

CONTENTS

Use of <i>Meloidogyne incognita</i> as biomonitor of cadusafos contamination in soil <i>H.C. Meher and Aruna Pradhan</i>	--	145
Description of <i>Cervoannulatus graminus</i> gen. n., sp.n. and <i>Psilenchus mixus</i> sp. n. (Tylenchida) from Haryana, India - <i>Harish K. Bajaj</i>	--	156
Effect of individual and concomitant inoculations of <i>Meloidogyne incognita</i> , <i>Rotylenchulus reniformis</i> and <i>Rhizoctonia solani</i> on brinjal - <i>S. Kumar and Sivagami Vadivelu</i>	--	162
<i>Tylenchorhynchus sabourensis</i> sp.n. and <i>Quinisulcius rotundicephalus</i> sp.n. with a key to <i>Quinisulcius</i> species. - <i>S.P. Shaw and E. Khan</i>	--	167
Ecofriendly management of <i>Meloidogyne incognita</i> on <i>Hyoscyamus niger</i> - <i>Rakesh Pandey</i>	--	175
Three new species of mononchs (Nematoda: Mononchida) - <i>N. Mohilal and Ch. Dhanachand</i>	--	179
Intra-specific variations in <i>Tylenchorhynchus mashhoodi</i> Siddiqi & Basir, 1959 - <i>M.R. Khan and E. Khan</i>	--	187
Effect of soil salinity on penetration, development and pathogenicity of <i>Meloidogyne incognita</i> on okra and cucumber - <i>M. Wajid Khan, Abrar Ahmad Khan and Mujeebur Rahman Khan</i>	--	194
Control of <i>Meloidogyne incognita</i> and <i>Rotylenchulus reniformis</i> singly and concomitantly on pigeonpea with <i>Paecilomyces lilacinus</i> - <i>Suhail Anver and M. Mashkoor Alam</i>	--	209
Movement and leaching of cadusafos in three major Indian soils- <i>A. Pradhan, H.C. Meher, N.P. Agnihotri, K.K. Kaushal, Siyanand and G. Singh</i>	--	214
Studies on biotic potential and predation efficiency of <i>Iotonchus monhystra</i> (Mononchida: Nematoda) - <i>Mujib I. Azmi</i>	--	222
Pathogenic effect of root-knot nematode, <i>Meloidogyne incognita</i> on African white yam, <i>Dioscorea rotundata</i> - <i>C.Mohandas and S.Ramakrishnan</i>	--	233
SHORT COMMUNICATIONS		
Nematodes associated with cherry plants in Kashmir valley - <i>M.I.S. Waliullah and Virender Kaul</i>	--	237
Studies on different isolates of <i>Paecilomyces lilacinus</i> collected from different agroclimatic regions in India - <i>B.K. Goswami and Umarao</i>	--	238
Identification of <i>Meloidogyne incognita</i> race infecting brinjal - <i>S. Kumar and Sivagami Vadivelu</i>	--	240

(continued on inner cover)

Interaction of <i>Meloidogyne incognita</i> with <i>Fusarium oxysporum</i> in rhizome rot of ginger - Arun Kumar Makhnotra, Luqman Khan and N.P. Dohroo	--	242
Reaction of sweet potato germplasm against root-knot nematode, <i>Meloidogyne incognita</i> S. Ramakrishnan, C. Mohandas and C.S. Easwari Amma	--	244
Studies on superoxide dismutase, catalase and peroxidase in relation to resistance and susceptibility to tomato plants inoculated with <i>Meloidogyne incognita</i> Race 1 - S.P. Rajasekhar and A.K. Ganguly	--	246
Efficacy of neem (<i>Azadirachta indica</i>) cake as nursery bed treatment in the management of root knot nematode (<i>Meloidogyne javanica</i>) infecting tomato - R.K. Jain and D.C. Gupta	--	249
Minimising yield losses due to root knot nematode (<i>Meloidogyne incognita</i>) by using non-infected tomato seedlings- R.K. Jain, D.C. Gupta and Sewak Ram	--	251
Damage potential of <i>Meloidogyne incognita</i> in gladiolus cv Sylvia - Anju S. Khanna and Shyam S. Chandel	--	253
Effect of soil amendment against root-knot nematode (<i>Meloidogyne incognita</i>) on bottlegourd - R.D. Verma, Mahendra Singh, R. Samar and G.L. Sharma	--	255
Occurrence of plant parasitic nematodes in association with peaches in Punjab - M. Sarwat Sultan, S.K. Sharma, Inderjit Singh and P.K. Sakhuja	--	256
Seedling bare root dip with chemicals for the management of root knot nematode in brinjal - B.M.R. Reddy, K. Krishnappa and K. Karuna	--	258
Assessment of yield losses in ginger due to <i>Meloidogyne incognita</i> - Arun Kumar Makhnotra and Luqman Khan	--	259
Solarization as nursery bed treatment in the management of root-knot nematode (<i>Meloidogyne javanica</i>) infecting tomato - R.K. Jain and D.C. Gupta	--	261
Studies on the management of root lesion nematode, <i>Pratylenchus zaei</i> with the endomycorrhizal fungus, <i>Glomus fasciculatum</i> on maize - G. Jothi and Rajeswari Sundarababu	--	264
Nematode associated with citrus crop in Himachal Pradesh - Mohd. Luqman Khan and Anju S. Khanna	--	266
Nematicidal activity of 3,4,5- Trimethoxybenzal derivatives - M.R. Manrao, Chander Kanta and V.K. Kaul	--	268
Effect of intercropping on pigeonpea infested with <i>Meloidogyne incognita</i> - K. D. Upadhyay, K. Dwivedi and S.K. Srivastava	--	270
<i>Xiphinema larliani</i> nom. nov. for <i>X. filicaudatum</i> - E. Khan and M. Singh	--	271

