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THE INTERACTION BETWEEN *MELOIDOGYNE INCOGNITA, M. JAVANICA* AND *ROTYLENCHULUS RENIFORMIS* IN TOBACCO

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Summary. The interaction between root-knot (*Meloidogyne incognita* and *M. javanica*) and reniform (*Rotylenchulus reniformis*) nematodes in bidi tobacco cv. Anand 119 was investigated with reference to the reproduction of the nematodes over a period of 60 days. The reproduction of *M. incognita* or *M. javanica* inoculated individually or in combination with *R. reniformis* was greater than *R. reniformis* alone. When inoculated alone, *R. reniformis* reproduced at a greater rate than when inoculated with *M. incognita* or *M. javanica*. Hence, *M. incognita* or *M. javanica* were predominant over *R. reniformis*.

The root-knot nematodes, *Meloidogyne incognita* (Kofoid *et* White) Chitw. and *M. javanica* (Treub) Chitw. and the reniform nematode, *Rotylenchulus reniformis* Linford *et* Oliveira often occur together in tobacco fields in Gujarat, India (Patel, 1986 and Shah *et al.*, 1981). An investigation was, therefore, carried out to examine the interaction of root-knot nematodes with the reniform nematode in relation to their reproduction on bidi tobacco, *Nicotiana tabacum* L.

Materials and methods

Earthen pots (15 cm diameter) were filled with 1400 g of a 4:1 mixture of autoclaved sandy loam soil (Clay 11%, Silt 6%, Sand 83%) and sieved farm yard manure. Six week old seedlings of bidi tobacco cv. Anand 119 raised in autoclaved soil were transplanted one per pot. One week later, the pots were inoculated with *M. incognita*, or *M. javanica*, and *R. reniformis*, in combinations or one followed by another at two weekly intervals (as indicated in Tables I and II). Two thousand nematodes for each of the nematode species individually or in combination were pipetted into the rhizosphere of each plant. There were seven replications of each treatment and the experiment was arranged in a complete randomised design in a glass house (30°C ± 2). Sixty days after nematode inoculation, the plants were depotted carefully and washed free of soil. The numbers of females and eggs in the roots were estimated by staining the roots in 0.5 percent acid fuchsin (Clark and Thomas, 1979). Nematodes in the soil were estimated by the modified petridish method of Whitehead and Hemming (1965).

Results and discussion

Number of *M. incognita* (Mi) or *M. javanica* (Mj) females/plant were highest in the treatments of Mi/Mj-Rr followed by Mi/Mj + Rr and Mi/Mj alone (Tables I and II). The *R. reniformis* (Rr) females were significantly less than the Mi/Mj females in the treatments of Mi/Mj + Rr and Mi/Mj-Rr. This can be attributed to the infection of Mi/Mj females either prior to or simultaneous inoculation of Mi/Mj with Rr. The Mi/Mj being endoparasitic in nature might have occupied the root surface preventing the entry of *R. reniformis*. While numbers of *R. reniformis* eggs/plant were greatest in *R. reniformis* alone because of no hinderance due to either Mi or Mj infection. The lowest numbers of eggs/plant were obtained in the treatment of Rr-Mi/Mj. The soil population of Rr was also significantly greater in the Rr nematode alone where as Rr was drastically reduced when inoculated in combination with Mi/Mj. This could perhaps be due to combined inoculation of Mi/Mj + Rr where Mi/Mj might have interfered with reproduction of Rr. This was also reflected in the total nematode population/plant.

Thus, it is evident that *M. incognita* or *M. javanica*, being endoparasitic in nature, when inoculated on the plant roots, is certainly creating uncongenial atmosphere for the penetration and further reproduction of *R. reniformis*, a semiendo parasitic nematode in nature. This further reveals that fields having combined infestation of Mi or Mj and R nematodes will build up more population of *M. incognita* or *M. javanica* in a long range. Time of inoculation, however, appeared to have little effect on the interaction

of the two *Meloidogyne* spp. with *R. reniformis*. Similar findings were obtained on sweet potato with simultaneous inoculation of Mi and Rr (Thomas and Clark, 1983). High population of *R. reniformis* was recorded due to shorter life cycle of nematode when Mj and Rr were inoculated simulataneously on tomato (Rao and Prasad, 1970).

TABLE I - *Reproduction of* Meloidogyne incognita *and* Rotylenchulus reniformis *on tobacco cv. Anand 119*

Treatment	Number/plant		Nematode/pot		Reproduction rate (pf/pi)
	Females	Eggs	Soil	Total	
M. incognita (Mi)	127	13	97	161	1:13
R. reniformis (Rr)	81	14	165	185	1:17
Mi-Rr (two weeks later)	143/62	12/10	97/60	180/88	1:32/1:8
Rr-Mi (two weeks later)	64/135	11/11	60/103	93/174	1:9/1:30
Mi + Rr (simultaneously)	134/63	12/11	107/66	166/88	1:28/1:8
LSD 0.05	28/25	2/2	10/14	23/22	–
$S\bar{X}$	10/9	1/1	4/5	8/8	–
C.V. %	28.5/29.6	20.5/16.2	11.4/14.8	16.3/17.3	–

TABLE II - *Reproduction of* Meloidogyne javanica *and* Rotylenchulus reniformis *on tobacco cv. Anand 119*

Treatment	Number/plant		Nematode/pot		Reproduction rate (pf/pi)
	Females	Eggs	Soil	Total	
M. javanica (Mj)	12	106	93	143	1:10
R. reniformis (Rr)	14	73	164	180	1:16
Mj-Rr (two weeks later)	11/10	124/60	98/80	167/93	1:28/1:9
Rr-Mj (two weeks later)	11/12	61/118	68/109	96/161	1:9/1:26
Mj + Rr (simultaneously)	13/11	141/68	105/72	167/107	1:28/1:11
LSD 0.05	3/3	31/28	18/16	25/24	
$S\bar{X}$	1/1	11/10	6/6	9/8	
C.V. %	30.0/30.0	33.5/36.9	18.9/17.7	18.4/19.5	

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