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ASSESSMENT OF AVOIDABLE YIELD LOSSES IN *MOMORDICA CHARANTIA* DUE TO *MELOIDOGYNE INCOGNITA* RACE 2

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Momordica charantia Linn. Commonly known as bitter gourd is a cucurbitaceous crop cultivated extensively all over India for its green, immature, ridged fruits. As the name indicates, these fruits are bitter in taste but these possess numerous medicinal properties in addition to their use as a summer vegetable crop. This crop is highly susceptible to root knot nematode Meloidogyne incognita and suffers extensive losses due to this pathogen. Experiments were thus laid to assess the avoidable yield losses in bitter gourd due to root-knot nematode for five consecutive years in the nematode infested field in agriculture farm of Entomology division of the university.

In the field showing heavy infestation of M. incognita, spherical beds of 1.5 sq meter diameter were prepared. In all twelve such beds were prepared. While half of the beds were given pre-transplanting treatment of the carbofuran 3g @ 3kg a. i. Per hactare (T), remaining half were untreated and acted as control (UTC). Observations regarding nematode population, fruit yield per plot and final root-knot index was recorded. Percent yield losses were assessed.

M. charantia is highly susceptible to M. incognita and this nematode is highly pathogenic to this crop. A significant increase in yield was evident in the plots receiving pre-sowing carbofuran application as compared to untreated control plots. Maximum increase in yield was achieved during second year when 5825 kg of fruits were harvested from nematicide treated beds as compared to 3333.3 kg per hectare from untreated control beds. Incidentally, initial nematode count was also recorded to be highest in that year. Yield losses ranging between 22.9 to 42.8 % were recorded during different years. Initial nematode population seems to play a major role as the initial number of below 200 (count of less than one nematode per gram) in the third year, though, caused yield losses to the tune of 22.9%, their non significant 't' value revealed the yields in treated plot to be at par with unteated control (Table 1). However, nematode count beyond this limit caused significant damage to the crop. Similar trends of root knot nematode damage to other summer crops like tomato, okra and eggplant have earlier been recorded (Jain et al., 1994).

REFERENCE

Jain R.K., Dabur, K.R. and Gupta, D.C. (1994). Indian J. Nematol. 24 : 181-184.

Table 1. Effect of root knot nematode on fruit yield of bitter gourd 1st year

Treatment	Initial Nematode Population per 200g soil	Average of six replications			
		Yield per 1.5 m^2 of bed (g)	Yield per hectare (kg)	Final root knot index (1-5 scale)	Percent yield loss***
T*	270	1054	7033.3	2.26	-
UTC*		685	4566.7	3.50	35.01
't' value at 5%		5.27 (S)			
2nd year					
T	418	873.7	5825.0	3.20	-
UTC		500.0	3333.3	4.00	42.8
't' value at 5%		6.48 (S)			
3rd year					
T	176	983.0	6555.5	1.83	-
UTC		750.0	50000.0	2.42	22.9
't' value at 5%					
4th year					
T	216	546.6	3644.0	1.84	-
UTC		400.0	2666.0	2.66	25.0
't' value at 5%		2.57(S)			
5th year					
T	396	772.0	5146.6	2.66	-
UTC		510.0	3400.0	3.24	33.9
't' value at 5%		4.68 (S)			

1-5scale=1=no gall, 2=1-10 galls, 3=11-30 galls, 4=31-100galls, 5=>100 galls
*carbofuran treated plot, **untreated control plots

$$*** \text{ Percent yield loss} = \frac{\text{yield in treated plot - yield in untreated plot}}{\text{Yield in treated plot}} \times 100$$