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Indian J. Nematol 22 (2): 77-81 (1992)

EFFECT OF PLANT GROWTH REGULATORS ALONE AND IN COMBINATION WITH NEMATICIDES ON ROOT-KNOT SEVERITY AND YIELD IN TOMATO

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Abstract: Foliar sprays with plant growth regulators alone-2, 4 dichlorophenoxy acetic acid (2, 4-D) 3 and 5 ppm, lihocin (2-chloroethyl) 2 trimethyl ammonium chloride, cycocel) 500 ppm, miraculan (1, hydroxyl triacontane) 1000 ppm and soil application of nematicides, phorate and aldicarb were evaluated in the field for the management of *Meloidogyne javanica* on tomato. 2, 4-D (3 and 5 ppm), lihocin (500 ppm) and miraculan (1000 ppm) reduced root - knot disease severity. Soil application of phorate (3 kg or 5 kg a.i./ha), aldicarb (3 kg a.i./ha) in combination with foliar sprays with plant growth regulators was more effective in reducing the root - knot disease severity than when the nematicides were applied alone. 2, 4-D increased the yield of tomato in rabi season and lihocin increased the yield in summer season.

Key words: ***Meloidogyne javanica*, lihocin, phorate, aldicarb, tomato, yield**

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Indian J. Nematol 22 (2): 82-85 (1992)

POTATO CYST NEMATODE PATHOTYPES IN THE SOUTHERN HILLS OF INDIA*

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Abstract: Five pathotypes belonging to two cyst nematode species of *Globodera* were identfied to be present in the Southern hills of India. Among them, three were dominant in distribution.

Key words: ***Globodera pallida, G. rostochiensis*, pathotyes, identification**

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Indian J. Nematol 22 (2): 86-88 (1992)

INCIDENCE OF RICE STEM NEMATODE, *DITYLENCHUS ANGUSTUS* IN RELATION TO SOWING TIME OF DEEP WATER RICE IN ASSAM

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Abstract: A field experiment was conducted in *kharif* season of 1990 and 1991 at Regional Agricultural Research Station, Assam Agricultural University, North Lakhimpur, Assam to evaluate the incidence of rice stem nematode, *Ditylenchus angustus* which causes *ufra* disease in deep water rice in relation to different dates of sowing commencing from March, 6 onwards upto May, 5 with 15 days interval. Results revealed that maximum incidence of *ufra* disease was observed in March, 6 sowing (100 per cent) but gradually declined as the sowing was delayed upto May, 5 (37.20 per cent) which showed minimum disease incidence.

Key words: Kharif, *ufra*, rice stem nematode, *Ditylenchus angustus*, incidence, overwintering

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Indian J. Nematol 22 (2): 89-92 (1992)

EFFECT OF TRIFLURALIN AND CERTAIN PESTICIDES FOR MANAGEMENT OF *MELOIDOGYNE INCOGNITA* ON TOMATO

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Abstract : The effect of the herbicide, Olitref (trifluralin 26%), 3.5 1/ha and of five pesticides, Temik (aldicarb 10G), 30 kg/ha, Vydate (oxamyl 10G) 30 kg/ha, Furadan (carbofuran 10G), 30 kg/ha, Basudin (diazinon 5G), 30kg/ha, and Ventillalt kenpor (sulphur 99%), 40 kg/ha on *Meloidogyne incognita* infecting tomato were studied in glasshouse conditions. Among the tested chemicals, high percentage of increase in tomato growth occurred with aldicarb (77.3%), whereas trifluralin showed the least percentage of increase (12.5%). The nematicides, aldicarb and oxamyl effectivily reduced nematode populations within tomato roots as well as number of galls and egg-masses. Although slight decrease in nematode populations obtained with trifluralin and sulphur, carbofuran and diazinon showed high population exceeded the control.

Key words: *Meloidogyne incognita*, tomato, pesticides, management

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Indian J. Nematol 22 (2): 93-95 (1992)

CHANGES IN TOTAL PHENOLIC CONTENTS IN RESISTANT AND SUSCEPTIBLE BARLEY CULTIVARS INOCULATED WITH THE CEREAL CYST NEMATODE, *HETERODERA AVENAE*

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Abstract: The changes in total phenolic contents in the three barley cultivars viz., DL 482 (susceptible), RD 2052 and C 164 (resistant) were studied after 30 days of *Heterodera avenae* inoculation. The total phenol content in the shoots of healthy and resistant cultivars was higher as compared to the susceptible cultivars. However, in the presence of nematode, the phenol content in the two resistant cvs. (RD 2052 and C 164) significantly increased as compared to the sustceptible cv. DL 482. In case of roots of the resistant cvs RD 2052, there was higher phenolic content as compared to other two cultivars, both with and without inoculation. A decreasing trend was also observed in the phenol content in the roots of inoculated susceptible and the resistant cultivars.

