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DIELDRIN RESISTANCE IN THE BANANA WEEVIL BORER, COSMOPOLITES SORDIDUS GERM., IN QUEENSLAND

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SUMMARY

Resistance to dieldrin was recorded for the first time for the banana weevil borer, *Cosmopolites sordidus* Germ., in southern Queensland in 1977 and in northern Queensland in 1979.

I. INTRODUCTION

Resistance to dieldrin by the banana weevil borer, *Cosmopolites sordidus* Germ., has been recorded from a number of countries (Vilardebo 1967). In Australia, dieldrin resistance was first reported from New South Wales by Shanahan and Goodyer (1974). Difficulties in controlling the insect in Queensland with the standard spray of 0·05% dieldrin (Swaine and Corcoran 1975a), occurred in the southern border area of Currumbin on three banana plantations in April 1977, on two other plantations in 1978, and on another one in 1979. In north Queensland similar difficulties arose on six plantations in the Mission Beach area in April 1979. Samples from all these plantations were tested in the laboratory for resistance to the insecticide.

II. MATERIALS AND METHODS

The material used was dieldrin, a solution of the pure material HEOD, re-crystallised from hexane to a constant melting point of 175–176°C, in kerosene at 0·65% and 1·3% active ingredient.

Suspected resistant borers were tested by topical application using the above concentrations, which had been found to give 99% and 99·9% mortality of a susceptible population (Swaine and Corcoran 1973b). In southern Queensland the methods of handling the insects and of determining death were those described by Swaine and Corcoran (1973b), whilst in northern Queensland the methods were those of Edge (1974).

III. RESULTS AND DISCUSSION

When the mortalities in table 1 are compared with the mortalities of susceptible borers for the two concentrations used, it is clear that all the samples from southern Queensland were resistant to dieldrin. Similarly, it is clear from the results in table 2 that dieldrin resistance is now established in northern Queensland plantations. Experience in New South Wales of the gradual spread of resistance throughout an area (Edge *et al.* 1975) is supported by our results for southern Queensland in 1978 and 1979.

Dieldrin resistance has not appeared so far in any other banana area between Currumbin and North Queensland, but a close watch is being maintained.

TABLE 1

DIELDRIN RESISTANCE IN SAMPLES OF BANANA WEEVIL BORERS FROM CURRUMBIN IN SOUTHERN QUEENSLAND

Year	Plantation No.	No. of Borers	Percentage Mortality After Three Days		
			Treated (1 microlitre of Dieldrin in Kerosene)		Control (1 microlitre of Kerosene only)
			*0·65% w/v	**1·3% w/v	
1977	1	27	0	..	0
	2	15	0	..	13·3
	3	20	5·0	..	0
	3	80	..	26·3	8·8
1978	4	30	..	13·3	0
	5	12	..	16·7	0
1979	6	30	..	66·7	3·3

* LD_{99} and ** $LD_{99\cdot9}$ values for a susceptible strain (Swaine and Corcoran 1973b). Insufficient numbers of borers were available from plantations 1 and 2 for tests at the higher dosage.

TABLE 2

DIELDRIN RESISTANCE IN BANANA WEEVIL BORERS FROM MISSION BEACH IN NORTH QUEENSLAND, 1979

Plantation No.	1 microlitre of *1·3% w/v Dieldrin in Kerosene		1 microlitre of Kerosene only	
	No. Treated	Percent Mortality After Three Days at 25°C.	No. Treated	Percent Mortality After Three Days at 25°C.
1	110	1·8	125	4·0
2	13	15·4	13	7·7
3	10	20·0	10	0
4	80	22·5	85	18·8
5	30	6·7	30	10·0
6	20	0	15	0

* $LD_{99\cdot9}$ value for a susceptible strain (Swaine and Corcoran 1973b).

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