

CONTENTS

Vol. 35 No. 1 June, 2005

Intraspecific variations of <i>Ditylenchus myceliophagus</i> Goodey, 1958 in relation to hosts, temperature and age of nematode culture --Debanand Das and Harish K. Bajaj	-- 1
New and known species of <i>Ditylenchus</i> Filipjev, 1936 from Haryana, India --Debanand Das and Harish K. Bajaj	-- 11
Persistence of <i>Heterorhabditis indica</i> on chickpea foliage --Prabhuraj, A.K.S. Girish and Shivaleela	-- 24
Effect of plant extracts and their potentized doses against root-knot nematode, <i>Meloidogyne incognita</i> on tomato --G. Rajendran and V. Saritha	-- 28
Management of root-knot nematode, <i>Meloidogyne incognita</i> on tomato by using indigenous isolates of AM fungus, <i>Glomus fasciculatum</i> --V. Kantharaju, K. Krishnappa, N.G. Ravichandra and K. Karuna	-- 32
Integrated management of nematode complex on banana --K.R. Shreenivasa, K. Krishnappa, B.M.R. Reddy, N.G. Ravichandra, K. Karuna and V. Kantharaju	-- 37
Interaction of pigeonpea cyst nematode <i>Heterodera cajani</i> and <i>Macrophomina phaseolina</i> on greengram (<i>Vigna radiata</i>) --M. Zareenaa Begum and M. Sivakumar	-- 41
Intercropping for the management of root-knot nematode, <i>Meloidogyne incognita</i> in vegetable-based cropping systems --N. Uma Shankar Kumar, K. Krishnappa, B.M.R. Reddy, N.G. Ravichandra and K. Karuna	-- 46
Integrated approach for the management of <i>Meloidogyne incognita</i> on jute --Bibha Luang and B.C. Bora	-- 50
Effect of carbosulfan (25 STD) and neem seed kernel powder as corm dressing for the management of root-knot nematode (<i>Meloidogyne incognita</i>) infecting gladiolus --M. Ravishankar and R.V. Singh	-- 53
Evaluation of nematicidal properties of neem for the management of <i>Meloidogyne incognita</i> on tomato --Iram Tariq and Mansoor A. Siddiqui	-- 56
Management of reniform nematode, <i>Rotylenchulus reniformis</i> on okra through <i>Streptomyces avermitilis</i> --J. Jayakumar, G. Rajendran and S. Ramakrishnan	-- 59
Effect of cropping sequences and ploughing on plant parasitic nematodes and plant growth in field --Abdul Hamid Wani	-- 63
Integrated nematode management schedule incorporating neem products, VAM and soil solarization against <i>Heterodera cajani</i> infecting pigeonpea --S. Nageswari and S.D. Mishra	-- 68
Effect of root extract against <i>Meloidogyne incognita</i> infestation and plant growth in tomato --G. Rajendran and V. Saritha	-- 72
SHORT COMMUNICATIONS	
Effect of soil types on multiplication and development of cereal cyst nematode, <i>Heterodera avenae</i> on wheat --O.P. Tard, A.U. Siddiqui, A. Parihar and Y.S. Yadav	-- 75
HPLC analysis of different plant extracts exhibiting nematicidal activity --B. Saravanapriya and M. Sivakumar	-- 76