USE OF *MELOIDOGYNE INCOGNITA* AS BIOMONITOR OF CADUSAFOS CONTAMINATION IN SOIL

H.C. MEHER AND ARUNA PRADHAN

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

Abstract: The potential use of *Meloidogyne incognita* as biomonitor of cadusafos, an acetylcholine esterase inhibitor (AChE) was studied in 3 major Indian soils, alluvial, black and red. The availability of the toxicant in soil solution as estimated by gas chromatography, was influenced by its adsorption on to clay, being strong in black, moderate in alluvial and weak in red soils. This in turn adversely affected invasion of *M. incognita* J2 in cowpea up to 60 days when the soils were exposed to cadusafos @ 1.0 and 2.0 µg/g soil for varying periods of time and plants grown in growth chamber providing 16 h photoperiod at 26°C and 8 h dark period at 18°C. The reduction in invasion was more in alluvial and red soils than black soil. The restriction in invasion could be well correlated with cadusafos concentration in soil solution ($R = 0.69^*$) and predicted as $Y = 23.4154 - 23.10067 X_1$ (log solution concentration) + $0.68626 X_2$ (clay%); adjusted $R^2 = 0.92^*$. Similarly, concentration of cadusafos in soil solution could be expressed as $\text{Log } Y = 1.70382 - 0.01957 X_1$ (invasion%) - $0.0064 X_2$ (days) - 0.0035 (sand%); adjusted $R^2 = 0.90^*$. The study envisaged ample potential of *M. incognita* as bioindicator of cadusafos in the soil environment and also revealed that cadusafos performed better in alluvial and red soils than black soil.

Key words: Biomonitor, *Meloidogyne incognita*, cadusafos, nematocidal efficacy.

DESCRIPTION OF *CERVOANNULATUS GRAMINUS* GEN. N., SP.N . AND *PSILENCHUS MIXUS* SP. N. (TYLENCHIDA) FROM HARYANA, INDIA

HARISH K. BAJAJ

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

Abstract: *Cervoannulatus graminus* gen. n. sp. n (Tylenchinae) is characterized by having cuticular annulations confined to the region just posterior to head, stylet with conus half its length, valvated median bulb, offset and bilobed spermatheca, embryonated eggs in uterus (in one female), tail tapering to a bluntly rounded terminus, and adanal caudal alae. *Psilenchus mixus* sp.n. is characterized by having striated lip region, inconspicuous amphidial apertures, long and narrow tail with rounded terminus. Genus *Atetylenchus* Khan, 1973 is synonymised with *Psilenchus* de Man, 1921.

Key words: *Atetylenchus*, *Cervoannulatus graminus* gen. n., sp.n., *Psilenchus mixus* sp.n. taxonomy

EFFECT OF INDIVIDUAL AND CONCOMITANT INOCULATIONS OF *MELOIDOGYNE INCOGNITA*, *ROTYLENCHULUS RENIFORMIS* AND *RHIZOCTONIA SOLANI* ON BRINJAL

S. KUMAR AND SIVAGAMI VADIVELU

Department of Nematology, Tamil Nadu Agricultural University, Coimbatore- 641 003

Abstract: The plant characters like height, fresh and dry weights of the shoots and roots were significantly affected when *M. incognita*, *R. reniformis* and *R. solani* were inoculated alone or in combinations. The nematode multiplication rate was affected when either of the nematode were combined with *R. solani* or when both the nematodes were present in the same plant.

Key words: Brinjal, *Meloidogyne incognita*, *Rotylenchulus reniformis*, *Rhizoctonia solani*, interactions.

