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CHEMICAL CONTROL OF NEMATODES IN PEANUT CROPS

by
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Peanut (*Arachis hypogaea* L.) is subject to parasitisation by various species of plant parasitic nematodes. Usually field populations consist of several species (Ingram and Rodriguez-Kabana, 1980). During a preliminary survey, plant parasitic nematodes, *Rotylenchulus reniformis* Linford et Oliveira, *Hoplolaimus indicus* Sher, *Pratylenchus zaei* Graham and *Helicotylenchus abunaamai* Siddiqi were isolated from the rhizosphere of peanut plants in central farm, O.U.A.T., Bhubaneswar. Three granular and three E.C. formulations of nemati-

cides, singly and/or in combinations were tested with a view to find a suitable control measure against the nematodes occurring in peanut fields.

The experiment was conducted in a field of the central farm, Bhubaneswar containing the above mentioned nematodes. It consisted of 16 treatments (including a control) replicated three times. The experimental design was a randomised complete block with subplot size 4×5 m². Aldicarb 10G, carbofuran 3G and phorate 10G granules were applied to the soil by broadcasting 2 kg

TABLE I - Effect of nematicides on nematode population and yield of peanut (mean of 3 replications).

Treatments	Nematode recovery/250 ml soil		Yield kg/ha
	Mean	Square root value	
Aldicarb 10G 1 kg a.i./ha + FMC 20% EC 0.05%	29	5.28 ^a	2400 ^c
Carbofuran 3G 1 kg a.i./ha + FMC 20% EC 0.05%	62	7.84 ^{bc}	2300 ^{dc}
Phorate 10G 1 kg a.i./ha + FMC 20% EC 0.05%	44	6.64 ^{ab}	2235 ^{de}
Aldicarb 10G 1 kg a.i./ha + Fenitrothion 40% EC 0.05%	53	7.29 ^b	2150 ^{cd}
Aldicarb 10G 2 kg a.i./ha	65	8.03 ^{bcd}	1990 ^e
Aldicarb 10G 1 kg a.i./ha + Chlorpyriphos 20% EC 0.05%	68	8.22 ^{bcd}	1975 ^c
Phorate 10G 1 kg a.i./ha + Fenitrothion 40% EC 0.05%	80	8.93 ^{bcde}	1785 ^b
Carbofuran 3G 1 kg a.i./ha + Fenitrothion 40% EC 0.05%	91	9.54 ^{cde}	1600 ^{ab}
Carbofuran 3G 2 kg a.i./ha	104	10.12 ^{cde}	1600 ^{ab}
Phorate 10G 2 kg a.i./ha	96	9.71 ^{cde}	1585 ^{ab}
Carbofuran 3G 1 kg a.i./ha + Chlorpyriphos 20% EC 0.05%	108	10.38 ^{de}	1535 ^{ab}
Phorate 10G 1 kg a.i./ha + Chlorpyriphos 20% EC 0.05%	99	9.91 ^{cde}	1535 ^{ab}
FMC 20% EC 0.05%	120	10.88 ^e	1515 ^{ab}
Chlorpyriphos 20% EC 0.05%	411	20.25 ^g	1515 ^{ab}
Fenitrothion 40% EC 0.05%	210	14.42 ^g	1510 ^{ab}
Control	459	21.34 ^g	1440 ^a
S.E.		0.82	0.05

Figures in the columns followed by the same letter/s do not differ significantly for P=0.05.

a.i./ha (singly) or 1 kg a.i./ha (in combination) followed with light irrigation at 7 days before sowing peanut cv. AKP 12-24. FMC 20% EC (an analogue of carbofuran, see Di Sanzo, 1981), chlorpyrifos 20% EC and fenitrothion 40% EC were sprayed on the foliage at a concentration of 0.05% 500 L sprayable solution/ha at 20 days after sowing. Final nematode numbers in the soil were determined and yields were obtained. Data were analysed statistically by Duncan's Multiple Range Test.

All treatments except chlorpyrifos reduced nematode populations compared with the control (Table I). However, the largest reductions in nematode numbers were obtained with aldicarb+FMC and with phorate+FMC. Nematode populations were also sufficiently reduced in aldicarb+fenitrothion, carbofuran+FMC, aldicarb, aldicarb+chlorpyrifos and phorate+fenitrothion over control but were statistically at par with phorate+FMC. Maximum increases in yield were recorded with aldicarb+FMC, carbofuran+FMC and phorate+FMC. However, yields in the latter two treatments were not significantly different from aldicarb+fenitrothion. There was also no significant difference in between the treatments aldi-

carb, aldicarb+chlorpyrifos and aldicarb+fenitrothion. Yield obtained with phorate+fenitrothion was also significantly higher than control.

The results indicate that soil application of granular nematicide aldicarb 10G, phorate 10G or carbofuran 3G 1 kg a.i./ha applied 7 days before sowing combined with spraying of FMC 20% EC 0.05% 500 L sprayable solution/ha on foliage at 20 days after planting were the most effective treatments for reducing the number of plant parasitic nematodes and increasing yields. All these granular nematicides have been reported by others to be useful in controlling plant parasitic nematodes and boosting peanut yields.

Literature cited

- DI SANZO C.P., 1981 - Effect of foliar application of carbofuran and a related compound on plant parasitic nematodes under green house and growth chamber conditions. *J. Nematol.*, 13: 20-23.
- INGRAM E.G. and RODRIGUEZ-KABANA R., 1980 - Nematodes parasitic on peanuts in Alabama and evaluation of methods for detection and study of population dynamics. *Nematopica*: 10: 21-30.