CARROT RUST FLY CONTROL

Field Evaluation of Non-persistent Insecticides

K. G. TATE

Research Division, Department of Agriculture, Levin

Summary

Thirteen non-persistent insecticides applied as granules in a narrow band beneath the seed were compared in a silt loam soil under summer conditions against late attacks of rust fly (*Psila rosae*) in carrots. All treatments gave significant control, but only disulfoton and phorate performed better than diazinon, and are therefore preferred treatments under summer conditions or where foliage aphids are also a problem.

INTRODUCTION

DIAZINON as a soil treatment at sowing time gives adequate control of carrot rust fly (*Psila rosae*) under cool soil conditions but is less effective under warm soil conditions (Tate, 1970). There was a need for alternative insecticides to be evaluated for these latter conditions.

In addition to carrot rust fly, growers usually have other insect pests to contend with, both in the roots and in the foliage. It would be advantageous to obtain both foliage and soil insect pest control in one pre-sowing application, and this should be possible by using systemic insecticides with a wide spectrum of activity. This note reports a field trial aimed at comparing a range of soil insecticides against rust fly under warm soil conditions including systemic materials likely to be of value against foliage aphids.

EXPERIMENTAL

The trial was conducted on Levin silt loam with treatments replicated six times in randomized blocks. Each plot was 30 ft long containing a single row of carrots (cv. Manchester Table) and separated from adjacent plots by single untreated guard rows at 1 ft row spacing. All the insecticides, formulated as granules, were banded 1 in. below untreated seed at a rate equivalent to 2 lb a.i. per acre. The trial was sown on December 13, 1968, and harvested 14 weeks later, on March 20, 1969. Soil temperatures at 4 in. depth remained above 60° F throughout and irrigation was necessary in the first four weeks of growth. Total rainfall exceeded 11 in. Young maggots were present in the roots at harvest, indicating a late infestation and providing a good test of the insecticides. Treatments were assessed by determining the percentage of mined roots at harvest.

RESULTS AND DISCUSSION

Results are given in Table 1.

TABLE 1: MINED CARROTS AT HARVEST

<i>Treatments</i>	<i>Mean %*</i>	<i>% Reduction</i>
disulfoton	1.9 dC	90
phorate	2.0 dC	91
fensulfothion	3.0 cdC	91
fonofos	3.0 cdC	87
"Dursban"	3.3 cdBC	87
C18244	5.1 bcdBC	77
aldrin-standard	5.1 bcdBC	82
thionazin	5.9 bcdBC	82
trichloronate	6.0 bcdBC	79
mecarbam	7.0 bcdBC	75
methomyl	7.0 bcdBC	77
diazinon	9.2 bcBC	67
aldicarb	9.5 bcBC	70
parathion	14.3 bB	56
Untreated	31.1 aA	—

*Square root transformation.

All insecticide treatments gave significant control. Disulfoton and phorate were superior to parathion, diazinon and aldicarb, but not significantly better than fensulfothion, fonofos, "Dursban", mecarbam, thionazin, trichloronate, methomyl, C18244 or aldrin. Worthwhile control in this trial was given by treatments which reduced mined roots by more than 85%. Since disulfoton and phorate performed better than diazinon under the warm soil conditions they are preferred treatments for summer carrot crops. In addition, their systemic properties make them an attractive proposition for combined control of foliage aphids and rust fly by soil application.

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REFERENCE

Tate, K. G., 1970: *Proc. 23rd N.Z. Weed & Pest Control Conf.*: 207-11.