***TYLENCHORHYNCHUS SABOURENSIS* SP.N. AND *QUINISULCIUS ROTUNDICEPHALUS* SP.N. WITH A KEY TO *QUINISULCIUS* SPECIES**

S.P. SHAW** AND E. KHAN

Division of Nematology, Indian Agricultural Research Institute, New Delhi, 110012

Abstract: *Tylenchorhynchus sabourensis* sp.n. is described and illustrated from the rhizosphere of black gram (*Phaseolus mungo*) from Sabour. It resembles *I. impar* Roy & Das, 1983 but can be separated by its shorter stylet and longer tail with more number of tail annules. It differs with *T. pruni* Gupta & Uma, 1981 by the absence of longitudinal striations and longer tail. *Quinisulcius rotundicephalus* sp.n. collected from the rhizosphere of banana (*Musa* sp.) at Sabour is described and illustrated. It can be separated from *Q. acutus* (Allen, 1955) Siddiqi, 1971 by having shorter stylet, (14.0-15.0 μm) longer tail (37 μm) less number of labial annules (3), distinctly set off esophageal bulb, and distinct conoid rounded cardia. It can also be differentiated from *Q. capitatus* (Allen, 1955) Siddiqi, 1971 in shape and number of tail annules and tail terminus. It possesses acutely pointed smooth terminus whereas *Q. capitatus* possesses bluntly pointed tail.

Key words: *Tylenchorhynchus sabourensis* sp.n., *Quinisulcius rotundicephalus* sp.n.

ECOFRIENDLY MANAGEMENT OF *MELOIDOGYNE INCOGNITA* ON *HYOSCYAMUS NIGER*

RAKESH PANDEY

Central Institute of Medicinal and Aromatic Plants (CIMAP-CSIR)
P.O. CIMAP, Lucknow- 226015 (U.P.)

Abstract: Ecofriendly approaches such as organic soil application in the form of neem oil, seed cake and dried leaf powder in combination with few plants viz. *Adhotoda vasica* Nees, *Mentha arvensis* L. and *Murraya koengii* L. caused significant reduction in the population of root knot nematode, *Meloidogyne incognita* on black henbane (*Hyoscyamus niger* L.). The most effective application for reducing nematode population and subsequently favoured various growth parameters was obtained in neem cake and *M. koengii* treated soil. It was followed by neem cake and *A. vasica* and neem cake and *M. arvensis* combinations. These different treatments also inhibited root galling, whereas, higher doses of neem cake alone showed some phytotoxic effect on the growth of the host plant.

Key words: Management, *Meloidogyne incognita*, *Hyoscyamus niger*.

THREE NEW SPECIES OF MONONCHS (NEMATODA: MONONCHIDA)

N. MOHILAL AND CH. DHANACHAND

Parasitology Laboratory, Life Sciences Department, Manipur University, Canchipur, Imphal

Abstract: Three new species of nematodes belonging to the order Mononchida are described and illustrated. *Actus baqrus* sp.n. is the first record of this genus from India. It resembles *Actus minutus* and *Actus salvadoricus* but differs in longer body, smaller lip, longer buccal cavity, higher position of dorsal tooth, amphids and longer tail. *Coomansus conoidus* sp.n. is nearer to *Coomansus indicus* and *Coomansus pretoriensis* but differs in the size of body, lips, buccal cavity, position of dorsal tooth and tail shape. *Cobbonchus impositus* sp.n. comes close to *Cobbonchus indicus* and *Cobbonchus ockerti* but varies in its longer body, buccal cavity, tail and in the presence of terminally opening caudal gland.

Key words: New species, *Actus baqrus*, *Coomansus conoidus*, *Cobbonchus impositus*, mononchs.

**INTRA-SPECIFIC VARIATIONS IN *TYLENCHORHYNCHUS MASHHOODI*
SIDDIQI & BASIR, 1959**

M.R. KHAN AND E. KHAN

Division of Nematology, I.A.R.I., New Delhi - 110012

Abstract: Morphological and morphometric variations were recorded among the populations of *Tylenchorhynchus mashhoodi*. Intra-specific variations in the shape of spear knobs, position of excretory pore, shape of basal bulb and cardia, number of tail annules, length and shape of spicule and gubernaculum were recorded, whereas number of lip annules (3-4), position of dorsal oesophageal glands opening (2-3 μm behind the spear base) and hemizonid (1-2 annules long) showed limited variability.

Key words: Intra-specific variation, *Tylenchorhynchus mashhoodi*

**EFFECT OF SOIL SALINITY ON PENETRATION, DEVELOPMENT AND
PATHOGENICITY OF *MELOIDOGYNE INCOGNITA*
ON OKRA AND CUCUMBER**

M. WAJID KHAN, ABRAR AHMAD KHAN AND MUJEEBUR RAHMAN KHAN*

Plant Pathology and Plant Nematology Laboratories, Department of Botany, Aligarh
Muslim University. Aligarh- 202002.