Key words: Barley, *Heterodera avenae*, phenols.

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Indian J. Nematol 22(2): 96-100 (1992)

INTERACTION OF ROOT-KNOT NEMATODE, *MELOIDOGYNE INCOGNITA* AND FUNGUS, *FUSARIUM OXYSPORUM* F. SP. *UDUM* ON PIGEONPEA*

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Abstract: The interaction between the root-knot nematode, *Meloidogyne incognita* and the fungus *Fusarium oxysporum* f. sp. *udum* was studied on pigeonpea var. T21 in pot condition. The results indicated that the effect of the nematode in combination with the fungus enhanced the suppression of growth of plants including bacterial nodules. Of the two organisms *M. incognita* affected the plant growth characters to a greater extent in comparision to fungus, however, maximum growth reduction was observed when both organisms were present at higher level. The bacterial nodulation was adversely affected in the presence of both the organisms. The nematode develpment and multiplication was also affected by the presence of fungus and maximum gall index was found at higher incoulum level.

Key words: *M. incognita, F. oxysporum* of sp. *udum*, pigeon pea, gall index, root rot intensity and rhizobial nodulation.

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Indian J. Nematol. 22(2): 101-109 (1992)

PATHOGENESIS OF *MELOIDOGYNE JAVANICA* ON CUCUMBER AND OKRA IN SAILNE SOILS

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Abstract: Effects of artificially created soil salinity levels by addition of NaCl and $NaHCO_3$ in soil were studied on penetration and development of root-knot nematode, *Meloidogyne javanica* in the roots of cucumber and okra. Penetration of second-stage juveniles in cucumber and okra roots and development of juveniles into adult females were impaired by the salinity levels. A direct correlation existed between concentration of the salts and number of root-ingressed juveniles. Production of egg masses was delayed and their number was significantly reduced. Plant growth of cucumber and okra was suppressed by the soil salinity levels. *M. javanica* also caused marked reduction in plant growth. But under the soil salinity stresses, the extent of reductions in growth parameters caused by the nematode was reduced and consequently the plant growth was comparatively better than those inoculated with the nematode alone. The soil salinity impeded nematode growth and reproduction which in turn reduced the harmful effects of the nematode on plants.

Key words: *Meloidogyne javanica*, okra, cucumber, salinity, development, plant growth, penetration

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Indian J. Nematol. 22(2): 110-115 (1992)

EFFICACY OF CHEMICALS AS SEED DRESSER AGAINST *MELOIDOGYNE INCOGNITA* ON BITTER GOURD AND ROUND MELON

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Abstract: All the three chemicals viz., carbofuran (40F), carbosulfan (25 WP) and phenamiphos (40 EC) inhibited larval penetration and the development of females on roots at seventh and thirtieth day after germination, thus resulting in reduced gall formation and nematode reproduction at 50 and 60 days in case of bitter gourd and round melon respectively. There was also an increase in the plant growth (shoot length and shoot weight) of both the crops. Both carbofuran and phenamiphos even at lower concentration of 1 per cent provided sufficient initial protection against *M. incognita* on both the crops.

Key words: Carbofuran, carbosulfan, phenamiphos, *Meloidogyne incognita*, control, bitter gourd, round melon.

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Indian J. Nematol. 22(2): 117-121 (1992)

EFFECT OF CERTAIN LEAF EXTRACTS AND LEAVES OF *GLYRICIDIA MACULATA*, (H.B &K.) STEUD. AS GREEN MANURE ON *RADOPHOLUS SIMILIS*

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Abstract: Extracts of leaves of *Glyricidia maculata, Ricinus communis* and *Crotolaria juncea* were lethal to *Radopholus similis* at dilutions of 1:5 within 24 hrs. The nematode mortality decreased with increase in dilutions of the extract. The chopped leaves of *G. maculata* (10g/Kg soil) as green manure was found to reduce the population of *R. similis* and promote the growth of black pepper under pot conditions.

