

CONTENTS

Biology of <i>Helicotylenchus abunaamai</i> —N.N. Padhi and S.N. Das	141
<i>Amphibelondira</i> Gen. N. (Nematoda; Belondiroidea) from Bhutan—M. Farooque Rahman, M. Shamim Jairajpuri, Wasim Ahmad and Irfan Ahmad	149
On the loss estimation and chemical control of 'Molya' disease of wheat caused by <i>Heterodera avenae</i> in India—B.N. Mathur, D.K. Handa, G. Swarup, C.L. Sethi, G.L. Sharma and B.D. Yadav	152
Larval stages of <i>Heterodera avenae</i> Woll., <i>H. cajani</i> Koshy and <i>H. mothi</i> Khan and Husain—A.S. Taya and Harish K. Bajaj	160
Two New species of <i>Inagrius</i> Khan, 1982 (Nematoda : Longidoroidea) from India—E. Khan	163
<i>Globocephalonema krishnani</i> Gen. N., Sp. N. (Nematoda : Drilonematidae) from Hyderabad—L. Rajeswari Anand and P. Narayana Rao	168
Effect of chemical treatment in soil on emergence, penetration and development of <i>Heterodera avenae</i> on wheat—K.K. Kaushal and A.R. Seshadri	171
<i>Punctoleptus rotundicaudatus</i> Gen. N., Sp. N. and <i>Basirotyletus minutus</i> Sp. N. (Nematoda : Leptonchoidea) from India—E. Khan	175
Host-range of <i>Pratylenchus coffeae</i> —Sandhya Das and S.N. Das	180
One new genus and four new species in the super family longidoroidea (Nematoda)—E. Khan	185
Reaction of mungbean germplasms and its pathogenicity against <i>Meloidogyne javanica</i> —D.C. Gupta, I.J. Paruthi and K.K. Verma	194
Three new species of dorylaim nematodes from the north-eastern region of India—M. Farooque Rahman, M. Shamim Jairajpuri, Wasim Ahmad and Irfan Ahmad	197
Five new species of genus <i>Aphelenchoides</i> (Nematoda : Aphelenchida) infesting mushroom in Northern India—Anju Seth and N.K. Sharma	205
Influence of some weed control practices and Rabi crops on nematode population behaviour—H.S. Gaur and M.M. Haque	216
Persistence of aldicarb residues in soil as influenced by the cropping season—H.C. Meher, C.L. Sethi and N.P. Agnihotri	222
A new genus in the family <i>Wilsonematidae</i> Rank N. (Plectoidea : Nematoda)—Sudershan Ganguly and E. Khan	226
Tow new species of genus, <i>Paratylenchus</i> Micoletzky, 1922 (Nematoda : Paratylenchinae) from Himachal Pradesh, India—G.C. Sharma, N.K. Sharma and E. Khan	231
<i>Datura</i> , <i>Ipomea</i> , <i>Tagetes</i> and <i>Lawsonia</i> as control of <i>Tylenchulus semipenetrans</i> and <i>Anguina tritici</i> —Ramesh Kumari, Kailash Kumar Verma, Kuldip Singh Dhindsa and D.S. Bhatti	236
Interspecific relations between concomitant populations of <i>Tylenchorhynchus</i> spp., <i>Rotylenchulus reniformis</i> and <i>Hoplolaimus indicus</i> under different crops—H.S. Gaur and M.M. Haque	241
Isolation and identification of nematotoxins produced by <i>Fusarium solani</i> (Mart) SACC.—A. Mani, C. L. Sethi and Devkumar	247
Development of peroxidase (E.C.1.11.1.7) activities in susceptible and resistant cultivars of cowpea inoculated with the root-knot nematode, <i>Meloidogyne incognita</i> —K.C. Mohanty, A.K. Ganguly and D.R. Dasgupta	252

(Continued on inner cover)

