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NOTE BREVI - SHORT COMMUNICATIONS

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STUDIES ON THE CONTROL OF *MELOIDOGYNE GRAMINICOLA* ON RICE

by
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The root-knot nematode, *Meloidogyne graminicola* Golden *et* Birchfield causes yield losses of rice in India. Several pesticides have been shown to give control but at high dosage rates (Krishna Prasad and Rao, 1976a, 1976b). Root-knot nematode populations have been controlled by incorporating vegetable oils (Miller, 1979) or roots and shoots of *Eclipta alba* into the soil (Prasad and Rao, 1979; Goswamy and Vijayalakshami, 1981). This note gives the results of the control obtained against *M. graminicola* with six chemical pesticides, three vegetable oils and extract of *E. alba*.

Rice cv. Java was sown in sterilised soil wetted to field capacity in zinc trays (30 × 15 × 5 cm soil depth). Six days after germination, soil was inoculated with larvae of *M. graminicola* to give an inoculum of 100 larvae/plant. Fifteen days after inoculation the plants were uprooted, the roots washed free from soil and batches of 3 plants were then dipped, for 30 min, in 0.02% solutions of chemicals, in shoot extract of *E. alba* (5 g shoot in 100 ml water) or in mustard, gingelly or sunflower oil dissolved in equal quantity of ethanol. The seedlings were then transplanted individually into glazed pots containing 300 g sterilised soil, each treatment being replicated three times.

In a second experiment glazed pots containing 300 g sterilised soil were drenched with 100 ml of 0.02% solutions of the pesticides or extract of *E. alba* to provide 3 replications of each treatment. A 20-day old rice seedling, infested with *M. graminicola*, was then planted into each pot (3 pots per treatment).

Table I - *Efficacy of root-dip treatments in the control of* M. graminicola *in rice.*

Treatment 0.02 per cent	*M. graminicola*			Plant characters		
	Adult females	Egg masses	Galls/plant	Shoot height	Root length	Fresh weight
	(Log 10 values)			(cm)	(cm)	(g)
Phenamiphos	0.23	0.85	1.86	35.1	16.8	0.4
Phosphomidon	0.23	1.80	1.73	43.8	15.7	0.7
Isofenphos	0.23	1.35	1.83	47.8	20.1	0.8
Carbosulfone	0.46	1.95	2.12	38.6	18.0	0.7
Carbofuran	1.38	1.73	2.00	60.6	19.7	1.2
Chlorpyriphos	0.60	1.83	1.89	40.0	15.5	0.6
Mustard oil	3.04	2.62	3.71	28.8	14.4	0.4
Gingelly oil	2.53	3.11	3.30	28.6	15.0	0.4
Sunflower oil	2.16	2.90	2.63	30.0	17.7	0.5
Eclipta alba	1.32	2.10	2.64	32.8	14.3	0.5
Control (Water)	3.63	3.72	4.00	26.8	9.6	6.3
C.D. 0.05	1.59	1.57	1.32	8.7	—	0.4

Table II - *Efficacy of soil drench and puddling treatments in the control of* M. graminicola *in rice.*

Treatment 0.02 per cent	*M. graminicola*			Plant characters		
	Adult females	Egg masses	Galls/plant	Shoot height	Root length	Fresh weight
	(Log 10 values)			(cm)	(cm)	(g)
Phenamiphos	1.50	0.23	2.13	18.8	6.1	0.1
Phosphomidon	0.77	1.64	2.02	16.2	5.9	0.1
Isofenphos	0.23	0.73	2.06	26.8	7.6	0.2
Carbosulfone	0.37	1.06	1.71	23.9	9.8	0.1
Carbofuran	0.46	0.90	1.19	27.8	9.8	0.2
Chlorpyriphos	1.46	3.06	3.39	24.0	10.1	0.3
Eclipta alba	1.90	1.78	2.61	40.2	17.3	0.3
Control (Water)	1.30	4.29	3.41	28.1	8.9	0.3
C.D. 0.05	—	1.42	0.99	9.3	5.8	—

Both the experiments were terminated one month after transplanting the seedlings when measurements were made of plant growth and the extent of nematode infestation.

All root dip treatments, except mustard oil and gingelly oil resulted in significant reduction in adult females, egg-masses and galls (Table I). Significant increases in shoot height were associated with chemical pesticide treatments. Among the vegetable oils, only sunflower oil reduced galling and the number of adult females. There was an increase in shoot height and root length of seedlings in *E. alba* treatment (Tables I, II). All the soil drench treatments caused a significant reduction in egg-mass and gall numbers (Table II).

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