

VARIED REACTIONS OF FCV TOBACCO GERMPLASM AGAINST ROOT-KNOT NEMATODES, *MELOIDOGYNE* SP.

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Flue-cured Virginia (FCV) tobacco is an important commercial crop grown worldwide. It is highly susceptible to plant parasitic nematodes especially root-knot nematodes. Root-knot nematodes are a serious limiting factor for tobacco production in both nursery and main field. Planting of root-knot infected seedlings in main field causes stunted growth and death of plant resulting in poor plant stand. Yield reduction due to root-knot nematodes in FCV tobacco in both nursery and field crop in Karnataka was estimated to the tune of 59.4 and 52.9%, respectively (Hussaini, 1983). Losses caused by these nematodes are very high, particularly when they cause disease complex with other pathogenic organisms in soil. Nematicides of chemical origin are being successfully used against root-knot nematodes in tobacco crop both nursery and field (Hussaini, 1985; Ramakrishnan *et al.*, 1998b). But, such use of synthetic nematicides against nematode pests is neither desirable nor economical due to the residue problems posed by them. Hence, use of resistant/tolerant crop varieties is the desirable, eco-friendly and economical way of nematode management. To have root-knot resistant FCV tobacco varieties through breeding programmes, it is essential to have identified resistant sources. To identify root-knot nematode resistant sources, FCV tobacco germplasm accessions being maintained at the research station were screened against root-knot nematodes under root-knot nematode sick field conditions.

FCV tobacco germplasm accessions numbering 39 were screened along with variety Bhavya as resistant check and varieties Rathna and Kanchan as susceptible checks against mixed

population of root-knot nematodes under sick field conditions. For screening, healthy seedlings of respective germplasm were obtained from sterilized nursery beds and were transplanted to sick plots with initial root-knot nematode population of 145 infective juveniles/100g soil. The crop was grown by adopting recommended agronomic practices. At 90 days after transplanting, individual plants were uprooted and washed free of soil to record Root-Knot Index on 0-5 scale and finally reaction rating was assigned to germplasm accessions.

Data presented in Table 1 showed varied reaction against root knot nematodes among FCV tobacco germplasm screened under sick field conditions. Six germplasm accessions *viz.*, FCH 201, FCH 224, FCH 225, FCH 226, RK 8 and RK 9 were found resistant against root-knot nematodes in the range of 1.0 to 1.5 with mean RKI of 1.27. Another 25 germplasm lines and Bhavya in the range of 1.60 to 2.50 with mean RKI of 2.04 were rated as moderately resistant. Remaining seven germplasm lines including variety Kanchan with RKI ranging from 2.60 to 3.26 were considered as susceptible. The germplasm lines *viz.*, FCH 217, FCH 218 and Rathna were found to be highly susceptible to root-knot nematodes with RKI ranging from 3.60 to 4.00. Such relative reaction to root-knot nematodes in FCV tobacco germplasm collections were widely reported earlier (Hussaini and Moses, 1981; Ramakrishnan *et al.*, 1998a). In the roots of susceptible plant materials, there were large sized multiple galls with slimy egg masses protruding out of the roots. Such infected plants in field clearly exhibited stunted growth and rim firing symptoms. In the resistant accessions, galls caused by root-knot

Table 1: Reaction of FCV tobacco germplasm against root-knot nematode

Germplasm	Mean RKI* (range)	Reaction rating
FCH-201, 224, 225, 226, RK-8 & RK-9	1.27 (1.0 to 1.5)	Resistant
FCH-196, 197, 198, 199, 204, 205, 206, 207, 208, 210, 211, 212, 213, 214, 215, 216, 219, 220, 223, 227, 228, RK 4, RK 5, RK7, RK 13 & Bhavya	2.04 (1.60 to 2.50)	Moderately resistant
FCH-200, 202, 203, 209, 221, 222 & Kanchan	2.84 (2.60 to 3.26)	Susceptible
FCH-217, 218 & Rathna	3.73 (3.60 to 4.0)	Highly susceptible

* Root Knot Index on 0-5 Scale

nematode infection were small sized and fewer in numbers. Such promising resistant lines can be exploited in resistant breeding programme after reconfirming the resistance under artificially inoculated conditions against root-knot nematode.

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