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SHORT COMMUNICATIONS

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Role of Prey Attractants in Food finding Behaviour of Dorylaim predators, *Laimydorus baldus* and *Discolaimus major* (Nematoda : Dorylaimida)

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ABSTRACT : Observations were made on the role of prey attractants in the food finding behaviour of two species of dorylaim predators viz., *Laimydorus baldus* and *Discolaimus major* using prey nematodes belonging to different trophic groups viz., saprophagous, virus-vectors, predators, epidermal, endodermal, migratory, semi-endodermal and cortical feeders. The attractants emitted by excised and non-excised prey individuals elicited positive and significant response of *L. baldus* and *D. major*. Excised prey individuals were more attractive to predators. *Rhabditis* sp., *Basiria graminophila, Hirschmanniella oryzae, Anguina tritici, Paralongidorus citri, Longidorus sp., Hemicriconemoides mangiferae* and *D. major* were most attractive whereas *Acrobeles* sp., *Helicotylenchus indicus, Tobrilus* sp., *Tylenchorhynchus mashhoodi, Xiphinema basiri, Mesodorylaimus bastiani, Heterodera mothi* and *Hemicycliophora dhirendri* were least attractive prey. The differential attraction responses of predators towards different species of prey were attributed to the differences in the inherent behaviour of predators, their preference for a particular species of prey, chemical composition, concentration, quality and quantity of prey, kairomones, minimum perceptible attraction gradient (*MPAG*) formed by prey kairomones and minimum response threshold (*MRT*) of the predators.

Key words: *Discolaimus major, Laimydorus baldus,* predators, prey, food finding, attraction.

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Influence of Soil Moisture levels on Root-Knot Nematode (*Meloidogyne incognita*) Infecting Cotton (*Gossypium hirsutum*)

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ABSTRACT : Effect of five soil moisture levels viz., 0.6, 0.8, 1.0, 1.2 and 1.4, based upon irrigation water (I.W.)/ cumulative pan evaporation (C.P.E.) ratio on root-knot disease of cotton were studied. Results recorded 90 days after inoculation revealed that 1.2 ratio was most conducive for maximum growth of cotton plants. However, root-knot disease incidence in terms of galling and nematode reproduction was also maximum at this level followed by 1.0 ratio. At 0.6 and 1.4 soil moisture levels, root-knot nematode development and growth of cotton plants were adversely affected with more pronounced effect at 1.4 ratio. The reproduction factor of *Meloidogyne incognita* was highest (8.6) at 1.2 followed by 7.5 at 1.0 and lowest (3.1) at 1.4.

Key words: Edaphic factors, *Gossypium hirsutum, M. incognita,* soil moisture.

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Effect of Chemical and Biological Methods on Root-knot Nematode Management in Sunflower

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ABSTRACT : A microplot study was conducted to evaluate effect of carbofuran, marigold waste amendment and biological agents *(Pasteuria penetrans* and *Glomus fasciculatum)* individually and in comibnations on growth and yield of sunflower infested with root-knot nematode, *Meloidogyne incognita.* Integration of all the 4 components was effective in improving plant growth and increasing seed yield by 100.3 per cent with a moderate cost : benefit ratio of 1 : 1.63.

Key words: Carbofuran, bioagents, *Pasteuria penetrans, Glomus fasciculatum,* management, root-knot, sunflower.

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Effect of Killing, Fixing and Mounting Methods on Morphological Clarity of *Tylenchorhynchus mashhoodi,* Siddiqi and Basir, 1959*

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ABSTRACT : Mature females of *Tylenchorhynchus mashhoodi* were killed and fixed in 4% formalin, FA (4:1), FP (4:1) and TAF at 40°, 50°, 60° and 70°C. Subsequently, the fixed specimens were processed through glycerol-ethanol method, rapid lactophenol method and rapid method to glycerol. Twenty-five morphological features were observed for their clarity as influenced by different killing temperatures, fixatives and processing methods. Mounted specimens were again observed after 5 months for any change in morphological clarity. Killing and fixing in TAF at 50°C produced specimens with better clarity than others. The most life-like specimens were produced when fixed in TAF and processed through rapid lactophenol method. Some features like nerve ring. oesophageal gland nuclei, ova, uterus etc. looked better than those in live nematodes, particularly after 5 months of processing.