SHORT COMMUNICATIONS

Pathogenic effect of <i>Meloidogyne incognita</i> on seedling growth of su-babool, <i>Leucaena leucocephala</i> —Mujib I. Azmi	...	257
Pathogenicity of <i>Meloidogyne incognita</i> on ginger (<i>Zingiber officinale</i> ROSC)—Sudha Sukumaran and P. Sundararaju	...	258
Damaging threshold level of the stunt nematode, <i>Tylenchorhynchus brevilineatus</i> on wheat variety, Sonalika—N.A. Thakar, H.R. Patel and C.C. Patel	...	260
Role of total phenols in pigeonpea resistance to reniform nematode—N.A. Thakar and B.S. Yadav	...	261
The histochemical localization of oxidase, peroxidase and lignin in the roots of tomato infected by the root-knot nematode, <i>Meloidogyne incognita</i> —Akhtar Haseeb, Abrar M. Khan and S.K. Saxena	...	263
Emergence of <i>Heterodera avenae</i> larvae as influenced by some systemic carbamates—M. Sarwat Sultan and P.K. Sakhuja	...	264
Screening of cotton varieties/hybrids against root-knot nematodes, <i>Meloidogyne</i> spp.—N.A. Thakar, H.R. Patel and C.C. Patel	...	265
Studies on the varietal reaction of some species of <i>Citrus</i> and <i>Poncirus</i> to <i>Tylenchulus semipenetrans</i> Cobb.—A. Mani and G.S. Reddy	...	267
Occurrence of root-knot nematodes in cardamom plantations of Karnataka—S.S. Ali	...	269
Pathogenicity of <i>Meloidogyne incognita</i> on edible <i>Coleus</i> —P.R. Patnaik and S.N. Das	...	271
Reaction of some varieties of melons (water melon and musk melon) to the root-knot nematode, <i>Meloidogyne incognita</i> —C. Sharma, R.K.S. Dhankhar, N.T. Sarna and P.C. Trivedi	...	272
Pathogenicity of <i>Meloidogyne incognita</i> on water melon (<i>Citrullus vulgaris</i> Scharad)—R.K.S. Dhankhar, C. Sharma, N.T. Sarna and P.C. Trivedi	...	274
Allelochemic effects of some plants on hatching in <i>Meloidogyne incognita</i> —U. Jain, S. Datta, P.C. Trivedi and B. Tiagi	...	275
Population dynamics of phytonematodes associated with betelvine (<i>Piper betle</i> L.), banana and paddy with special reference to crop rotation—M. Sivakumar and T. Marimuthu	...	277
Efficacy of different organic amendments against phytonematodes associated with betelvine (<i>Piper betle</i> L.)—M. Sivakumar and T. Marimuthu	...	278
New host records of the root-knot nematode, <i>Meloidogyne incognita</i> (Kofoid & White) Chitwood—P.C. Trivedi, C. Sharma and S. Datta	...	279
Occurrence of <i>Radopholus similis</i> on betelvine (<i>Piper betle</i> L.) in Karnataka—P. Sundararaju and C.P. Suja	...	279
Efficacy of some indigenous plant materials and non-edible oilseed cakes against <i>Meloidogyne incognita</i> on tomato—B.K. Goswami and K. Vijayalakshmi	...	280
Efficacy of some systemic chemicals in control of <i>Rotylenchulus reniformis</i> infecting mungbean—O.S. Patel and N. Thakar	...	281
Effect of intercropping on root-knot nematode (<i>Meloidogyne javanica</i>) infesting grapevine (Var. Perlette)—P.P.S. Baghel and D.C. Gupta	...	283
Inheritance of resistance to root-knot nematode in cowpea—D.B. Singh and P. Parvatha Reddy	...	284
Some chemical changes in chick pea plants infected with root knot nematode, <i>Meloidogyne javanica</i> —K.D. Upadhyay and B. Banerjee	...	286
Book Review	...	289
Index	...	291

BIOLOGY OF *HELICOTYLENCHUS ABUNAAMAI*

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Abstract : The spiral nematode, *Helicotylenchus abunaamai* took 6-8 days for its embryonic development at $25 \pm 6.5^{\circ}\text{C}$. The life cycle from egg to egg was completed in 32-40 days on little millet. Oviposition was observed as a simple and rapid process. The first-stage juvenile was formed inside the egg, 4-5 days after egg-laying. The first moult took place inside the egg and the second stage juvenile hatched at 6-8 days after oviposition. Post-embryonic development consisted of 3 juvenile stages and the adult with three moults. Feeding on host roots by the juveniles was essential for development to subsequent stages.

