

Host status of different cover crops for three *Pratylenchus* species

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Introduction

Root lesion nematodes belonging to the genus *Pratylenchus* are migratory obligate endo-parasites that cause substantial damage to a wide range of economically important crops. Different species often occur concomitantly. The use of cover crops that either suppress or maintain low numbers of root lesion nematodes has increased in recent years. However, data about the host status of different cover crops for mixed species of *Pratylenchus* are scarce. Greenhouse experiments were carried out to study eight cover crops for suppression of three major *Pratylenchus* species, i.e. *P. neglectus*, *P. crenatus* and *P. thornei*.

Materials and Methods

Cover crops were grown in 700 ml plastic pots containing a mixture of steam sterilized sand, field soil, and clay gravel (4:1:1, v:v:v) at 22-25°C in the greenhouse (Fig. 1). The experimental design was 3 *Pratylenchus* species x 8 cover crops + 2 controls (oat, *Tagetes patula*) x 8 replicates. Pots were set up as a randomized complete block. Plants were weekly fertilized with 0.3% Wuxal (N:P:K, 8:8:6 + microelements) and watered as needed. Ten weeks after inoculation the number of nematodes per root system and in the soil was counted and the reproduction rate was determined. According to nematode reproduction, cover crops were classified as poor host = ($Pf/Pi < 1$), maintenance host = ($1.5 > Pf/Pi \geq 1$), good host = ($10 > Pf/Pi \geq 1.5$), and excellent host = ($Pf/Pi > 10$).

