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Indian J. Nematol. 28 (1) : 1-5 (1998)

MELOIDOGYNE INCOGNITA EXTRACT REDUCES *MELOIDOGYNE INCOGNITA* INFESTATION IN TOMATO

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Abstract: Ethanolic extract of *Meloidogyne incognita* females, when applied as foliar spray at the rate of 5.7 mg/plant in aqueous suspension on tomato plants cv. Pusa Ruby, inoculated with *M. incognita* larvae, reduced nematode infestation and promoted plant growth. The same extract, when applied at 1.3 mg/culture tube to root callus of tomato grown on MS media supplemented with NAA (1mg/l) and BAP (0.5 mg/l) and inoculated with *M.incognita* larvae, reduced nematode infestation of callus and improved callus growth. The nematode extract (NE) is thought to induce systemic resistance in tomato.

Key words: *Meloidogyne incognita* tomato, nematode extract, root callus

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Indian J. Nematol. 28 (1) : 6-9 (1998)

PENETRATION AND DEVELOPMENT OF THE ROOT-KNOT NEMATODE, *MELOIDOGYNE INCOGNITA* IN RESISTANT HYBRID AND LINES OF TOMATO

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Abstract: The penetration and post-penetration development of root-knot nematode, *Meloidogyne incognita* juveniles (J2s) were observed in case of a hybrid (FM-2), two lines (BN- 10 and IIHR-550) alongwith variety Pusa Ruby, before and after transplanting of tomato crop. The degree of penetration was significantly less in the three resistant hybrid/ lines compared to Pusa Ruby, where it was thirty and thirty five percent, before and after transplanting respectively. The development of J2s' into adult females was totally restricted in two resistant lines BN-10 and IIHR-550. Whereas, in case of FM-2, only few developed into females, compared to susceptible Pusa Ruby, where it was upto ninety percent.

Key words: Development, *tomato, Meloidogyne incognita*, penetration, resistance.

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Indian J. Nematol. 28 (1) : 10-14 (1998)

POPULATION ECOLOGY AND COMMUNITY STRUCTURE OF PLANT PARASITIC NEMATODES ASSOCIATED WITH GINGER IN WEST BENGAL

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Abstract: A two-year intensive survey of ginger in 24 plantations in West Bengal indicated the presence of plant parasitic nematodes belonging to eight genera and ten species, from both soil and root. Among them, by community analysis, *Rotylenchulus reniformis*, *Helicotylenchus indicus* and *Xiphinema elongatum* were adjudged first three positions in importance value, and *R. reniformis*, *Pratylenchus coffeae* and *H. multicinctus* in prominence value, both in descending order. Cluster analysis, dendrogram and similarity index computed for five major horticultural crops, viz. mandarin orange, ginger, pineapple, coconut, arecanut in the region indicated identicality of more than 90 p.c. nemic fauna of Kalimpong and Pedong, suggesting that location effect due to variations in climate, cropping system and management practices were least in most of the ginger growing areas.

Key words: Population ecology, community analysis, cluster analysis, dendrogram,similarity index, plant parasitic nematodes.

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Indian J. Nematol. 28 (1) : 15-21 (1998)

EFFECT OF SOIL SOLARIZATION, RABBING, NEMATICIDES AND GREEN MANURING ON GROWTH AND DEVELOPMENT OF BIDI TOBACCO SEEDLINGS, ROOT-KNOT DISEASE, WEEDS AND PHYTONEMATODES IN NURSERY*

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Abstract: Soil solarization, rabbing, dazomet, phenamiphos, subufos and carbofuran significantly increased fresh weight of 100 seedlings and number of transplants at 40 days after seeding (DAS) over control. In general, soil solarization, sebufos and phenamiphos yielded more transplants. Number of weeds was significantly reduced by soil solarization, rabbing and dazomet over control. The treatment of soil solarization, dazomet, sebufos, and phenamiphos significantly reduced root-knot index over control. Dazomet proved the best in suppressing the population of stunt, root-knot and reniform nematodes till the end (62 DAS), while soil solarization, rabbing, sebufos, phenamiphos and carbofuran found to reduce the population of the nematodes at seeding. Green manuring of sunnhemp and ekkad harboured higher population of the nematodes than control at seeding.

Key words: Soil solarization, rabbing, nematicides green manuring, bidi tobacco, nematode and weed management.

