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**CONTROL TRIALS AGAINST THE ROUGH BROWN
WEEVIL LEPTOPIUS CORRUGATUS PASCOE**

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SUMMARY

Seventeen insecticides were tested in field trials against adults of the rough brown weevil *Leptopius corrugatus* Pasc. (Coleoptera:Curculionidae), a pest of tropical pasture legumes. In these trials the more efficacious materials were azinphos-ethyl, dieldrin and methidathion each at a spray strength of 0.05% active constituent.

I. INTRODUCTION

Various aspects of the bionomics of the rough brown weevil *Leptopius corrugatus* Pasc. (Coleoptera:Curculionidae) have been elucidated (Elder, Brown and Wicks, in preparation) as part of a program to determine a method of control for this pest, which feeds in the larval stage in the roots of a number of tropical pasture legumes on the northern tablelands of Queensland (Saunders 1968).

From this work it was apparent that the main emergence of the wingless adults from the soil occurs at the break of the autumn-winter dry season with the first summer rainstorm yielding approximately 50 mm. The whole population, by this time resting as adults in earthen pupal cells, emerges from the soil. Since egg-laying does not then commence for approximately 2 months, this is a strategic time to make an insecticide application if control is to be directed against the adults. Three field trials were undertaken to determine a suitable insecticide. These were located in the Atherton-Mareeba districts of North Queensland.

II. METHODS AND MATERIALS

Trial 1 was commenced on January 5, 1970, at Tolga on *Lablab purpureus* seedlings in rows 0.92 m apart and in the first trifoliate leaf stage of growth. A 7 x 6 randomized block design was used. Plots were 4.0 m in length with one guard row between plots and 0.8 m guard area between adjoining plots in the same row. The treatments were applied as sprays once to run-off with a knapsack sprayer.

Trials 2 and 3 were commenced on December 7, 1970, on adjacent areas at Walkamin on *Lablab purpureus* seedlings in the first trifoliate leaf stage. A 9 x 4 randomized block design was used in each but with two guard rows between plots. The plot sizes and spray treatments were as for trial 1.

The insecticides used in the trials are listed in Table 1, together with the kind of formulation and percentage of active constituent in the concentrates and the strengths of the sprays applied in the field.

TABLE 1
INSECTICIDES USED IN THE TRIALS

Insecticide	Formulation	Active Constituent (%)	Spray Strength (%)	Trial No.
Azinphos-ethyl ..	Miscible concentrate	40 w/v	0.05	1, 2, 3
Carbamult	Wettable powder	49 w/w	0.05	3
Carbaryl	Wettable powder	80 w/w	0.05	1
Carbaryl	Wettable powder	80 w/w	0.1	2
Chlorfenvinphos ..	Miscible concentrate	50 w/v	0.025	2
Diazinon	Miscible concentrate	20 w/v	0.05	3
Dieldrin	Miscible concentrate	15 w/v	0.05	2, 3
Dieldrin	Miscible concentrate	30 w/v	0.05	1
Dimethoate	Miscible concentrate	30 w/v	0.03	2
Endosulfan	Emulsifiable concentrate ..	35 w/v	0.05	1
Fenitrothion	Emulsifiable concentrate ..	50 w/v	0.05	1
Imidan	Miscible concentrate	15 w/v	0.05	3
Leptophos	Miscible concentrate	26 w/v	0.1	2
Maldison	Miscible concentrate	20 w/v	0.05	2
Methidathion	Miscible concentrate	40 w/v	0.05	3
Methomyl	Soluble powder	90 w/w	0.05	1
Monocrotophos ..	Water soluble concentrate ..	60 w/v	0.025	3
Naled	Miscible concentrate	90 w/v	0.025	2
Tetrachlorvinphos ..	Emulsifiable concentrate ..	24 w/v	0.05	3

Pretreatment counts were made on the day of or prior to the insecticide applications. Post-treatment counts were made after 2, 5 and 14 days for trial 1 and 2, 6 and 13 days for trials 2 and 3.

