CHEMICAL CONTROL OF THE CEREAL APHID (*RHOPALOSIPHUM PADI* L.)

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Summary

An experiment in the chemical control of the cereal aphid is described. Under conditions of this test, demeton-S-methyl, dimethoate, thiometon, mevinphos, menazon, phosphamidon and endosulfon all gave something better than 90% of control. Vamidothion gave 88%.

INTRODUCTION

CEREAL APHID, *Rhopalosiphum padi* (L.) is responsible for transmitting barley yellow dwarf virus, a disease than can seriously reduce wheat yields, particularly in autumn-sown wheat (Smith and Wright, 1964). Close and Lamb (1961) show that there are two main periods each year when flights of this aphid occur, in the autumn and in spring. These autumn flights from virus-infected grasses and other greenfeed cereals ensure a continuing link of aphids and virus with autumn-sown wheat. The extent of virus transmission varies from year to year depending on numbers of aphids flying and duration of flights. It is now known that, by keeping wheat free from aphids and virus in the autumn, considerable losses in yield can be avoided. Two basic principles can be employed: (1) Sow after aphid flights have finished, or (2) Use an insecticide to kill these aphids which are important even in low numbers.

The chemicals listed in Table 1 were tested in a paddock of autumn-sown Aotea wheat at Lincoln. This trial compared the efficiency of several insecticides and no yields were recorded.

MATERIALS AND METHODS

In the spring of 1962, the materials were applied by tractor-operated boom sprayer using 14 gal of water per acre. Plots one boom width by 2 chains were all randomized within four columns separated by buffer strips, two replications of each treatment. Counts taken randomly within each plot consisted of all aphids from 20 counts of 3 tillers per plot (60 tillers). There were two counts, one at three days and another at ten days from treatment.

RESULTS

All materials gave a very high degree of control (Table 1). Heavy rain (1.17 in.) in the period between counts, together with the predacious effects of large numbers of lacewings and ladybirds, would have been largely responsible for the reductions in aphid numbers on control plots.

TABLE 1: MATERIALS AND DOSAGES USED AND SUMMARY OF RESULTS

<i>Materials</i>		<i>Dosage (fl. oz active)</i>	<i>Aphid Numbers per 60 Tillers</i>			
			<i>3 Days</i>		<i>10 Days</i>	
			<i>Aphids</i>	<i>% of Control</i>	<i>Aphids</i>	<i>% of Control</i>
Demeton-S-methyl	....	3	0	100	1	99+
		1½	0	100	0	100
		¾	1	99+	2	99
Dimethoate	....	2.4	3	99+	2	99
		1.2	19	98	1	99+
Thiometon	....	1.2	4	99+	0	100
		0.6	8	99	4	99
Mevinphos	....	1.5	17	98	3	99
		0.7	5	99	7	98
Menazon	....	2.4	11	99	4	99
Phosphamidon	....	3	14	98	1	99+
Endosulfon	....	2.1	57	93	22	94
Vamidothion	....	2.4	95	88	43	88
Control	....	....	809		353	

DISCUSSION

Th results indicate that a high degree of control of aphids can be obtained using any of the insecticides mentioned but it must be borne in mind that some of the low dosages used may only be satisfactory when applied under optimum conditions. Convection currents, winds, etc., are at times very likely to reduce these already low dosages to an ineffective level. Even though the percentage kill of aphids is high, it would be unwise to use an insecticide which would not kill 98% or more of this cereal aphid. Low numbers of virus-infected aphids in the autumn have a very high yield-reducing potential the following spring.

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REFERENCES

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