

RESEARCH NOTES

Vegetable Oils as Protectants Against Nematode Infections

P. M. MILLER¹

Miller et al. (1) found that cottonseed meal is toxic to *Heterodera tabacum* Lownsbury & Lownsbury. Since oils or lipids might be formed during the decay of such meals, tests were made of the nematotoxicity of corn, cottonseed, linseed, olive, and safflower oils to *P. penetrans* (Cobb) Filipjev and Schuurmans Stekhoven.

MATERIALS AND METHODS

In this experiment, 0, 0.125, 0.25, 0.5, and 1.0 ml of each oil dissolved in 1 ml of 95% ethanol was added to 1 kg of soil containing 370 *P. penetrans* per kg, and incorporated by shaking. After 10 days at 22 ± 3 C, a four-week-old tomato (*Lycopersicon esculentum* Mill cv. Bonny Best) seedling was planted in each of six 5-cm-diam plastic pots containing 100 g of treated or untreated infested soil. After 5 days at 22 C each root system (about 0.2 g) was washed free of soil and homogenized in a blender for 30 seconds. The number of free *P. penetrans* was determined.

In another test, 1 ml of soybean oil was mixed with 1 kg of soil containing 850 *Tylenchorhynchus dubius* (Butschli) Filipjev. The soil was placed in 15-cm-diam plastic pots and incubated for 3 days at 22-25 C. Then annual rye grass (*Lolium temulentum* L.) was seeded. Twelve days later, *T. dubius* individuals in 100 g of soil from each pot were extracted by flotation (1) and counted.

To test possible use of these oils as root dips, tomato roots were dipped into water containing 0.25% corn oil and then planted in pasteurized soil or soil infested with *P. penetrans* (370/kg of soil). After growth in the greenhouse for 5 days at 22-25 C, the roots were washed and homogenized in a blender for 30 seconds, and free *P. penetrans* were counted.

TABLE 1. Number of *Pratylenchus penetrans* obtained from Bonny Best tomato roots after 5 days growth in soil treated with vegetable oils.

Oil	Rate per kg of soil	No. <i>P. penetrans</i> per 0.2 g roots
None, complete control		150* a
None, ethanol control		125 a
Corn oil	0.125 ml	115 ab
	0.25	112 ab
	0.5	84 b
	1.0	67 c
Cottonseed oil	0.125	159 a
	0.25	129 a
	0.5	117 ab
	1.0	100 b
Linseed oil	0.125	63 b
	0.25	51 c
	0.5	41 c
	1.0	35 c
Olive oil	0.125	165 a
	0.25	106 ab
	0.50	45 c
	1.0	22 c
Safflower oil	0.125	108 ab
	0.25	90 b
	0.50	74 bc
	1.0	53 c

*Average of six replicates. Figures followed by same letters are not significantly different according to Duncan's multiple-range test ($P = 0.05$).

RESULTS AND DISCUSSION

Populations were decreased by all rates of linseed oil, 0.5 and 1 ml of cottonseed or olive oils, and 1 ml of corn, soybean, or safflower oil. The ethanol check reduced populations 15%.

The root dip reduced root populations of *P. penetrans* 80% ($P = 0.05$) below those in untreated plants.

One ml of soybean oil per kg of soil reduced *T. dubius* populations 65% ($P = 0.05$) after 15 days at 22-25 C, without injury to the grass.

These results suggest that vegetable oils might be used for nematode control in small areas such as gardens or lawns.

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¹ Plant Pathologist, Connecticut Agricultural Experiment Station, P. O. Box 1106, New Haven, Connecticut 06504.

LITERATURE CITED

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