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INTERACTION OF *MELOIDOGYNE JAVANICA* AND
RHIZOCTONIA SOLANI ON COWPEA

by

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The effect of *Meloidogyne javanica* (Treub) Chitw. and *Rhizoctonia solani* Kuhn, singly and in combination, on the growth of cowpea [*Vigna unguiculata* (L.) Walp] was evaluated in a greenhouse experiment. Three soil types were used: sand (pure fine sand); sandy loam (66, 19 and 15 per cent respectively of sand, silt and clay); and loamy sand (84,6 and 10 per cent respectively of sand, silt and clay). The soil was autoclaved before filling 15 cm clay pots in each of which four cowpea cv. HFC 42-1 seeds were sown. Three days after germination each pot was thinned to one plant and four days later inoculated with *M. javanica* (1000 juveniles/plant) and/or *R. solani* (2 g mycelial mat) in the root zone. Inoculated and uninoculated controls were also maintained. Each treatment was replicated four times.

Plant shoot length, shoot dry weight and root dry weight were decreased in all treatments compared with the uninoculated control. Only root dry weight was significantly reduced. However, plant growth was better in loamy sand than in the other two soil types for all the treatments. The reduction in number of nodules compared with control was non-significant in all the treatments. Loamy sand supported the greatest number of nodules and hence the better plant growth. The simultaneous inoculation of fungus and nematode inhibited the nematode multiplication since number of galls were less in this treatment compared with the inoculated control (nematode alone).

Table I - *Effect of Meloidogyne javanica and Rhizoctonia solani, singly and in combination, on the growth of cowpea in three soil types.*

	Treatment ¹						Mean	C.D. 5% for soil type
	C	F	N	FN	N-F	F-N		
1. Shoot length (cm)								
Sandy soil	22	19	18	18	19	20	19	2.41
Sandy loam	19	14	18	17	16	15	16	
Loamy sand	35	28	29	34	31	30	31	
Mean	25	21	22	23	22	22		
C.D. 5% for treatments = N.S.								
2. Shoot dry wt. (g)								
Sandy soil	1.9	1.8	1.5	1.6	1.4	1.7	1.6	0.49
Sandy loam	1.8	1.2	1.7	1.3	1.1	1.1	1.3	
Loamy sand	4.7	3.4	3.5	3.9	3.6	3.1	3.7	
Mean	2.3	2.1	2.2	2.3	2.0	2.0		
C.D. 5% for treatments = N.S.								
3. Root dry wt. (g)								
Sandy soil	0.6	0.3	0.5	0.5	0.4	0.4	0.4	0.03
Sandy loam	0.4	0.2	0.3	0.2	0.3	0.3	0.3	
Loamy sand	0.6	0.5	0.5	0.4	0.4	0.5	0.5	
Mean	0.5	0.4	0.4	0.4	0.4	0.4		
C.D. 5% for treatments = 0.04								
4. No. of nodules								
Sandy soil	54	48	39	49	39	49	46	N.S.
Sandy loam	33	22	24	30	24	15	24	
Loamy sand	74	69	34	56	46	55	56	
Mean	54	46	32	45	36	40		
C.D. 5% for treatments = N.S.								
5. Gall Index								
Sandy soil	1.0	1.0	4.0	2.8	3.5	3.8	2.6	N.S.
Sandy loam	1.0	1.0	3.5	2.8	3.3	3.0	2.4	
Loamy sand	1.0	1.0	4.2	3.3	4.0	3.5	2.8	
Mean	1.0	1.0	3.9	2.4	3.7	3.4		
C.D. 5% for treatments = 0.66								

¹ C=uninoculated control; F=fungus alone; N=nematode alone; FN=nematode and fungus simultaneously; N-F=nematode one week before fungus; F-N=fungus one week before nematode.

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