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INSECTICIDE CONTROL OF THREE GRASS-FEEDING NOCTUIDS AND HERPETOGRAMMA LICARSISALIS (WALK.)

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SUMMARY

Trichlorphon, carbaryl, and DDT sprays each at 0·05% active constituent gave good control of *Herpetogramma licarsisalis* (Walk.), and mixed populations of *Spodoptera exempta* (Walk.), *Spodoptera mauritia* (Boisd.), and *Agrotis munda* Walk.; *S. exempta* predominating.

I. INTRODUCTION

Herpetogramma licarsisalis (Walk.) (Lepidoptera:Pyralidae) is distributed throughout Queensland, but is responsible for serious damage to pastures and lawns only in the south-eastern coastal areas of the State in late summer and autumn (late January to late May) (Champ 1954, 1955).

Outbreaks of the day feeding armyworm (*Spodoptera exempta* (Walk.)) on pastures are common in the same period (January to May) throughout the State.

On the Tablelands of north Queensland, outbreaks in pastures and lawns of *H. licarsisalis* have been recorded in September and from December to March, and outbreaks of *S. exempta* from January to March. Mixed populations of *Spodoptera mauritia* (Boisd.) (lawn armyworm), *Agrotis munda* Walk. (brown cutworm) and *S. exempta* are commonly found damaging lawns on the Tablelands, *S. exempta* usually predominating (unpublished Department of Primary Industries records).

DDT has been recommended for control of armyworms (Smith 1933, Passlow 1952, May 1953 and May and Passlow 1954) and for *H. licarsisalis* (Champ 1954). As a result of the appearance of chlorinated hydrocarbon residues in meat from animals grazing treated pastures, two trials were undertaken on closely mown couch (*Digitaria didactyla* Willd. and *Cynodon dactylon* Pers.) approximately 2·5 cm high to obtain data on short residual life insecticides as alternatives to DDT for control of *S. exempta* and *H. licarsisalis*.

TABLE 1

PRE-TREATMENT AND POST-TREATMENT LARVAL POPULATIONS PER PLOT

Treatment	*H. licarsisalis*						*S. exempta*, *S. mauritia*, *A. munda* (predominately *S. exempta*)					
	At pre-treatment (17 Mar 67)		At Post-treatment				At Pre-treatment (17 Mar 67)		At Post-treatment			
			Two days (19 Mar 67)		Five days (22 Mar 67)				Two days (19 Mar 67)		Five days (22 Mar 67)	
	Trans mean*	Equiv mean†	Trans mean*	Equiv mean†	Trans mean*	Equiv mean†	Trans mean*	Equiv mean†	Trans mean*	Equiv mean†	Trans mean*	Equiv mean†
Trial 1												
Trichlorphon	3·87	14·5	1·70	2·4	1·44	1·6	2·43	5·4	1·08	0·7	1·05	0·6
Carbaryl	4·10	16·3	1·84	2·9	1·05	0·6	2·48	5·7	1·34	1·3	1·50	1·7
DDT	4·42	19·0	1·63	2·1	0·88	0·3	2·39	5·2	0·97	0·4	1·07	0·7
Untreated	4·72	21·8	3·64	12·8	2·48	5·6	3·12	9·2	2·85	7·6	2·45	5·5
F	2·61 NS	..	19·61†	..	19·60†	..	1·42 NS	..	37·14†	..	7·56†	..
Necessary difference for significance 5%	..	..	0·66	..	0·49	..	..	..	0·43	..	0·72	..
Necessary difference for significance 1%	..	..	0·91	..	0·67	..	..	..	0·60	..	0·99	..
	Mean per plot (9 Feb 1968)		Mean per plot (11 Feb 1968)		Mean per plot (14 Feb 1968)		Mean per plot (9 Feb 1968)		Mean per plot (11 Feb 1968)		Mean per plot (14 Feb 1968)	
Trial 2												
Trichlorphon	19·5		2·7		1·7		9·3		0·2		0·8	
Carbaryl	20·5		2·8		1·3		4·3		0·0		0·3	
DDT	17·7		1·5		0·7		8·2		0·3		0·1	
Untreated	13·8		9·2		12·5		8·3		9·3		9·3	

* Transformation $\sqrt{x} + \frac{1}{2}$.
† Lavae per 45 cm x 35 cm.

II. MATERIALS, METHODS AND RESULTS

The insecticide materials used at 0·05% active constituent spray strength in both trials were—

Trichlorphon. A soluble powder containing 80% w/w active constituent.
Carbaryl. A wettable powder containing 80% w/w active constituent.
DDT. A miscible oil containing 25% w/v active constituent.

Layouts for both trials were 6 x 4 randomized blocks with a plot size of 1·5 m x 1·5 m. Treatments were made with a 6·8-litre junior knapsack having a single nozzled lance, a thorough cover being made at application.

Population sampling was facilitated by spreading wet jute bags (Champ 1954) folded in half and placed two nights before a count. The bags were distributed as evenly as possible over the plot, each folded bag covering an area 45 cm x 35 cm. Counts of larvae under bags and on the ground under the bags were made before treatment, and 2 and 5 days after treatment. Larvae obtained under bags in the areas adjacent to the trial locations were bred out to adults for identification.

In both trials the three spray treatments gave satisfactory control of *H. licarsisalis* and mixed populations of *Spodoptera* spp. and *A. munda, S. exempta* predominating (table 1).

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