Management of root-knot nematode, <i>Meloidogyne incognita</i> through antagonistic approaches in pointed gourd --A.C. Verma, H.K. Singh and M. Nehal Khan	--	78
Efficacy of <i>Pasteuria penetrans</i> against <i>Meloidogyne incognita</i> on greengram under field condition --B.B. Gogoi and P.P. Neog	--	80
Rice root nematode <i>Meloidogyne graminicola</i> —A threat to rice-wheat cropping system --K.R. Dabur and R.K. Jain	--	81
Polyethylene mulching in the management of plant parasitic nematodes --H.K. Sharma, Pankaj and S.D. Mishra	--	82
Viability of <i>Meloidogyne incognita</i> juveniles exposed to fungal culture filtrates --R.K. Bansal, R.S. Dahiya, I.J. Paruthi and R.K. Jain	--	84
Biodiversity of plant parasitic nematodes on yams, <i>Dioscorea</i> spp. in Kerala --Reni Varghese and N.C. Kurup	--	86
Comparative biology of <i>Meloidogyne incognita</i> on capsularis and olitorius jute --Bibha Luang and B.C. Bora	--	88
Screening of jute cultivars for resistance against root-knot nematode, <i>Meloidogyne incognita</i> --Bibha Luang and B.C. Bora	--	90
Effect of rice root-knot nematode (<i>Meloidogyne graminicola</i>) on wheat in rice-wheat cropping system --Daman Jeet Kaur	--	90
Effect of initial inoculum levels of <i>Meloidogyne incognita</i> on root-knot development and growth of <i>Vigna radiata</i> cv. ML-1108 --Akhtar Haseeb, Anita Sharma and Prabhat Kumar Shukla	--	93
New record on the occurrence of <i>Radopholus similis</i> (Cobb, 1893) Thorne, 1949 on pine trees in Manipur --L. Victoria, N. Mohilal and Ch. Dhanachand	--	95
Effect of root-knot nematode with <i>Fusarium solani</i> on damping-off of papaya --Ram Kishore, R.S. Kamalwanshi and Manjul Pandey	--	96
Effect of essential nutrients application for the management of root-knot nematode, <i>Meloidogyne incognita</i> on tomato --G. Rajendran and V. Saritha	--	98
Reaction of accessions of wild relatives of pigeonpea against root-knot nematode, <i>Meloidogyne javanica</i> and pigeonpea cyst nematode, <i>Heterodera cajani</i> --Bansa Singh and I.P. Singh	--	101
Book review --Sudershan Ganguly and A.K. Ganguly	--	105

Intraspecific Variations of *Ditylenchus myceliophagus* Goodey, 1958 in relation to Hosts, Temperature and Age of Nematode Culture

DEBANAND DAS* AND HARISH K. BAJAJ

Department of Nematology, CCS Haryana Agricultural University, Hisar-125 004

ABSTRACT: The effects of nine fungal hosts (*Alternaria alternata*, *Agaricus bisporus*, *Fusarium solani*, *Mucor* sp., *Pleurotus sajor-caju*, *Rhizoctonia solani*, *R. bataticola*, *Sclerotium sclerotiarum* and *Trichoderma harzianum*), four temperatures (13, 20, 25 and 30 \pm 1 $^{\circ}$ C) and three culture ages (30, 40 and 55 days) on taxonomic characters of *Ditylenchus myceliophagus* were investigated. Occurrence of males, shape of stylet knobs, number of lateral lines, junction between corpus and median bulb, arrangement of oocytes in ovary, crustaformeria, limit of anterior genital tract, shape of spicules, and covering of bursa were not affected by temperature, type of host and age of host culture. However, marked variations occurred in the basal oesophageal bulb and tail shape. Morphometric and allometric characters were influenced to varying degrees by these environmental factors.

Key words: *Ditylenchus myceliophagus*, morphometric, allometric characters, taxonomy, temperature, age, fungal hosts.

[Back to Contents](#)

New and Known Species of *Ditylenchus* Filipjev, 1936 from Haryana, India

DEBANAND DAS* AND HARISH K. BAJAJ

Department of Nematology, CCS Haryana Agricultural University, Hisar-125 004

ABSTRACT: Twelve species of *Ditylenchus* including 5 new species have been reported from Haryana state of India. *D. hisariensis* n. sp. Female: L=0.99-1.25 mm, c=11.8-17.1, c'=4.2-56., V=82.4-86.2, median bulb heart-shaped with slight thickening of valvular apparatus, crustaformeria quadricolumellate, tail short with sharply tapering posterior half and ending in a pointed terminus; *D. zaeae* n. sp. Female: L=0.69-0.81 mm, c=14.1-16.4, c'=3.5-4.5, V=82.5-84.5, MB=27.1-29.7, with distinct valvular apparatus, crustaformeria quadricolumellate, tail tapering gradually to end in a rounded terminus; *D. triticus* n. sp. Female: L=0.49-0.65 mm, c=7.6-9.8, c'=3.7-4.8, V=77.2-83.1, median bulb without valvular apparatus, genital tract forming a loop in the region of spermatheca, crustaformeria with 7-10 cells in each row, tail with hyaline region and a rounded terminus; *D. robustus* n. sp. Female: L=0.43-0.51 mm, c=9.1-10.8, c'=21.-4.1; V=79.8-82.0, median bulb without valvular apparatus, crustaformeria with 7-9 cells in each row, genital tract three to four times coiled between spermatheca and crustaformeria, tail elongated conoid with a pointed terminus; *D. bhattii* n. sp. Female: L=0.66-0.86 mm, c=7.5-13.0, c' 4.0-5.7, V=80.2-83.0, median bulb without valvular apparatus, crustaformeria with five cells in each row, tail with a dull-pointed terminus. Populations of *D. mirus* Siddiqi, 1963, *D. medicaginis* Wasilewska, 1965 and *D. oryzae* (Mathur *et al.*, 1966) Fortuner & Maggenti, 1987 occurring in the state were compared with their original descriptions and commented upon.

