichlorphon spray	0.91	**	94.0	**
2. Diazinon spray	1.16	**	92.6	**
3. Diazinon granules	1.16	**	86.2	**
4. DDT wheat bait prills	1.59	**	80.0	**
5. DDT wetmix super.	1.65	**	74.0	**
6. DDT bait prills	1.99	*	69.7	N.S.
7. Controls	2.69	—	67.2	—
Differences for significance:				
		5%	1%	
	A	0.70	0.95	
	B	4.80	6.40	
Notes: N.S.=Not significant.				
* = Significant at 5% level.				
** = Significant at 1% level.				

SUMMARY

- (1) All treatments except No. 6 were better than control, at the 1% level by both assessments.
- (2) Trichlorphon sprays were not significantly different from diazinon sprays or granules on *Wiseana* counts, but were better than diazinon granules at the 1% level on percentage cover.
- (3) Trichlorphon was not significantly different from DDT wheat bait prills on *Wiseana* counts, but was better at the 1% level on percentage cover.
- (4) Trichlorphon was better than DDT wetmix superphosphate at the 5% level on *Wiseana* counts and at the 1% level on percentage cover.
- (5) Trichlorphon was better at the 1% level than DDT bait prills on both assessments.
- (6) Diazinon (sprays and granules) was not significantly different from DDT wheat bait prills or DDT wetmix superphosphate on *Wiseana* counts, but spray was better than DDT wheat bait prills at the 1% level, and both were better at the 1% level than DDT wetmix superphosphate on percentage cover.
- (7) Diazinon (sprays and granules) was significantly better at the 5% level than DDT bait prills on *Wiseana* counts, but at the 1% level on percentage cover.
- (8) DDT wheat bait prills were not significantly better than DDT wetmix superphosphate on *Wiseana* counts, but were at the 5% level on percentage cover.

SERIES II

Applied: March 22-5, 1964.

Sampled: August 24, 1964

Pre-treatment sampling (50 spade square samples):

	Range	Average
Grass-grubs	0-61	1.56
<i>Wiseana</i>	6-45	18.86

Application by hand, etc., as for Series I. Wind: Range 3-7. Average 4 m.p.h. Replications: 3. Rain since application 7.22 in. Larval counts on basis of 10 spade square samples per plot.

TABLE 2: SHAND'S TRACK TRIALS

Materials	Dosage (lb)	A		B	
		Live <i>Wiseana</i> Statist'l Means	Signifi- cance c.f. Controls	% Cover Statist'l Means	Signifi- cance c.f. Controls
1. Trichlorphon spray	0.8	1.34	**	89.2	**
2. Methyl parathion spray	0.5	1.64	**	85.4	**
3. DDT wetmix super.	2.0	1.65	**	83.3	**
4. DDT American pellets + super.	2.0	3.06	**	72.9	**
5. Azinphos-methyl spray	0.5	4.55	N.S.	68.0	**
6. Azinphos-ethyl spray	0.4	4.74	N.S.	63.9	**
7. Metacil spray	0.5	5.45	**	33.0	**
8. Control	—	4.27	—	16.6	—

Differences for significance:	5%	1%
A	0.81	1.12
B	8.00	10.80

Notes: N.S.=Not significant.

*=Significant at 5% level.

**=Significant at 1% level.

**-=Significantly worse than control at 1% level.

SUMMARY

- (1) The first four treatments were significantly better than control at a 1% level on *Wiseana* counts, and all 7 treatments than control at the 1% level on percentage cover.
- (2) No significant differences between the first three by either method of assessment.
- (3) Trichlorphon was significantly better than American DDT pellets and the azinphos and metacil at the 1% level by both assessments.
- (4) Methyl parathion and DDT wetmix superphosphate were better at the 1% level than azinphos-methyl, azinphos-ethyl and metacil preparations by both assessments.
- (5) DDT wetmix superphosphate was better at the 1% level on *Wiseana* counts and at the 5% level on pasture percentage than the American DDT pellets.

- (6) The higher counts of larvae on metacil than on control plots were due to migration from controls to treatments. Controls were bare ground in most cases.

SERIES III

Applied: March 26, 1964.

Sampled: September 10, 1964.

Pre-treatments counts: Same as for Series I, Tancreds Rd. Application by hand as for others. Other conditions also were the same as for Series I except for rain since application, which was 8.56 in.

This series consisted of bait prills using attractants and with DDT as the insecticide. The idea behind their usage was that it might be possible, by using attractants, to reduce the DDT dosage significantly and so reduce residue hazards.

TABLE 3: TANCRED ROAD TRIALS

Materials	Dosage of DDT (lb)	Live Wiseana Statist'l Means	Significance c.f. Control
1. (1A) Attractants+DDT	1	2.18	**
2. (1B) Attractants+DDT	2	1.93	**
3. (2A) Kibbled wheat+attractants+ DDT	$\frac{1}{2}$	1.78	**
4. (2B) Kibbled wheat+attractants+ DDT	1	1.79	**
5. (2C) Kibbled wheat+attractants+ DDT	2	1.05	**
6. (3) Ammophos/DDT	2	1.34	**
7. Control	—	4.22	—
Differences for significance:	5% 0.97	1% 1.37	

Note: **=Significant at 1% level.

SUMMARY

- (1) All treatments were significantly better than control at the 1% level.
- (2) No. 5 was not significantly better than Nos. 6, 3, 4, or 2.
- (3) No. 5 was significantly better than No. 1 at the 5% level.
- (4) There were no significant differences between other treatments.

GENERAL DISCUSSION OF RESULTS

A study of the three tables above indicates that, as far as *Wiseana* control in these Canterbury tests is concerned, there were five preparations in the organophosphate group of insecticides which gave results very nearly as good as or better than the DDT wetmix superphosphate; these were trichlorphon as a spray, diazinon as sprays and granules, methyl parathion and azinphos-methyl and azinphos-ethyl preparations as sprays. The carbamate metacil did not give practical control at the dosage used. Of the DDT preparations, the wheat bait prills in Series I at 2 lb looked promising and comparison with the bait prill, Series III, indicates that there is a possibility that the 2 lb rate could be reduced to $\frac{1}{2}$ lb in future trials. The DDT wetmix superphosphate was clearly superior to the American pellets in superphosphate in Series II. There did not appear to be any real differences between the 0.8 lb and 2 lb dosages of trichlorphon in Series I and II.