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Effect of Soil Fumigation on Sclerotial Populations of *Sclerotium rolfsii*

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Considerable data are available on the effect of soil fumigation on the incidence of *Sclerotium rolfsii* Sacc. in various crops (1, 2), but little on their effect on the sclerotial population of the fungus. A field trial was undertaken on infested land at Silvan, 40 km east of Melbourne to assess this effect.

The site was rotary-hoed on 30th October, 1974 and divided into 25 plots (5 rows of 5), each measuring 3.5 m x 1.5 m and separated by 0.5 m wide buffer zones. Soil fumigants and fungicides were applied so as to give a simple randomization of 5 treatments in each of 5 replications. The chemicals used were: Basamid (R), 500 kg/ha; Edopic (R), 225 l/ha; Folosan (R) 135 kg/ha, and Fungafume (R), 500 kg/ha. The area remained fallow throughout the experiment.

Before the chemicals were applied, five 400 g soil samples were taken at and 10 cm below the soil surface of each plot. Comparable soil samples were also taken 4 and 11 months later.

The organic matter, including sclerotia of *S. rolfsii* in each sample, was separated from the finer soil particles, by washing the sample through a soil sieve (B.S.S. mesh No.60). The material collected on the sieve, was added to water in petri dishes (*C.* lcc material/dish) and examined on a white background under a strong light for sclerotia. The sclerotia were transferred onto PDA containing 50 ppm achromycin and incubated for 3-5 days at 20°C.

Numbers of sclerotia which germinated, are given in Table I and represent *C.* 92 per cent of the total number taken from the soil samples.

These numbers show a significant decrease in viable sclerotia for 11 months after fumigating with either Basamid (R) or Fungafume (R). No similar decrease occurred with either Edopic (R) or Folosan (R).

Table 1. Estimates of viable sclerotia of *Sclerotium rolfsii* at two depths in soil treated with various fungicides

Treatment	Period after treatment (Months)	Estimates of Viable Sclerotia per kg soil	
		On Surface	At 10 cm
Basamid, 500 kg/ha	0*	68.5 (1.84)++	61.0 (1.79)++
	4	6.6 (0.82)	4.9 (0.69)
	11	14.3 (1.16)	17.9 (1.25)
Fungafume, 500 kg/ha	0	35.0 (1.54)	37.1 (1.57)
	4	6.3 (0.84)	3.3 (0.52)
	11	5.0 (0.70)	3.4 (0.53)
Edopic, 225 l/ha	0	79.8 (1.90)	70.6 (1.85)
	4	59.9 (1.78)	39.2 (1.59)
	11	44.9 (1.65)	33.2 (1.52)
Folosan, 135 kg/ha	0	76.1 (1.88)	49.2 (1.69)
	4	75.4 (1.88)	65.2 (1.82)
	11	78.6 (1.90)	63.9 (1.81)
Nil control	0	77.8 (1.89)	62.3 (1.80)
	4	75.0 (1.88)	50.6 (1.70)
	11	73.9 (1.87)	55.8 (1.75)
LSD P = 0.05		(0.62)	(0.62)
P = 0.01		(0.82)	(0.82)

* Immediately before treatment
++ Log transformation

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Differences in Reaction to an Antagonist in Cultures of *Phytophthora cinnamomi*

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This paper reports the results of experiments to assess the antagonistic effects of a species of *Penicillium* against three isolates of *Phytophthora cinnamomi* Rands, from a site at Palmdale in the Ourimbah State Forest near Wyong, N.S.W. The three isolates of *P.cinnamomi*, designated A, B, and C, were obtained from a slope on which trees exhibited varying levels of dieback. The overstorey comprised a mixed stand in which the more important species were *Eucalyptus saligna* Sm., *E. acmenioides* Schau, *E. gummifera* (Gaertn.) Hochr., *E. paniculata* Sm., *E. agglomerata* Maiden, *E. deanei* Maiden, *Angophora floribunda* (Sm.) Sweet, and *Syncarpia glomulifera* (Sm.) Niedenza. The main species in the understorey were, *Acacia* spp., *Casuarina* spp., and *Asterolasia* spp.

P. cinnamomi was isolated from soil using the apple trap method (1, 6) plated on 3P agar (2), and sub-cultured on slants of corn meal agar. Cultures for the experiments were obtained from the latter, and transferred to PDA in plates. The antagonist used, was a species of *Penicillium*, probably of the *P. purpurogenum* series. After four days incubation in darkness at 25°C, aerial mycelium was removed from each of the isolates of *P. cinnamomi* and the *Penicillium* sp. Inoculum for the experiments consisted of discs 5 mm in diameter taken from the advancing edge of the cultures, using a sterile cork borer. In each experiment, five plates of PDA were inoculated with each isolate of *P. cinnamomi*. Plates were inoculated with a single disc of *P. cinnamomi*, and a single disc of the antagonist, both placed upside-down 6 cm apart on the same axis. Controls were inoculated singly, with discs of either an isolate of *P. cinnamomi* or the antagonist and there were five plates of each, i.e. total of twenty controls.

Care was taken to ensure that the thickness of PDA in the plates was uniform, as this has been shown to be important in the study of the growth of organisms and their inhibition by antagonists (3). After inoculation, all plates