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Screening of plants used as pepper standards against root-knot nematode

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Kerala is the largest producer of Black pepper (*Piper nigrum* L.) in India accounting for 98 per cent of the country's production. Large scale cultivation of pepper is undertaken along hilly areas on special live standards. In large scale plantations often a selected plant species is used as standard.

Ayyar[1] listed pepper as a host of *Meloidogyne* sp. Later Nadakal[2] recorded heavy infestation and diffused galling on roots of pepper at Trivandrum in Kerala. Ting[3] reported *Meloidogyne* spp. as the most important group of nematode in Malaysia causing gradual decline of black pepper characterised by unthrifty growth and yellowing of leaves.

During a preliminary survey large number of pepper vines in the districts of Trivandrum, Quilon, Alleppey, Kottayam, Idikki and Cannanore exhibited root galls, root lesions and rotting. The pathogens involved were identified as *M. incognita* (Kofoid and White, 1919) Chitwood, 1949 from galls and *Radopholus similis* (Cobb, 1893) Thorne, 1949 from lesions and rotted parts from vines in Idikki and Cannanore districts. Roots of the most common live standard *Erythrina* spp. also exhibited root galls. Susceptible standards acting as collateral host are likely to serve as reservoirs of the pathogen. It was, therefore, felt necessary to screen more common species of plants used as standards for their susceptibility to *M. incognita*.

MATERIALS AND METHODS : Five plants each of the 19 species of plants used as pepper standards were grown in 12″ clay pots containing 2 kg steam sterilised soil. Seedlings were raised in cases where seeds were available and in others rooted cuttings were used. Plants thus raised during April, 1975 were maintained in a thatched shed. Nematode culture was raised on okra plants by inoculating them with root-knot affected pepper roots. Test plants were inoculated with inoculum of larvae and eggs totalling 60,000/10 g of infected roots per pot in September, 1975. After four months the plants were depotted and root system was washed thoroughly with a strong jet of water to remove the adhering soil particles. Total number of galls per plant and the root weight was recorded. Roots were, then cut into small pieces and one gram from each was taken, stained in 1 per cent boiling acid fuchsin-lactophenol, blended, and population was assessed. Perineal patterns of females extracted from roots of test plants were identified as *M. incognita*.

Reactions of the various plant species screened aganist *M. incognita* were different. Seedlings of *Oroxylon indicum*. (81*/5255**), *Erythrina lithosperma* (181/1764), *Ceiba pentandra* (31/2560) and *Bombax malabaricum* (30/587) are highly susceptible to *M. incognita* compared to *Erythrina indica* (10/56), *Macranga indica* (0/32) and *Areca catechu* (0/30) on the basis of low number of galls and per gram population of nematodes recovered as in the parenthesis. *Gliricidia* seedlings yielded one or two small galls but their rooted cuttings did not show any galling. In the case of *O. indicum* both cuttings as well as seedlings exhibited heavy galling but nematode assay was

*Galls/plant (average of 5 plants.)

**Per gram population.

made only with seedlings. Though *Tamarindus indica* is reported to be a host of *Meloidogyne* sp., on inoculation with *M. incognita* under the present conditions did not give any positive reactions. Except *E. lithosperma* other seven plants are new host records for *M. incognita.* Rooted cuttings of *Garuga pinnata, Portium caudatum* and seedlings of *Adenanthera pavonia, Artocarpus hirsuta, A. integrifolia, Careya arborea, Mangifera indica, Phyllanthus emblica, Odina wodier, Schleichera trijuga* and *Tamarindus indica,* are non-hosts.

The results show that *E. lithosperma, O. indicum, Bombax malabaricum* and *C. pentandra* are highly susceptible and thus are unsuitable standards for pepper. The study also revealed that *Garuga pinnata, Macranga indica* and *E. indica* could be profitably used as standards.

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[1]Ayyar, P. N. K. *Madras Agric J.* **14** : 113-118 (1926).

[2]Nadakal, A. M. *J. Bombay Nat. Hist. Soc.* **61** : 467-469 (1964).

[3]Ting, W. P. *Review of Plant Pathology* **54** : 297-305 (1975).

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