SOLDIER FLY — CONTROL OF LARVAE WITH CHEMICALS

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Summary

One preliminary screening trial is described, where 7 chemicals were compared with untreated control on soldier fly (*Inopus rubriceps* [Macq.]) infested pasture. Data on populations of larvae and pasture production are presented.

INTRODUCTION

HEWITT (1964, 1969) has shown that insecticides will give some degree of control of soldier fly larvae in soil. Required rates of chemicals were excessive and adversely affected pasture.

Parathion was reported to have had some use for crop establishment (Fellowes 1971) and 2 chemicals — fensulfothion and methamidophos — were also reported to be effective against soldier fly larvae in pastures and crops (Fellowes pers. comm.).

TRIAL DESIGN AND MANAGEMENT

The chemicals tested are shown in Table 1.

All chemicals were applied at heavy rates in May, 1972, as granules, except thionazin, which was sprayed on to short pasture. The trial site was adjacent to that described by Cumberland *et al* (1973) for their cultivation trial. Plots of 3 m x 3 m were used with 6 replications. Soil samples for larva counts were collected from control plots a few days after the trial was laid down and subsequently from all plots during the trial. Pasture differences were recorded by mowing.

RESULTS AND DISCUSSION

Initial larval density (May) over the area was about 4400/m². Larval counts in July 1972 are shown in Table 1. Obvious pasture vigour differences were confirmed by mowing (Table 1).

This trial has shown that all chemicals used reduced numbers of larvae and increased pasture vigour within 3 months of application. Parathion, thioxamyl, fenamiphos and thionazin resulted in the greatest reduction. The best, fenamiphos, at the heavy rates used gave only a 75% reduction of larval numbers which is less than the best cultivation treatment on the adjacent trial (Cumberland *et al* 1973). The difference in pasture vigour (particularly colour) persisted in this trial for 6 to 8 months. Longer lasting and more marked responses were probably not realised, for there were few high producing pasture species on the trial site.

TABLE 1: CHEMICAL CONTROL OF LARVAE UNDER PASTURE

<i>Treatment</i>		<i>Counts of larvae July 1972 (Thousands/m²)</i>	<i>Dry Matter May to Aug. 1972 (kg/ha)</i>	<i>Pasture Vigour August 1972 (0-10 scale)</i>
	<i>kg/ha</i>			
control		3.9 aA	500 bC	4.2 cC
parathion	22	1.9 bcBC	840 aAB	7.5 aAB
methamidophos	11	2.3 bcAB	650 bBC	5.5 bcBC
ethoprop	11	2.3 bcAB	850 aAB	7.0 abAB
fensulfothion	11	2.6 abAB	830 aAB	7.0 abAB
thioxamyl	11	1.4 cdBC	890 aAB	7.0 abAB
fenamiphos	11	0.9 dC	1000 aA	7.0 abAB
thionazin	11	1.9 bcBC	1000 aA	8.5 aA
C.V.		42%	18%	17% (reps 1 - 4 only)

A correlation coefficient between July larvae counts and August dry matter was shown to be -0.86 (sig. 1%), which indicated a strong relationship between these two measurements.

CONCLUSIONS

1. Extremely heavy rates of chemicals, parathion, thioxamyl, fenamiphos and thionazin reduced numbers of larvae and increased dry matter production.
2. There was a highly significant correlation between larvae counts and dry matter production.
3. The best chemical did not achieve the same degree of larval reduction as better cultivation treatments on an adjacent trial.
4. The extremely heavy rates of application of chemicals, coupled with the mediocre level of control of the pest, suggests that these chemicals on their own are unlikely to have commercial merit for the control of soldier fly in pasture.

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REFERENCES

- Cumberland, G. L. B.; Dyson, C. B., Farrell, C. A., 1973. Soldier Fly—Aspects of its control with cultivation. *Proc. 26th N.Z. Weed & Pest Control Conf.*: (in print).
- Fellowes, R. W., 1971. Control of Australian Soldier Fly damage in maize. *Proc. 24th N.Z. Weed & Pest Control Conf.*: 164.
- Hewitt, S. R., 1964. Trials on Soldier Fly. *Proc. 17th N.Z. Weed & Pest Control Conf.*: 191.
- Hewitt, S. R., 1969. The effect of Australian Soldier Fly on pasture, crops and production. *Proc. 22nd N.Z. Weed & Pest Control Conf.*: 280.