Key words : *Helicotylenchus abunaamai*, life cycle, oviposition, embryogenesis, hatching, post-embryonic development

**AMPHIBELONDIRA GEN. N. (NEMATODA : BELONDIROIDEA) FROM
BHUTAN**

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Abstract : *Amphibelondira* gen. n. is described and illustrated. The new genus is closely related to *Belondira* Thorne, 1939; *Belondirella* Thorne, 1964 and *Anchobelondira* Nair & Coomans, 1971 and is characterized by having a non-constricted oesophageal expansion, an amphidelphic gonad and the absence of ventromedian supplements in male.

Key words : Taxonomy, *Amphibelondira bhutanensis* Gen. N. and Sp. N.

ON THE LOSS ESTIMATION AND CHEMICAL CONTROL OF 'MOLYA'
DISEASE OF WHEAT CAUSED BY *HETERODERA AVENAE* IN INDIA

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Abstract : Studies on loss assessment and chemical control of *molya* disease of wheat, caused by *Heterodera avenae*, were conducted at several infested sites during 1976-82. Losses upto 47.2 per cent for wheat variety, Kalyan Sona, in the sandy soils of Rajasthan (India) were comparable to the loss estimates in Australia and were higher than those reported from Canada and European countries. Of the different nematicides (aldicarb, carbofuran, DBCP, phorate, mephosfolan, isofenphos and terbufos) tested under field conditions, of all except phorate, were effective in reducing nematode population and also resulted in improved crop yield. Drill application of granular nematicides was superior than their broadcast application. Application of aldicarb was most economical.

Key words · *Heterodera avenae*, loss, chemical control, wheat.

LARVAL STAGES OF *HETERODERA AVENAE* WOLL., *H. CAJANI*
KOSHY AND *H. MOTH* KHAN AND HUSAIN

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Abstract : The larval stages of *Heterodera avenae*, *H. cajani* and *H. mothi* have been compared. The second, third and fourth stage larvae of these species can be differentiated on the basis of body length, values of a, b and c; shape of lip annule, spear size, spear knobs; lateral lines, opening of dorsal oesophageal gland and tail size. The development of fourth stage male larvae of *H. avenae* is different from other species because the posterior end of larvae remains attached to the third cuticle and larvae increase in length from anterior end, whereas in other species this larval stage gets completely detached itself from the cuticle at both the ends.

Key words : *Heterodera avenae*, *H. cajani*, *H. mothi*, Larval stage

TWO NEW SPECIES OF *INAGRIUS* KHAN, 1982 (NEMATODA :
LONGIDOROIDEA) FROM INDIA

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Abstract : Two new species of *Inagrius* Khan, 1981 collected from Uttar Pradesh and Punjab are described. *I. eugeni* sp. n. is distinctive by having thickened and broader amphidial pouches, absence of double depression, position of sub-ventral gland nuclei and distinct pre-rectum. *I. teres* with *I. teres* sp. n. is distinctive by having double constricted lip, distinct lips, broad amphidial aperture and long pre-rectum.

Key words : New species of *Inagrius*

**GLOBOCEPHALONEMA KRISHNANII GEN. N., SP. N. (NEMATODA :
DRILONEMATIDAE) FROM HYDERABAD**

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Abstract: *Globocephalonema Krishnanii* Gen. n., Sp. n. is described from the body cavity of earthworms of *Lampito mauritii* (Megascolecidae). The new genus is characterised by amphids deep pocket with rims. Head distinctly demarcated by amphids. Excretory pore anterior to oesophageal bulb. Caudal suckers present in both the sexes. Copulatory apparatus present.

Key words : *Globocephalonema krishnanii*, Gen. n., and Sp. n.