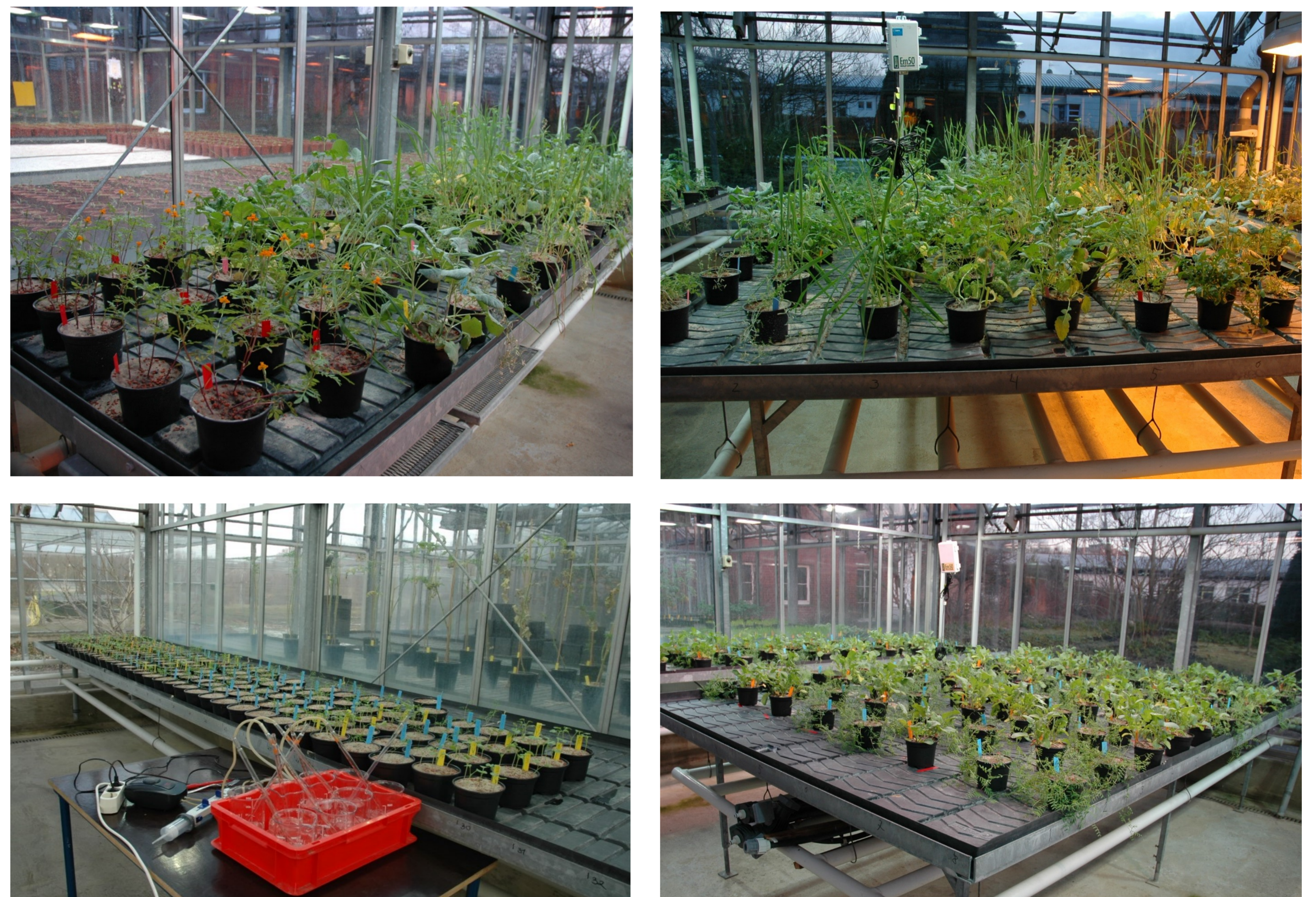


Fig. 1: Cover crops grown in plastic pots under greenhouse conditions

Results and Discussion

The results (Tab. 1) indicated that *Pratylenchus neglectus* had the highest reproduction on common vetch followed by berseem clover, Ethiopian mustard, white mustard and the susceptible control oat with reproduction rates of 6.8, 5.3, 4.8, 2.6 and 2.4, respectively.

Regarding *P. crenatus*, the highest reproduction was obtained on common vetch (2.7) followed by berseem clover (1.2). The final population of *P. crenatus* on all other cover crops was below the initial population density ($Pf/Pi < 1$).

Pratylenchus thornei only reproduced on common vetch (3.1) and the susceptible control oat (1.3).

Conclusion

This study demonstrated that the host status of the tested cover crops varied among the three *Pratylenchus* species

Acknowledgement

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Table 1. Mean total number of three *Pratylenchus* species in soil and root of cover crops with their respective reproductive factors evaluated 10 weeks after inoculation with 700 mixed stage nematodes of each species

Cover crops	<i>Pratylenchus</i> species								
	<i>P. neglectus</i>			<i>P. crenatus</i>			<i>P. thornei</i>		
	Total (Pf) Root+soil	Soil (%)**	Pf/Pi	Total (Pf) Root+soil	Soil (%)	Pf/Pi	Total (Pf) Root+soil	Soil (%)	Pf/Pi
Berseem clover cv. Pharos	3721 f B [*]	1.98	5.32	859 d A	2.44	1.23	607 cd A	34.05	0.87
Common vetch cv. Jose	4779 f B	5.86	6.83	1863 d A	3.01	2.66	2189 e AB	40.94	3.13
Phacelia cv. Factotum	639 cd C	13.15	0.91	202 c B	12.13	0.29	21 ab A	100	0.03
White mustard cv. Ultimo	1846 ef B	72.24	2.64	58 b A	48.28	0.08	18 a A	100	0.03
Ethiopian mustard cv. Cappuccino	3346 f C	34.84	4.78	78 bc B	35.90	0.11	35 ab A	100	0.05
Japanese oat cv. AS35 OG	854 de B	7.79	1.22	141 bc A	7.47	0.2	288 c A	36.52	0.41
Oilseed radish cv. Doublet	270 bc C	74.03	0.39	79 bc B	71.34	0.11	18 a A	100	0.03
Rocket cv. Tiara	122 b B	91.80	0.17	70 bc B	60.43	0.10	32 ab A	100	0.05
Oat cv. Black beauty	1708 ef B	6.76	2.44	198 c A	8.86	0.28	877 de B	35.54	1.25
French marigold cv. Single gold	18 a A	100	0.03	7 a A	100	0.01	63 b B	100	0.09

Excellent host ($Pf/Pi > 10$)

Good host ($10 > Pf/Pi \geq 1.5$)

Maintenance host ($1.5 > Pf/Pi \geq 1$)

Poor hosts ($Pf/Pi < 1$)

^{*}) Means with different lowercase letters within a column and with different uppercase letters within rows are significantly different ($P \leq 0.05$).

^{**}) Percentage of nematodes recovered from soil as compared to total numbers (roots + soil)