Key words: *Tylenchorhynchus mashhoodi,* fixing, mounting, morphological clarity

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Management of the Burrowing Nematode, *Radopholus similis* (Cobb, 1893) Thorne, 1949 Infesting Banana*

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ABSTRACT : Investigations were carried out on the management of burrowing nematodes, *Radopholus simulis*, infesting banana, by integrating ecofriendly components such as oil cakes (neem and pongamia), bio-control agent (*Trichoderma viride*) and a nematicide (carbofuran). The treatments were evaluated individually and in integration against *R. similis* under field conditions. Among the different treatments, neem cake + carbofuran + *T. viride* was most effective in reducing the nematode population, improving plant growth and increasing fruit yield with high cost : benefit ratio.

Key words: Management, *Radopholus similis,* banana, biocontrol agent, *Trichoderma viride*, nematicide.

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Integrated Approach for the Management of Burrowing Nematode, *Radopholus similis* in Arecanut based Cropping System

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ABSTRACT : A trial was laid out at CPCRI, Kasaragod, to study the effect of green manure alongwith phorate and neem oil cake, singly and in combination, for the control of *Radopholus similis* infesting arecanut, banana and black pepper. Phorate, @25g/plant, alone or in combination with neem cake @1kg/plant was effective in reducing the nematode population on all the tested crops. Application of *Glyricidia* leaves @5kg/plant also reduced the nematode population significantly.

Key words: *Radopholus similis,* Phorate, Neem cake, *Glyricidia* leaves.

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Effect of Aqueous Extracts of Plant Products on Hatching and Penetration of *Meloidogyne incognita* Infecting Sunflower

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ABSTRACT : The aqueous extracts of fresh leaves of neem (*Azadirachta indica*), *ak* (*Calotropis procera*) and *dek* (*Melia azedarach*); and oilcakes of mustard and cotton were tested on hatching and penetration of root knot nematode, *Meloidogyne incognita* on sunflower plants. The maximum inhibition of hatching occurred at N and N:10 concentration of aqueous extracts of all the plant products. Cotton cake was best in causing maximum inhibition. Penetration by the second stage juveniles into the roots of sunflower plant was significantly inhibited by all the plant products over control. However, highest doses i.e. 20 and 40g/kg soil were better in suppressing penetraion. Cotton cake caused maximum suppression in the penetration.

Key words: Aqueous extracts, neem, *Calotropis procera, Melia azedarach, M. Incognita,* sunflower

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Role of Soil Organic Carbon on Root-knot Disease of Cotton and uptake of a Few Biochemical Constituents

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ABSTRACT : Growth of cotton plants increased significantly with corresponding increase in organic carbon from 0.58% (10 g FYM/kg soil) to 1.27% (30 g FYM/kg soil) which was at par with 1.63 (40 g FYM/kg soil) However, nematode galling and reproduction decreased with increasing level of organic carbon. The disease intensity was maximum in unmanured check. Both under nematode inoculated and non-inoculated conditions, uptake of N, P, K total sugar and total phenol was higher in FYM supplemented plant compared to unamended soils. However, non-inoculated plants recorded higher uptake and contents. Further, irrespective of nematisation, uptake of these constituents was highest at 1.27 and 1.63% organic carbon while lowest in soils having 0.27% (check) and 0.58% organic carbon.

Key words: *Gossypium hirsutum, Meloidogyne incognita*, soil organic carbon, uptake.

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Integrated Management Approach for Root-knot Nematode in Jute

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ABSTRACT : An effort was made to contain the jute root-knot nematode through an integrated approach with inclusion of phytosanitary, cultural, organic soil amendment and synthetic chemical components. The treatment quite effectively suppressed the nematode population, kept the infection at significantly low level and was superior to chemical method.