Key words: Taxonomy, *Ditylenchus hisariensis* n. sp., *D. zaeae* n. sp., *D. triticus* n. sp., *D. bhattii* n. sp., *D. robustus* n. sp.

Persistence of *Heterorhabditis indica* on Chickpea Foliage

PRABHURAJ, A.K.S. GIRISH AND SHIVALEELA

*Department of Entomology, College of Agriculture, Raichur-584 101
Karnataka. E-mail: prabhusha@rediffmail.com*

ABSTRACT: Persistence of *Heterorhabditis indica* (RCR) on chickpea foliage was evaluated under field condition during Rabi, 2003. Infective juveniles (IJs) at a concentration of 600 IJs/ml alone and in combination with various antidessiccants was sprayed on foliage during evening hours. Nematodes sprayed along with 0.1% glycerol recorded significantly maximum survival (81-25%) compared to other treatments after 2h of application. This was followed by nematode + Triton X-100 (0.1%) and nematode + paraffin liquid (0.1%) which recorded 62.6 and 50.6% survival, respectively. However, *H. indica* when sprayed along with oils viz., castor oil, palm oil and sunflower oil at 1% recorded poor survival (16.6 and 18.6%). However, after 4h of spray there was drastic reduction in survival in all the treatments and none of the nematodes survived after eight hours of spray in any of the treatments.

Key words: *Heterorhabditis indica*, persistence, survivability, chickpea foliage, antidessiccant.

Effect of Plant Extracts and their Potentized Doses against Root-Knot Nematode, *Meloidogyne incognita* on Tomato

G. RAJENDRAN AND V. SARITHA

Department of Nematology, Tamil Nadu Agricultural University, Coimbatore

ABSTRACT: Plant extracts of *Arnica montata*, *Calendula officinalis*, *Carica papaya*, *Azadirachta indica* were evaluated for their nematicidal effect against *Meloidogyne incognita* infesting tomato cv. PKM 1. All the plant extracts tested were found to reduce the root galls and soil population. Maximum mortality was recorded in plants treated with *A. indica* at 30 dilution.

Key words: Plant extracts, root-knot nematode, *Meloidogyne incognita*.

[Back to Contents](#)

Management of Root-Knot Nematode, *Meloidogyne incognita* on Tomato by using Indigenous Isolates of AM Fungus, *Glomus fasciculatum*

V. KANTHARAJU, K. KRISHNAPPA, N.G. RAVICHANDRA AND K. KARUNA

Department of Plant Pathology, UAS, GKVK, Bangalore-560065

ABSTRACT: Studies conducted on management of virulent isolates of *Meloidogyne incognita* on tomato by using indigenous isolates of *Glomus fasciculatum* showed that Shimoga Banana Isolate of *G. fasciculatum* (SBI-G.f.) was found to be effective in increasing plant growth development and yield of tomato cv. Pusa Ruby besides reducing the root-knot nematode population and root-knot index.

Key words: *Meloidogyne incognita*, *Glomus fasciculatum*, management, tomato.

Integrated Management of Nematode Complex on Banana

K.R. SHREENIVASA, K. KRISHNAPPA, B.M.R. REDDY, N.G. RAVICHANDRA, K. KARUNA AND V. KANTHARAJU

Department of Plant Pathology, UAS, GKVK, Bangalore-560 065

Abstract: Integration of physical, chemical and cultural methods for management of *Radopholus similis*, *Helicotylenchus multicinctus* and *Meloidogyne incognita* infecting banana were evaluated under farmers field. Integration of paring and hot water treatment of suckers along with application of carbofuran 3G and neemcake at the time of planting reduced the soil and root population of nematode besides increasing growth, development and yield of banana.

Key words: *Radopholus similis*, *Helicotylenchus multicinctus*, *Meloidogyne incognita*, integration, banana.