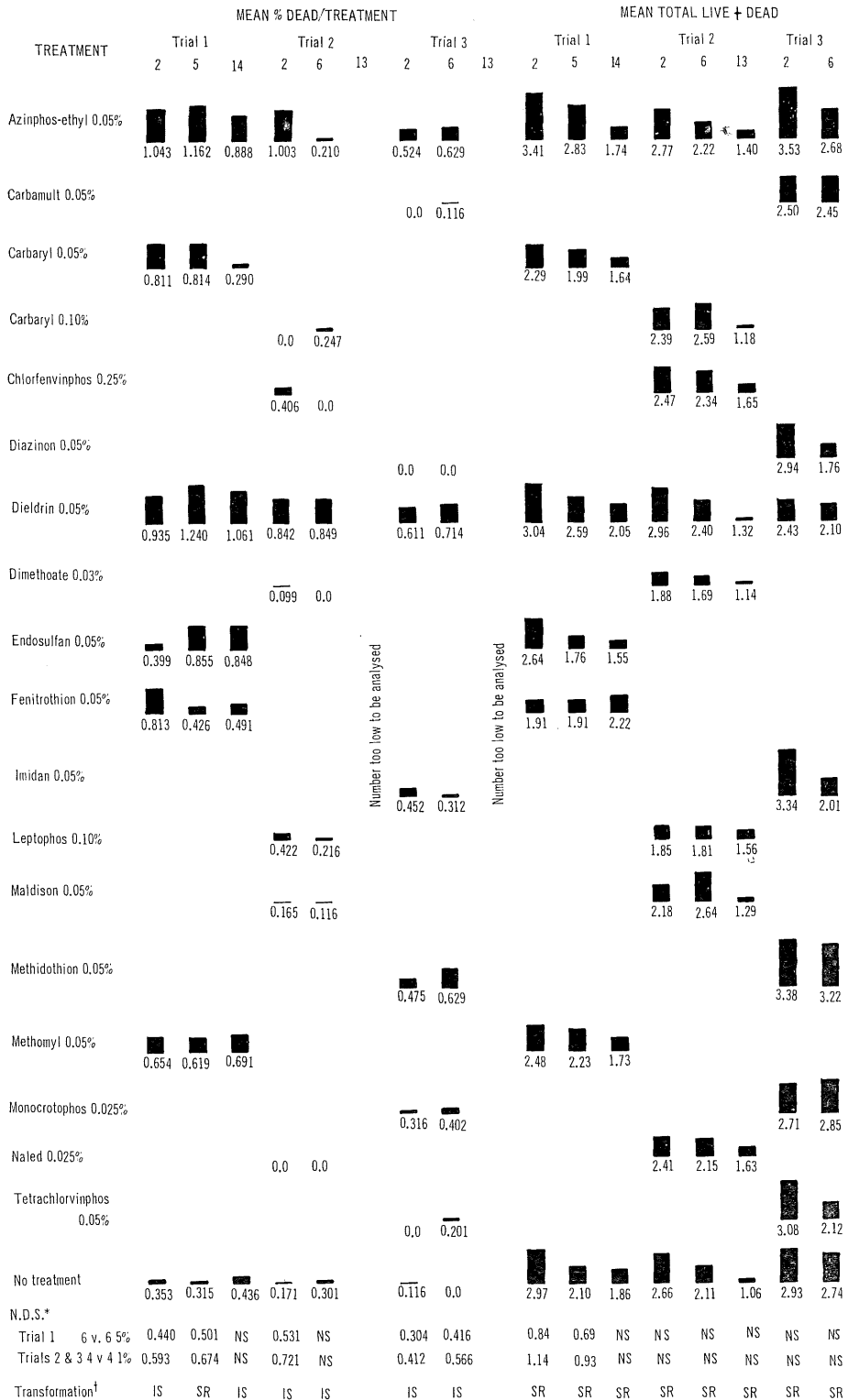
In all trials each plant in the plots was examined and the numbers of living and dead weevils on or under the plant were recorded. This was facilitated by the habit of the adults of usually resting during daylight hours on the plants or under clods of earth at the bases of the plants. Dead weevils only were removed at each count.

It was observed in trial 1 that plants with cover in the form of clods at their bases usually had a higher weevil count, and that the weevils readily walked, at least in the early morning, from plant to plant. In order to reduce this movement, clods of earth as cover were placed at the bases of the plants at the time of the pretreatment count.

III. RESULTS AND DISCUSSION

The details for all trials are given in Figure 1.

Most of the insecticides used in the trials were poor in their effects against *L. corrugatus* adults and few were worth submitting to further testing.



* Necessary difference for significance † IS = inverse sine; SR = $\sqrt{x + \frac{1}{2}}$

Fig. 1.—Mean percentage of dead weevils per treatment and mean total live plus dead weevils per treatment for the three trials. Numbers are the transformed means. (N.D.S. for 6v.6 and 4v.4 should read .5 and .1 respectively.)

Dieldrin 0.05% and azinphos-ethyl 0.05% were the more efficacious insecticides in all three trials. Methidathion 0.05%, used in trial 3 only, appeared worthy of further testing.

REFERENCE

SAUNDERS, G. W. (1968).—Pests of legume seed crops in Nth. Queensland. *Qd agric. J.* 94:725-30.

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