CONTROL OF *WISEANA DESPECTA* (WALK.) WITH SOME ORGANOPHOSPHATE CHEMICALS

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Summary

In a trial of four chemicals at 1 lb of active ingredient per acre as sprays and granules, all materials gave significant reduction of caterpillars of *Wiseana despecta* (Walk.). Fenitrothion spray, and granules of Bayer 5082, fenitrothion and trichlorphon controlled more than 80% of caterpillars, while diazinon granules, trichlorphon and Bayer 5081 sprays gave reductions between 60 and 80% in caterpillar numbers. All these treatments were significant at the 1% level. Diazinon spray was slightly below this level in percentage kill, but was significant at the 5% level on statistical analysis.

INTRODUCTION

DIAZINON and trichlorphon have recently been described as effective chemicals for the control of porina caterpillar (*Wiseana* spp.) in pasture (Kelsey, 1964).

The occurrence of late spring damage in a pasture at Springburn in October, 1965, gave opportunity to test these and other promising materials, both as sprays and granules, against spring damage by *Wiseana despecta* (Walk.). A 2-year-old paddock was sampled over several months in order to determine the species involved. In early October, when damage first became apparent, caterpillars were just over an inch long. The pasture was predominantly cocksfoot and red clover, but had been sown with white clover, perennial ryegrass, timothy and sweet vernal. The worst damage consisted of severe thinning, the ground being bared of all growth except cocksfoot and red clover plants. On October 20, caterpillars were 1½ in. long and averaged six per square foot. On November 23, untreated areas were still being damaged, though much of this was masked by heavy growth. Caterpillars had not increased in size by mid-December, and on January 4, 1966, only pupae were present. On January 15, 12 spade-square samples taken at random yielded no pupae, and six adults collected from the paddock and two reared from pupae collected earlier were all determined by L. J. Dumbleton as *Wiseana despecta* (Walk.).

EXPERIMENTAL METHODS

Four organophosphate chemicals were applied at 1 lb active ingredient per acre both as sprays and granules on October 19 and 20, 1965 (see Table 1). All treatments and untreated controls were replicated five times in a randomized block consisting of 45 plots, each plot being 11 yards square. Sprays were hand-applied with a precision sprayer in the equivalent of 40 gal of water per acre. Granules were hand-applied in two directions with a perforated shaker after being bulked with 1 lb of dry granulated soil per plot.

TABLE 1: RESULTS FROM APPLICATION OF MATERIALS FOR CONTROL OF *WISEANA DESPECTA* (WALK.) AT 1 lb PER ACRE
ACTIVE INGREDIENT

Material	Live Caterpillars (6 samples $\times$ 5 reps.)		Significance
	Arithmetic Total	As Trans- formed Mean of Rep. Totals	
Fenitrothion spray	3	0.986	**
Bayer 5082 granules	5	1.116	**
Fenitrothion granules	6	1.248	**
Trichlorphon granules	9	1.442	**
Trichlorphon spray	13	1.546	**
Diazinon granules	12	1.566	**
Bayer 5081 spray	11	1.610	**
Diazinon spray	12	1.652	*
Untreated control	31	2.532	

Std. error of treatment mean: 0.248 LSD 5% 0.715; 1% 0.962

Effectiveness of treatments was judged by sampling for live caterpillars. Three operators each dug 2 spade-square samples from each plot, all sampling being completed on November 23, 1965, approximately one month after application.

RESULTS

Mean count of caterpillars per replication were transformed — $\sqrt{(n + 0.5)}$ — and an analysis of variance carried out over all counts taken as a whole. There were no significant differences between treatments but all treatments were significantly better than control, diazinon spray at the 5% level, and all others at the 1% level. All treatments gave a worthwhile reduction in numbers of live caterpillars at a stage when they were actively damaging pasture.

Over the period of the trial, the population declined in untreated controls by approximately 50%.

A marked visual difference was obvious between the best of the treatments and the untreated control, but no measurements were made of actual pasture cover.

DISCUSSION AND CONCLUSION

Unpublished data on control of this type of caterpillar (J. M. Kelsey, pers. comm.) show that application of some organophosphate chemicals in winter is not as effective as would appear in this trial. This is thought to be connected with the behaviour of the insect, which lives in a tunnel in the ground, and may not be actively feeding on frosty evenings. The trial shows that an effective kill of caterpillars in the spring can be obtained by application of several different chemicals either as sprays or granules. Fenitrothion spray, and fenitrothion, Bayer 5082 and trichlorphon granules killed more than 80% of the caterpillars. Diazinon granules, trichlorphon and Bayer 5081 sprays gave reductions between 60 and 80% in caterpillar numbers. All these treatments were significant at the 1% level. Diazinon spray was slightly below this level in per-

centage kill, but was significant at the 5% level on statistical analysis.

Natural and chemical control together reduced the population by up to 90% and this gave a significant reduction in caterpillar numbers when compared with untreated plots.

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REFERENCE

Kelsey, J. M., 1964: *Proc. 17th N.Z. Weed & Pest Control Conf.*: 141.