Interaction of Pigeonpea Cyst Nematode *Heterodera cajani* and *Macrophomina phaseolina* on Greengram (*Vigna radiata*)

M. ZAREENAA BEGUM AND M. SIVAKUMAR

Department of Nematology, Tamil Nadu Agricultural University, Coimbatore – 641 003.

ABSTRACT: Investigations were carried out on the root-rot disease complex induced by the pigeonpea cyst nematode, *Heterodera cajani* and the root-rot fungus *Macrophomina phaseolina* to know their interaction effects of *H. cajani* a week prior to the inoculation of *M. phaseolina* caused highest root-rot incidence and significant reduction in plant growth and yield. Nematode multiplication was adversely affected when fungus inoculation was preceded by nematode inoculation. Pathogenicity studies of nematode and fungus revealed highest root-rot incidence and lowest pod yield at highest inoculum levels of nematode and fungus.

Key words: *Heterodera cajani*, *Macrophomina phaseolina*, interaction, pathogenicity, *Vigna radiata*.

[Back to Contents](#)

Intercropping for the Management of Root-Knot Nematode, *Meloidogyne incognita* in Vegetable-based Cropping Systems

N. UMA SHANKAR KUMAR, K. KRISHNAPPA, B.M.R. REDDY, N.G. RAVICHANDRA AND K. KARUNA

Department of Plant Pathology, UAS, GKVK, Bangalore-560 065

ABSTRACT: Efficacy of different intercrops, marigold, mustard and sweet potato against root-knot nematode, *Meloidogyne incognita* infesting vegetables like tomato, okra and brinjal were evaluated by growing intercrops in vegetable-based cropping systems. Among the different intercrops evaluated, marigold intercropped with different vegetables reduced the nematode population in soil, number of galls, egg masses per root system, number of eggs per egg mass and root-knot index as compared to growing of vegetables alone continuously.

Key words: Tomato, okra, brinjal, intercrops, *Meloidogyne incognita*.

[Back to Contents](#)

Integrated Approach for the Management of *Meloidogyne incognita* on Jute

BIBHA LUANG AND B.C. BORA

Department of Nematology, Assam Agricultural University, Jorhat-785 013

ABSTRACT: An investigation was carried out to study the efficacy of neem products alone and in combination with carbofuran on root-knot nematode, *Meloidogyne incognita*, infecting jute. The study revealed that neem cake, nemin-coated urea and carbofuran 3G either alone or in combination with each other brought about considerable reduction in incidence of root-knot nematode. However, neem cake alone proved most effective out of all the treatments with regards to promoting growth parameters and fiber yield of jute.

Key words: *Corchorus* spp., neem products, carbofuran, *Meloidogyne incognita*, management.

[Back to Contents](#)

Effect of Carbosulfan (25 STD) and Neem Seed Kernel Powder as Corm Dressing for the Management of Root-Knot Nematode (*Meloidogyne incognita*) Infecting Gladiolus

M. RAVISHANKAR AND R.V. SINGH

Division of Nematology, Indian Agricultural Research Institute, New Delhi-110 012.

ABSTRACT: Studies were conducted to evaluate the effect of carbosulfan (25 STD) and Neem seed kernel powder (NSKP) as corm dressing on growth of gladiolus var. Shweta infested with root-knot nematode, *Meloidogyne incognita*. Carbosulfan (25 STD) at 3% (w/w) as corm dressing reduced the infection of *M. incognita*. Treated corms with carbosulfan at 3% (w/w) and neem seed kernel powder at 10% (w/w) resulted in increased plant growth parameters and less galls of *M. incognita* compared to their corresponding lower concentrations.

Key words: *Meloidogyne incognita*, gladiolus, carbosulfan, neem seed kernel powder.

[Back to Contents](#)

Evaluation of Nematicidal Properties of Neem for the Management of *Meloidogyne incognita* on Tomato

IRAM TARIQ AND MANSOOR A. SIDDIQUI

Department of Botany, Aligarh Muslim University, Aligarh-202 002, U.P.

ABSTRACT: Bare root-dip of tomato, *Lycopersicon lycopersicum* (L.) Karsten cv. 'Pusa Ruby' in extracts of neem leaf and oil-cake alone, carbofuran alone and in combination significantly reduced the root-knot nematode penetration into roots. Highest inhibition in root-knot larvae penetration was observed in neem-cake extract with carbofuran plant dipped at 120 minutes. Highest reduction in root-knot development was observed in soil amended with neem-cake+carbofuran. Due to reduction in root-knot development, the plant growth increased in these treatments.

