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Screening mint (*Mentha* spp.) accessions against root-knot nematode infection

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Abstract

Different mint (*Mentha* spp.) accessions were screened *in vitro* against root-knot nematode (*Meloidogyne incognita*). Root-knot infection was high in Siwalik and Himalaya and two *M. arvensis* cultivars, whereas moderate reaction was found in *M. arvensis* cultivars like SS-11, SS-27, Gomti, Kosi, *M. cardiaca*, and MAH-1. The lowest root-knot infection level was found on SS-4, SS-5, Kalka and SS-20. Moderate to high degree of resistance was recorded in SS-1-4, SS-2-7, SS-15, SS-26, SS-36, *M. piperita* cv. Kukrail, *M. spicata* cv. Neera, *M. spicata* cv. Arka, *M. citrata* cv. Kiran, *M. gracilis* and *M. viridis*.

Key words : *Meloidogyne incognita, Mentha arvensis, Mentha piperita, Mentha spicata, Mentha viridis,* root knot nematode, screening

Use of resistant varieties is one of the most suitable and ecofriendly approaches to manage phytonematodes on agricultural crops (Dahiya & Gupta 1992; Rao *et al.* 1994). Generally the mint species and accessions are reported to be susceptible to one or other nematode species although some degree of resistance was found in a few mint species and cultivars against root-knot nematode, *Meloidogyne incognita* (Pandey 1989).

Mint (*Mentha* spp.) plants of different species and accessions raised in autoclaved mixture (soil 7 : sand 2 : compost 1) were inoculated at three leaf stage with 5000 freshly hatched second stage juveniles of *M. incognita* in six replications. The pots were arranged in a glasshouse in a randomized complete block design. Root gall indices were recorded 60 days after inoculation based on 0-4 scale (Krusberg & Nielson 1958). Nematode population from the soil was isolated by Cobb's sieving and decanting technique along with Baermann funnel and nematode population in root was estimated by macerating the root tissues in a warring blender (Southey 1986). Data were analysed by analysis of variance.

Mint species and accessions tested showed differential reactions to root-knot nematode (Table 1). Root-knot index was high in Siwalik, SS-18 and Himalaya. Comparatively moderate reaction was found on SS-11, SS-27, Gomti, Kosi, *M. cardiaca* and MAH-1. Nematode infection level was low in SS-5, SS-5-4, Kalka, and SS-20. On the other hand moderate to high degree of resistance was noticed on SS-1-4, SS-2-7, SS-15, SS-26, SS-36, *M. piperita* cv. Kukrail, *M. spicata* cv. Neera, *M. spicata* cv. Arka, *M. citrata* cv. Kiran, *M. gracilis* and *M. viridis*. The accessions showing resistant reaction can be further used in breeding and selection for

Table 1. Reaction of mint accessions to root-knot nematode, *Meloidogyne incognita*

Accession/species	Root-knot index (RKI)	Reproduction factor (Rf)
Mentha arvensis cv. Siwalik	3.66	8.01
Himalaya	2.33	6.31
Gomti	1.66	2.00
Kalka	1.33	1.80
MAH-1	2.00	2.18
Kosi	1.66	2.10
SS-1-4	0.33	0.70
SS-2-7	0.33	0.54
SS-5	1.33	1.80
SS-5-4	1.00	0.86
SS-11	1.66	2.00
SS-15	0.66	0.81
SS-18	3.33	7.56
SS-20	1.00	0.83
SS-26	0.66	1.00
SS-27	2.00	3.89
SS-36	1.00	0.83
Mentha piperita cv. Kukrail	0.33	0.61
Mentha spicata cv. Arka	0.33	0.58
Mentha spicata cv. Neera	0.33	0.70
Mentha spicata cv. Neer-Kalka	0.66	0.93
Mentha citrata cv. Kiran	0.66	1.31
Mentha cardiaca	1.66	2.51
Mentha gracilis	0.66	0.91
Mentha viridis	0.66	1.01
C.D. at 5%	0.27	0.04

resistance against root-knot nematodes. Resistant accessions reported here can be cultivated in root-knot nematode infested fields.

References

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