EFFECT OF CHEMICAL TREATMENT IN SOIL ON EMERGENCE,
PENETRATION AND DEVELOPMENT OF *HETERODERA AVEÑAE*
ON WHEAT¹

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Abstract : Penetration of *Heterodera avenae* larvae in wheat roots was significantly affected with carbofuran at 2 and 4 kg ai/h causing marked reduction in comparison to aldicarb. Cyst multiplication was negligible in all the treatments except aldicarb @ 2 kg ai/h.

Key words : Aldicarb, Carbofuran, *Heterodera avenae* emergence and penetration

***PUNCTOLEPTUS ROTUNDICAUDATUS* GEN. N., SP. N. AND
BASIROTYLEPTUS MINUTUS SP. N. (NEMATODA :
LEPTONCHOIDEA) FROM INDIA**

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***Abstract :* *Punctoleptus rotundicaudatus* gen. n. sp. n. is proposed for small sized leptonchid nematodes having large number of small punctations dispersed throughout the body rather irregularly and *Basirotyleptus minutus* sp. n. is distinctive for having angular lip region, sclerotized amphids and hemispherical tail.**

Key words : New leptonchoids from India

HOST-RANGE OF *PRATYLENCHUS COFFEA**

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Abstract : Sixty three plant species, belonging to different families, tested for their suitability as hosts of *Pratylenchus coffea* under pot conditions indicated that nematode preferred both monocot as well as dicot plants with banana as the most preferred host.

Key words : *Pratylenchus coffea*, host range

ONE NEW GENUS AND FOUR NEW SPECIES IN THE SUPER FAMILY
LONGIDOROIDEA (NEMATODA)

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Abstract : *Neolongidorus* gen. n. is suggested to accommodate new forms which do not fit within genus *Longidorus*. The new genus is close to *Longidorus* but differs in the position of spear guiding ring, located at about $\times 4$ lip-widths from anterior end as against a maximum of $\times 3$ lip widths in *Longidorus* and also in the location of amphidial pouch.

Key word : *Neolongidorus* gen. n.

REACTION OF MUNGBEAN GERMPLASMS AND ITS PATHOGENICITY
AGAINST *MELOIDOGYNE JAVANICA*

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Abstract : (219) varieties/lines of mung bean were screened under pot conditions for their susceptibility to root-knot nematode, *Meloidogyne javanica*. None was recorded resistant but, 15 varieties exhibited moderate resistance. An initial inoculum level of 100 larvae/kg soil and above caused significant reduction in plant growth (var. K 851).

Key words : *Meloidogyne javanica*, Mungbean, Pathogenicity, Resistance.

THREE NEW SPECIES OF DORYLAIM NEMATODES FROM THE NORTH-EASTERN REGION OF INDIA

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Abstract : Three new species of nematodes belonging to the order Dorylaimida are described. *Aporcelaimellus maximus* sp. n. has 3.37-3.96 mm long body, a = 42-47; b = 4.5-4.8; c = 66-78; V = 51-54; odontostyle = 19-22 μ m; odontophore = 47-49 μ m and is closely related to *A. obscurus* and *A. parvus*. *Neoactinolaimus neoelaboratus* sp. n. has 1.92-2.13 mm long body, a = 43-46; b = 4.1-4.3; c = 8; V = 50-54; odontostyle = 23-24 μ m; odontophore = 24 μ m and is related to *N. elaboratus*, *N. occalescens* and *N. proximus*. *Tylencholaimus vulvulatum* sp. n. has 0.79-0.85 mm long body, a = 29-32; b = 4.3-4.6; c = 40-43; V = 61-69; odontostyle = 6-7 μ m; odontophore = 6 μ m; and is related to *T. formosus*, *T. airolensis* and *T. alpinus*.