Abstract: Effect of soil salinity (created by NaCl and NaHCO₃) on penetration and development of *Meloidogyne incognita* race 2 in okra and cucumber roots and on plant growth were assessed. Salts at 5.0 mmhos/cm impaired ingress of the juveniles and delayed their development. Soil salinity and root-knot nematode reduced plant growth of both okra and cucumber, root galling, egg mass production and fecundity. There was a corresponding decrease in number of galls, egg masses and number of eggs/egg mass with increase in concentration of the salts. Delay in nematode ingress, development and reproduction in plant roots caused by the salinity stress resulted in improved plant growth.

Key words: Salinity, *M. incognita*, nematode development, cucumber, okra, plant growth.

CONTROL OF *MELOIDOGYNE INCOGNITA* AND *ROTYLENCHULUS RENIFORMIS* SINGLY AND CONCOMITANTLY ON PIGEONPEA WITH *PAECILOMYCES LILACINUS*

SUHAIL ANVER AND M. MASHKOOR ALAM

Department of Botany, Aligarh Muslim University, Aligarh- 202002.

Abstract: The root-knot nematode, *Meloidogyne incognita* caused greater reduction in plant growth, chlorophyll content, water absorption capacity of roots, root nodulation and bulk density of woody stem of pigeonpea than the reniform nematode, *Rotylenchulus reniformis*. These nematodes inhibited each other development in concomitant infections. However, both the nematodes together caused more damage to the plants than either of them singly, and it was less than the sum total of the damage caused by them individually. The nematodes were found to be less damaging in the presence of *Paecilomyces lilacinus*. The multiplication rate of nematodes was less in presence of *P. lilacinus* compared to the absence of *P. lilacinus*.

Key words: *Meloidogyne incognita*, nematode control, *Paecilomyces lilacinus*, pigeonpea, *Rotylenchulus reniformis*.

MOVEMENT AND LEACHING OF CADUSAFOS IN THREE MAJOR INDIAN SOILS

A. PRADHAN, H.C. MEHER, N.P. AGNIHOTRI*, K.K. KAUSHAL, SIYANAND AND G. SINGH

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

Abstract: Downward movement and leaching of cadusafos in soil column was studied in alluvial, black and red soils from diverse biogeographical origin, employing gas chromatography. Both movement and leaching were highest in red soil followed by alluvial and least in black soils. Mobility and leaching increased with water flux which redistributed the chemical in different soil layers. Leaching potential of cadusafos was higher in light than heavy soils.

Key words: Cadusafos, movement, leaching behaviour.

**STUDIES ON BIOTIC POTENTIAL AND PREDATION EFFICIENCY OF
IOTONCHUS MONHYSTERA (MONONCHIDA: NEMATODA)**

MUJIB I. AZMI

Plant Protection Division, Indian Grassland and Fodder Research Institute, Jhansi- 284 003.

Abstract: Mononchid nematode, *Iotonchus monhystera* was cultured in 1% soil-beef extract agar. Estimate of biotic potential i.e. intrinsic rate of natural increase was calculated from the data generated on generation time and rate of egg production by individual female. Equation for these variables in the laboratory cultures within the temperature range of 5 to 33°C were derived. Predation efficiency of *I. monhystera* was studied in agar as well as in soil. Percentage of predator causing 50% predation of *Meloidogyne incognita* and *Pratylenchus zeae* within five days in soil was calculated by profit-log dose analysis.

Key words: Biotic potential, predator, prey, *Iotonchus monhystera*, pest management.

PATHOGENIC EFFECT OF ROOT-KNOT NEMATODE, *MELOIDOGYNE INCOGNITA* ON AFRICAN WHITE YAM, *DIOSCOREA ROTUNDATA*

C.MOHANDAS AND S.RAMAKRISHNAN

Crop Protection Division, Central Tuber Crops Research Institute, Sreekariyam, Trivandrum- 695017

Abstract: An initial inoculum level of 100 juveniles of *Meloidogyne incognita* per plant caused significant reduction in fresh and dry fibrous root weight and tuber yield and proved to be pathogenic to *Dioscorea rotundata*. Severe well pronounced large sized galls were noticed in plants which received an initial inoculum of 100 J_2 plant or more. The multiplication rate of the nematode was maximum at the lowest level of inoculum (10 J_2) and minimum at the highest level (10000 J_2).

Key words: *Meloidogyne incognita*, pathogenicity, *Dioscorea rotundata*, yield loss.

[Back to Contents](#)