Key words: Leaf extracts, *Radopholus similis, Glyricidia maculata*

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Indian J. Nematol. 22(2): 122-124 (1992)

PATHOGENICITY OF THE BURROWING NEMATODE, *RADOPHOLUS SIMILIS* ON AVOCADO

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Abstract: The pathogenic effect of *Radopholus similis* on avocado was studied with five different inoculum levels viz. 0, 10, 100, 1000 and 10,000 per plant in 35 cm earthen pots containing sandy loam soil fumigated with methyl bromide. Initial infestation in tender, creamy white fleshy roots produced brown to black coloured lesions. Consequent to multiplication of nematodes these initial lesions enlarged, coalesced which led to rotting. Transverse and longitudinal sections of infested roots showing lesions revealed that *R. similis* colonised the cortex but not the stelar region. An initial inoculum density of 10,000 nematodes per plant caused 10, 10, 17, 46 and 62 per cent reduction over control in length and weight of shoot, number of leaves, weight and volume of root respectively over a period of 4 months. The pathogenic threshold level of *R. similis* was 100 nematodes per plant or one nematode in 12 cm^3 of sandy loam soil for root growth characters. The study has estabilshed the potential of the burrowing nematode as a pathogen of avocado.

Key words: *Radopholus similis*, avocado, pathogenicity.

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Indian J. Nematol. 22(2): 125-133(1992)

EVALUATION OF CERTAIN PESTICIDES FOR THE MANAGEMENT OF *MELOIDOGYNE INCOGNITA* INFESTING SUNFLOWER

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Abstract: Three chemicals (Carbofuran, prophos and phorate) at two concentrations (2 and 4 kg a.i./ha) with two times of applications (7 days before and 7 days after nematode inoculation) were evaluated for their effect on growth of sunflower and development of nematode (*Meloidogyne incognita*). Among the chemicals tested, phorate at 6kg a.i./ha applied seven days before nematode inoculation recorded maximum growth of the host plant. However, prophos at 4 kg a.i./ha applied 7 days before nematode inoculation was effective in reducing the nematode development and reproduction.

Key words : *Meloidogyne incognita*, sunflower, chemical control, carbofuran, prophos, phorate.

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Indian J. Nematol. 22(2): 134-138 (1992)

EFFECT OF FENVALERATE, TRIAZOPHOS AND FMC 54800 ON HATCHING AND MORTALITY OF *MELOIDOGYNE INCOGNITA*

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Abstract : Fenvalerate, Triazophos and FMC 54800 were evaluated for their ovicidal efficacy against the root- knot nematode, *Meloidogyne incognita*. The experiments revealed that triazophos was most effective in reducing the hatch from egg masses followed by FMC 54800 and Fenvalerate. The hatching decreased with increase in concentration from 50 to 200 ppm and exposure time from 3 to 12 hrs. in all chemicals but Triazophos showed significantly better results at low concentrations and shorter exposure periods. Some hatched larvae in chemical treatments also showed sluggish movements. Larval mortality in Triazophos treatment was maximum followed by FMC 54800 and Fenvalerate respectively.

Key words: *Meloidogyne incognita*, control, Triazophos, Fenvalerate, FMC 54800, ovicidal.

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Indian J. Nematol. 22(2): 139-145 (1992)

STUDIES ON TWO OXIDOREDUCTASES AND POLYPHENOL OXIDASE FROM COWPEA INFECTED BY *MELOIDOGYNE INCOGNITA* RACE 1

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Abstract: The activity of two oxidoreductase enzymes (viz, Malate dehydrogenase and Glucose 6-phosphate dehydrogenase) and the enzyme polyphenol oxidase were studies in cowpea cultivar Pusa Do Fasli at the intervals of 7 and 14 days, following inoculation by the nematode, *Meloidogyne incognita* race 1. Activity of these enzymes increased when compared to their respective controls following inoculation with the nematode at both the intervals. Polyacrylamide gel electrophoresis (PAGE) analysis of polyphenol oxidase revealed that four new isozymes were produced in the roots 7 days after inoculation, identical number of isozymes were observed 14 days after inoculation, but their Rb values differed. The shoot samples showed the appearance of two new isozymes at both the intervals, with the disappearance of 3 isozymes in infected plants after 14 days of inoculation. Correspondingly, the phenol concentration also increased with infection. PAGE analysis of MDH, 7 Days after infection revealed the appearance of 2 new isozymes in the roots and one isozyme in the shoot following infection.

Key words: Malate dehydrogenase, Glucose-6-phosphate dehydrogenase, Polyphenol oxidase, Cowpea, *Meloidogyne incognita* Race-1

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