Key words : *Aporcelaimellus maximus*, *Neoactinolaimus neoelaboratus*, *Tylencholaimus vulvulatum*

FIVE NEW SPECIES OF GENUS *APHELENCHOIDES* (NEMATODA :
APHELENCHIDA) INFESTING MUSHROOM IN NORTHERN INDIA

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Abstract : Five new species of the genus, *Aphelenchoides* isolated from mushroom are described. *Aphelenchoides agarici* sp. n. is close to *A. composticola* but differs from the latter in size, prominence of vulval lips and longer female tail. *A. myceliophagus* sp. n. is close to *A. sacchari*, *A. composticola* and *A. saprophilus* but differs from them in body size, shape and size of spicules and absence of papillae. *A. neocomposticola* sp. n. is close to *A. composticola* but differs from the latter in the body size, position of vulva and spicule size. *A. swarupi* sp. n. is close to *A. subparietinus* but differs in number of incisures in lateral field, position of vulva, shape of female and male tail and size of post-vulval uterine sac. *A. minor* sp. n. is close to *A. composticola*, *A. sacchari*, *A. saprophilus*, *A. parietinus*, *A. cyrtus* and *A. dactylocercus* from which it differs in body size, length of stylet and size of spicules.

Key words : *Aphelenchoides*

INFLUENCE OF SOME WEED CONTROL PRACTICES AND *RABI* CROPS ON NEMATODE POPULATION BEHAVIOUR*

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Abstract : Results of factorial experiments conducted in 2.25 m² field microplots, over two years revealed that the influence of crop on nematode population was more pronounced than that of weed control practices. The mustard crop, in general, maintained lower equilibrium population of plant-parasitic nematodes than wheat, pea or fallow. The mechanical weed control was the best in keeping down the weed densities as well as nematode populations followed by pre-emergence and post-emergence weedicides (linuron and tribunil @ 0.5 kg a.i./ha). Lack of weed control led to populations as high as obtained under wheat or pea crops. The interaction effect of weed control practices and crops was not significant except in April, 1984 when mustard recorded lowest populations with any of the weed control practices. Mechanical weed control had similar effect on nematodes in all crops. With pre-emergence weedicide, wheat recorded highest populations followed by pea while with post-emergence weedicide, fallow had highest populations followed by wheat and pea. Without weed control the highest population buildup was observed under fallow and wheat and least in mustard. The post-emergence weedicide application was more effective in reducing the semi-endoparasite, *Rotylenchulus reniformis*, whereas the pre-emergence application caused slightly greater reduction of ectoparasites like species of *Tylenchorhynchus*. Weed control, mechanically or by pre-emergence weedicide, gave higher yields of wheat and mustard while the post-emergence weedicide and mechanical method gave higher yield of pea.

Key words : Population dynamics, Crops, Weed control practices

[Back to Contents](#)

PERSISTENCE OF ALDICARB RESIDUES IN SOIL AS INFLUENCED BY THE CROPPING SEASON

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Abstract : Residues of aldicarb, applied as broadcast and in furrow, at 1.25, 1.0 and 1.5 kg a.i./ha, persisted for about 60, 120 and 120 days, respectively in sandy loam soil cropped with cowpea, pea and okra. Initial degradation of aldicarb residues was rapid upto 15 days and slow subsequently in all the three cropping seasons. The differential persistence of aldicarb residues are attributed more to the method of application than moisture and temperature condition.

Key words : Aldicarb, persistence, residues

A NEW GENUS IN THE FAMILY *WILSONEMATIDAE* RANK N.
(PLECTOIDEA : NEMATODA)

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Abstract : The sub-family Wilsonematinae is upgraded to family Wilsonematidae rank n. which can be distinguished from other families of Plectoidea by having cervical expansions with elaborate hyperlabial extensions. Wilsonematidae is divided into two sub-families-Wilsonematinae and Tylocephalinae subfamily n., distinguished on the basis of shape of amphid (circular/dorsoventrally oblong respectively). *Coronacephalus* gen. n. is described and illustrated which is characterized by having well developed double hyperlabial cervical extension of which the inner lining being annulated, flabella non-fimbriate and non-cornuate, and absence of cervical setae. Key to the genera of both the sub-families is provided.

Key words : Wilsonematidae rank n., Tylocephalinae subfam. n. and *Coronacephalus indicus* gen. n. sp. n.