Key words: Bare root-dip, organic amendments, *Meloidogyne incognita*, tomato.

[Back to Contents](#)

Management of Reniform Nematode, *Rotylenchulus reniformis* on Okra through *Streptomyces avermitilis*

J. JAYAKUMAR, G. RAJENDRAN AND S. RAMAKRISHNAN¹

Department of Nematology, Tamil Nadu Agricultural University, Coimbatore-641 003, ¹CTRI, Research Station, Hunsur.

ABSTRACT: An experiment conducted under glasshouse conditions on the management of reniform nematode, *Rotylenchulus reniformis* in okra with avermectin, revealed that the plants treated with avermectin (100 %) as seed treatment recorded maximum shoot length, fresh shoot weight, dry shoot weight and fruit yield. It was on par with carbofuran 3G @ 1kg a.i./ha and avermectin (75%) as seed treatment. Highest reduction in *R. reniformis* population was observed in plants treated with avermectin 10% as seed treatment. Avermectin treated plants also recorded significantly increased total phenol content and enzymatic activities such as peroxidase and Indole acetic acid oxidase compared to control plants.

Key words: Reniform nematode, *Streptomyces avermitilis*, okra.

[Back to Contents](#)

Effect of Cropping Sequences and Ploughing on Plant Parasitic Nematodes and Plant Growth in Field

ABDUL HAMID WANI

Section of Plant Pathology, P.G. Department of Botany, University of Kashmir, Hazratbal Srinagar, Kashmir-190 006

ABSTRACT: Significant reduction in the population of nematodes were recorded due to combined effect of cropping sequences and ploughing in different seasons, resulting in improved plant growth of all the test crops viz. wheat, chilli, mustard, mung, lentil, cowpea, chickpea, okra and tomato. The cropping sequence wheat-chilli-fallow caused greatest reduction in nematode populations. It was followed by lentil-cowpea-mung, chickpea-okra-chilli, mustard-mung-tomato and tomato-fallow-okra. Fallowing after tomato and chilli in the 2nd and 3rd season of cropping sequence decreased the population of nematodes. The different crops involved in the cropping sequences when grown in the following season after other test crops showed better improvement than crops grown in the first season. Deep ploughing proved more effective than normal ploughing.

Key words: Cropping sequence, plant-parasitic nematodes, ploughing, plant growth.

[Back to Contents](#)

Integrated Nematode Management Schedule incorporating Neem Products, VAM and Soil Solarization against *Heterodera cajani* infecting Pigeonpea

S. NAGESWARI AND S.D. MISHRA

Division of Nematology, Indian Agricultural Research Institute, New Delhi-110 012

ABSTRACT: In a field microplot study effective integrated nematode management schedules observed against pigeonpea cyst nematode, *Heterodera cajani* were: (a). soil application of neem seed powder @ 50 kg/ha + soil solarization (transparent polythene sheet of 400 gauge thickness for a period of 4 weeks) + VAM @ 100 kg/ha; (b). seed treatment with neem seed powder @ 10% w/w + soil solarization + VAM @ 100 kg/ha. The performance of both these schedules was almost similar as they provided maximum plant growth and grain yield as well as maximum reduction in nematode population. The cost-benefit ratio was found to be 1:2.54 and 1:2.60 for treatments (a) and (b), respectively, which indicated these to be economically viable.

Key words: Integrated nematode management, neem products, VAM, soil solarization, *Heterodera cajani*, pigeonpea.

[Back to Contents](#)

Effect of Root Extract against *Meloidogyne incognita* Infestation and Plant Growth in Tomato

G. RAJENDRAN AND V. SARITHA

Department of Nematology, Tamil Nadu Agricultural University, Coimbatore-3.

ABSTRACT: Ethanolic extract of root extract from the resistant tomato cultivar Hisar Lalit seedlings and from nematode induced cells when applied as potentized dose at the ratio of 1:50 ml on tomato plants CV. PKM 1, inoculated with *Meloidogyne incognita* larvae, reduced nematode population and promoted plant growth. The root extract from the resistant Hisar Lalit induced systemic resistance in tomato.

Keywords: *Meloidogyne incognita* tomato, root extract, dilution, stock solution.

[Back to Contents](#)