



Interaction between *Raphanus* populations and isolates of *Meloidogyne chitwoodi* and *M. fallax*

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Introduction

Interactions between genotypes of Fodder Radish (*Raphanus sativus*) and isolates of *Meloidogyne* were studied in order to characterise the virulence/aggressiveness of isolates and to explore the genetic background of resistance and virulence.



Figure 1. Part of the *Meloidogyne* isolate collection on tomato in the greenhouse

Methods

Seedlings of FR and reference tomato were grown in 400 ml pots and inoculated with 400-600 J2 of specific isolates of *M. chitwoodi* or *M. fallax* from the European collection at PRI. Eight weeks later the plant shoots were removed and the pots stored at 4°C till further processing. Root systems were rinsed, weighed and stained with Phloxine B and the number of *Meloidogyne* egg masses was counted.

Results and discussion

Reproductive success (female/added J2) is always much lower on FR than on susceptible tomato. Table 1 shows considerable variation. Nevertheless, low values imply significantly higher resistance than the average. The variation among the 8 plants in each combination was often large, although some combinations were completely incompatible (Table 2). Seed populations of FR are often a mixture of resistant and susceptible genotypes. Breeding progress can be made by selecting and crossing resistant genotypes from different populations. Isolates Ck, Cba

and Fb show the highest aggressiveness, whereas Cz and Fh are relatively weak on FR. Isolate Cbd is developing very successfully on relatively few FR populations. FR accessions B and E are the most resistant. Apparently there are multiple genes of resistance/virulence involved in the interactions between *Meloidogyne* spp and FR.



Figure 2. Fodder radish in the field.

Table 1. Percentage development (egg masses / added J2).

	fodder radish seedling populations						Tom. MM	Mean ex tom
	C	D	F	A	E	B		
Ck	2.2	4.0	2.2	2.5	0.4	1.9	23.6	2.2
Cbd	0.0	2.6	0.2	0.0	6.3	0.0	23.7	1.5
Ccj	2.4	0.9	1.6	3.4	0.0	0.1	24.8	1.4
Cba	1.6	0.8	1.9	0.6	0.7	1.1	24.5	1.1
Cbn	4.3	0.3	0.4	0.1	0.0	0.6	24.9	0.9
Fb	0.3	0.5	2.2	0.8	0.2	0.4	27.4	0.7
Cz	1.7	1.5	0.1	0.0	0.8	0.0	29.6	0.7
Cch	0.8	0.4	0.1	1.0	0.5	0.7	22.1	0.6
Fh	0.9	0.1	0.9	0.7	0.1	0.0	22.7	0.4
Mean	1.6	1.2	1.1	1.0	1.0	0.5	24.8	1.1

more
 less compatible than average in experiment

Table 2. Percentage infected of max. 8 plants per combination.

	fodder radish seedling populations						Tom. MM	Mean ex tom
	F	D	C	A	B	E		
Ck	50.0	37.5	62.5	50.0	50.0	25.0	100.0	45.8
Cba	25.0	50.0	37.5	50.0	25.0	37.5	100.0	37.5
Fb	57.1	50.0	25.0	50.0	25.0	12.5	100.0	36.6
Cch	12.5	37.5	25.0	37.5	50.0	12.5	100.0	29.2
Cbn	25.0	25.0	50.0	25.0	28.6	0.0	100.0	25.6
Ccj	37.5	25.0	37.5	37.5	14.3	0.0	100.0	25.3
Fh	75.0	14.3	25.0	25.0	0.0	12.5	100.0	25.3
Cz	25.0	25.0	25.0	12.5	0.0	12.5	100.0	16.7
Cbd	25.0	50.0	25.0	0.0	0.0	28.6	100.0	21.4
Mean	36.9	34.9	34.7	31.9	21.4	15.7	100.0	29.3