TWO NEW SPECIES OF GENUS, *PARATYLENCHUS* MICOLETZKY, 1922
(NEMATODA : PARATYLENCHINAE) FROM HIMACHAL
PRADESH, INDIA

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Abstract : Two new species of the genus, *Paratylenchus*, *P. prunii* and *P. minor* associated with rhizosphear of Peach in Himachal Pradesh are described and illustrated.

Key words : *Paratylenchus prunis* sp. n; *P. minor* sp. n.

DATURA, IPOMEA, TAGETES AND LAWSONIA AS CONTROL OF
TYLENCHULUS SEMIPENETRANS AND *ANGUINA TRITICI*

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and D.S. BHATTI**

Abstract : *In vitro* tests on toxic effect of water and methanolic extracts of leaves, stems and buds of *Datura stramonium*, *Ipomea carnea*, *Tagetes patula* and *Lawsonia alba* on the second stage larvae of *Tylenchulus semipenetrans* and *Anguina tritici* indicated that methanolic extracts of leaves, stems and buds caused 75-100 per cent larval mortality of *T. semipenetrans* and *A. tritici* at 4 mg/ml or 1 : 5 dilution. Larval mortality in oil extracted from seeds of *D. stramonium* and *L. alba* was 65-90 per cent.

Key words : Plant extracts, *Tylenchulus semipenetrans*, *Anguina tritici*

INTERSPECIFIC RELATIONS BETWEEN CONCOMITANT POPULATIONS
OF *TYLENCHORHYNCHUS* SPP., *ROTYLENCHULUS RENIFORMIS* AND
HOPLOLAIMUS INDICUS UNDER DIFFERENT CROPS

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Abstract : Interspecific correlation and regression analyses of population densities of *Tylenchorhynchus* spp., *Rotylenchulus reniformis* and *Hoplolaimus indicus* indicate very weak interspecific competition among these plant-parasitic nematodes owing to their differential ecological niches on the same host. The kind and extent of correlation was determined by the host and the season, especially temperature. *Tylenchorhynchus* spp. and *R. reniformis* populations were usually negatively correlated. Mustard suppressed both these nematodes. *Tylenchorhynchus* spp. and *H. indicus* were positively correlated under wheat and pea in the *Rabi* season but negatively under *mung*, okra and fallow in summer. *R. reniformis* and *H. indicus* were usually positively correlated in both seasons. The rates of change in the population densities of any one nematode with unit change in the population of the others was a function of the rates of reproduction, host preference and the prevailing temperature.

Key words : Interspecific correlations, Populations.

ISOLATION AND IDENTIFICATION OF NEMATOTOXINS PRODUCED
BY *FUSARIUM SOLANI* (MART) SACC.

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Abstract : Nematotoxins present in the culture filtrate of *Fusarium solani* were isolated as colourless oil by liquid extraction using ethylacetate and fractionated into five components M_1-M_5 by preparative TLC. Among these M_1 alone constituted 80 per cent of the total and the nematotoxicity was in the descending order : M_5 , M_4 , M_2 , M_3 and M_1 . Gas chromatograph-mass spectrometric (GC-MS) analysis revealed M_1 to contain $C_{17}-C_{26}$ n-alkanes.

Key words : *Fusarium solani*, culture filtrate, *Meloidogyne incognita*, Nematotoxin,
n-alkanes

DEVELOPMENT OF PEROXIDASE (E.C.1.11.1.7) ACTIVITIES IN
SUSCEPTIBLE AND RESISTANT CULTIVARS OF COWPEA
INOCULATED WITH THE ROOT-KNOT NEMATODE,
MELOIDOGYNE INCOGNITA

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Abstract : Investigation on development of peroxidase activity at two intervals were carried out in two cowpea cultivars viz. Pusa Barsati (susceptible) and C 152 (resistant) inoculated with root-knot nematode, *Meloidogyne incognita*. Quantitative increase in peroxidase activity was observed at both the intervals. On the basis of electrophoretic analysis, it was found that new isozyme of peroxidase was synthesized during post infection period.

Key words : Peroxidase, Cowpea, *Meloidogyne incognita*.