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Indian J. Nematol. 28 (1) : 22-34 (1998)

REACTION OF SOME HOST PLANTS TO DIFFERENT RACES OF ROOT-KNOT NEMATODE, *MELOIDOGYNE INCOGNITA*

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Abstract: Evaluation of seventeen populations of *Meloidogyne incognita* falling in four races for their reaction on eight plant species belonging to cowpea, mungbean, tomato, and chilli showed that although, penetration of second stage juveniles occurred in all hosts irrespective of the race, but gall formation was not observed with Hissar, Chandigarh and Delhi populations (race 1), Coimbatore (race 2) and Shimla (race 4) on tomato cv. PNR-7. Differences were noticed with Bangalore, Bhubaneswar (race 1), Bagora and Rahuri (race 2), and Shimla (race 4) forming egg mass on cowpea cv. (-152; Bhubaneswar (race 1) on (-152 and Jodhpur (race 3) on cowpea cv 82-1B; Pusa, Kayangulam, Jabalpur and Kanpur (race 1) on tomato cv. PNR-7; Pusa, Bangalore (race 1) on mungbean cv. ML-62. The population of Bangalore, Jabalpur, Bhubaneswar and Udaipur (race 1) had not multiplied on chilli cv. X-2-3-5. Such differences were observed in population of same race or among the races of *M. incognita* are not reflected when host differentials as used under IMP are taken. Thus, the need for augmenting host differentials to cover up this variability is suggested.

Key words: *M. incognita*, reaction, host, race, population.

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Indian J. Nematol. 28 (1) : 35-40 (1998)

EFFECT OF VARIOUS SOIL TYPES ON THE DEVELOPMENT OF *PASTEURIA PENETRANS* ON *MELOIDOGYNE INCOGNITA* IN BRINJAL CROP

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Abstract: The effect of various soil types on development of *Pasteuria penetrans* on *Meloidogyne incognita* infecting brinjal crop was assessed and significant reduction in nematode reproduction was found in the treatment having sandy loam + bacterium and nematode compared to loamy sand, loam and clay loam soils having becterium and nematode. The plant growth parameters were found reduced in treatments receiving nematodes alone, but increased growth was observed when soils were supplemented with the bacterium. The bacterial spores/female were found higher in coarse textured soil compared to clay loam soils.

Key words: *Pasteuria penetrans, Meloidogyne incognita,* brinjal, soil types

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Indian J. Nematol. 28 (1) : 41-47 (1998)

VAM FOR ROOT KNOT NEMATODE MANAGEMENT AND INCREASED PRODUCTIVITY OF GRAIN LEGUMES IN ORISSA

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Abstract: In an investigation involving VAM fungus, *Glomus fasciculatum*, legume bacterium *Rhizobium phaseoli* (M-14 strain) and roots knot nematode *Meloidogyne incognita* on green gram (*Vigna radiata*) alone and in various combinations, it was observed that all plant growth parameters including pod yield, leaf chlorophyll content, bacterial nodulation, leghaemoglobin content of nodules and NPK contents of plant were lower in nematode inoculations compared to control with significant improvement in mycorrhizal and rhizobial inoculations either alone or in combinations. Mycorrhizal and rhizobial inoculations alone were superior over control in the absence of root- knot nematode, their combined inoculations giving better results than their single inoculations, showing a compatible and synergistic relationship between the two organisms with common antagonism to the root knot nematode. Root- knot nematode on the other hand suppressed the growth of other two organisms also. Increases in pod yields in mycorrhiza + nematode and rhizobium + nematode treatments were 44% and 22% respectively over that of nematode inoculations alone and 13%, 26% and 66% over control in nematode free soil due to mycorrhia, rhizobium and mycorrhiza + rhizobium combinations respectively.

Key words: Vam, root-knot nematode, management, legumes

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INFLUENCE OF THE ENDOMYCORRHIZAL FUNGUS, *GLOMUS FASCICULATUM* ON *MELOIDOGYNE INCOGNITA* AND *TYLENCHORHYNCHUS VULGARIS* INFECTING BERSEEM

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Abstract: Prior establishment of VAM fungus, *Glomus fasciculatum* by two weeks tended to mitigate the adverse effect of both *Meloidogyne incognita* and *Tylenchorhynchus vulgaris* on the plant growth of berseem. Gall formation by *M. incognita*, as also the multiplication of both the nematodes was reduced by 28-50 percent. Conversely, prior presence of nematodes reduced the percent root colonization by VAM fungi to some extent.

Key words: Interaction, *Meloidogyne incognita, Tylenchorhynchus vulgaris*, VAM fungi, *Glomus fasciculatum*, berseem.

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Indian J. Nematol. 28 (1): 52-55 (1998)

STUDIES ON THE NEMATODES OF SPICES. PATHOGENIC EFFECT OF ROOT-KNOT (*MELOIDOGYNE INCOGNITA)* AND RENIFORM NEMATODES (*ROTYLENCHULUS RENIFORMIS*) ALONE AND IN COMBINATION ON TURMERIC (*CURCUMA LONGA* L.).

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Abstract: One hundred infective stages of root-knot and reniform nematodes as initial inoculum level could cause significant reduction in growth characters. Reniform nematode appeared to be more harmful than root-knot by producing significantly higher growth reduction at lower level. Gall formation due to root-knot nematode was adversely affected by their combined inoculation.

Key words: *Meloidogyne incognita, Rotylenchulus reniformis,* turmeric, pathogenicity.

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Indian J. Nematol. 28 (1) : 56-71 (1998)

GEOGRAPHICAL VARIATIONS IN MORPHOBIOMATRICS OF RENIFORM NEMATODE, *ROTYLENCHULUS RENIFORMIS*

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Abstract: Altogether six geographical isolates of *Roty lenchulus reniformis* collected from Andhra Pradesh, Delhi, Gujarat and Manipur were used for studying the morphological and biometrical variations in different developmental stages. Most of the characters in different isolates exhibited variability. The re-evaluation of the characters showed body length, distance from head to vulva, V% and stylet length to be highly stable. Excepting V% and to some extent 0% none of the allometric characters was found to be valid and justified. Lip region and tail shape of immature females and males, body shape and terminal projection of mature females were found to be highly variable in all the isolates. Inter-isolate comparisons revealed significant differences in body length, body width, position of dorsal oesophageal gland orifice, distance from head to median bulb and excretory pore and length of hyaline part of tail. Based upon this, Andhra Pradesh grape isolate was found to be a distinct morphological variant among the six geographical isolates studied in this investigation. A rare phenomenon of ovovivipary was evident in Gujarat isolate.

Key words: Morphobiometrics, *Rotylenchulus reniformis*, geographical variations

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EFFECT OF VARIOUS LEVELS OF ORGANIC CARBON ON THE DEVELOPMENT OF *PASTEURIA PENETRANS* ON *MELOIDOGYNE INCOGNITA*

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Abstract: The investigation on effect of various organic carbon levels on development of *Pasteuria penetrans* on *Meloidogyne incognita* in brinjal crop showed a significant reduction in nematode reproduction parameters at the increasing levels of organic carbon with bacterium+nematode in comparison to the treatment of nematode alone. The number of bacterial spores/female get reduced on increasing the level of organic carbon in the soil. The plant growth parameters showed an increasing trend at higher does of organic carbon in soil.

Key words: *Pasteuria penetrans, Meloidogyne incognita,* brinjal, organic carbon.

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MANAGEMENT OF *PRATYLENCHUS ZEAE* ON MAIZE BY BIOFERTILIZERS AND VAM

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Abstract: In a field trial on maize, vesicular arbuscular mycorrhiza, Azospirillum and Phosphobacterium when applied alone or in different combination in soil, reduced the population of *Pratylenchus zeae* and recorded highest cob yield.

Key words : Biofertilizers, VAM, *Pratylenchus zeae*, maize, Azospirillum

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USE OF ESTERASE PHENOTYPES OF FEMALES FOR PRECISE DIAGNOSIS OF FOUR *HETERODERA* SPECIES

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Abstract: Esterase isozyme pattern of white females could reliably characterise four *Heterodera* species, namely *Heterodera cajani, H. graminis, H. sorghi* and *H. zeae*. The pattern in six isolates of *H. zeae* was found to be consistent.

Key words : Esrerase phenotype, Polyacrylamide gel electrophoresis, *Heterodera cajani, H. graminis, H. sorghi* and *H. zeae*.

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