Key words: Jute, root-knot nematode, management

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Management of Nematodes in Bidi Tobacco Nursery by Inimical Plants

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ABSTRACT : An investigation was carried out to test the efficacy of various inimical plants as green manure viz. sunnhemp, periwinkle and french marigold in the management of stunt, root-knot and reniform nematodes in bidi tobacco nursery. Sebufos @ 5 kg/ha and soil solarization with clear LLDPE plastic of 25 μm for 15 days during summer were also tested singly as well as in combination with inimical plants alongwith appropriate control. Rabbing with *bajra* husk @ 7 kg/sq.m., the standard practice, was also included. Bidi tobacco cv. Anand 119 was seeded @ 5 kg/ha in experimental area. Pooled results for 3 years revealed that all treatments reduced the nematode population at seedling over control. Root-knot disease was significantly reduced till 63 DAS in the treatments of sebufos alone and its combinations with sunnhemp or marigold and in green manuring of sunnhemp followed by soil solarization. Economics worked out for two times green manuring with sunnhemp (seeding in September and February) followed by soil solarization gave an ICBR of 1:47 and the said treatment increased transplants by 113%, reduced root-knot disease, nema population at seeding and weeds by 75, 91 and 65%, respectively over contol.

Key words: Sunnhemp, French marigold, Periwinkle, Sebufos, Soil solarization, Bidi tobacco, Rabbing, Stunt, Root-knot and Reniform nematode.

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Effect of Neem Products and Dazomet for the Management of *Aphelenchoides composticola* on White Button Mushroom *(Agaricus bisporus)* under Semi-commercial Conditions*

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ABSTRACT : Neem leaf, neem cake and dazomet treatment of compost beds effectively increased number of fruiting bodies as well as yield of *Agaricus bisporus* by reducing the population of *Aphelenchoides composticola.* Treatments at spawning showed better yield than given at the time of casing. Among treatments, neem cake at 20 g dose was most efficient, followed by neem leaf and dazomet. Neem cake at 20g and 10g and neem leaf at 16g dose showed manurial effect on *A. bisporus* in terms of yield potential, but Achook at higher doses proved fungitoxic as was evident from number of fruiting bodies and yield data.

Key words: *Aphelenchoides composticola,* mushroom, *Agaricus bisporus,* spawning, casing, fruiting bodies.

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Morphometric Changes in *Helicotylenchus astriatus* due to Fixation and Dehydration*

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ABSTRACT : Effect of 4 fixatives (4% formalin, FA 4:1, FP 4:1 and TAF) and 3 dehydration techniques (glycerol-ethanol method, rapid lactophenol method and rapid method to glycerol) on morphometrics of *Helicotylenchus astriatus* was studied.Sixteen out of 20 parameters were found to be significantly altered. However, ratio b, V%, width of stylet knobs and distance from base of the stylet to DGO remained highly stable.

Key words: Processing, mophometrics, *Helicotylenchus astriatus*

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Effect of Seed Soaking with Carbosulfan and Triazophos on the Penetration and Development of *Meloidogyne incognita* on Sunflower

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ABSTRACT : Seed soaking with carbosulfan 25 STD and triazophos 40 EC at 50, 100, 200 and 400 μg/ml significantly affected penetration and development of *Meloidogyne incognita* race-1 in sunflower cv. EC 68414. Invasion by juveniles was inversely related to concentration of chemicals. Even lower concentration of 50 μg/ml was significantly effective in reducing penetration and further development of nematode. Penetration at high concentration of 400 μg/ml, of both the chemicals, was negligible. In untreated control, most of the penetrated juveniles developed into females on 21st day, but in chemical treatments, the penetration and development were delayed. Egg production per female was also low by the chemical treatments.

Key words: *Carbosulfan, triazophos,* seed soaking root-knot nematode, sunflower, penetration

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Nematode Population as Influenced by Paddy Based Cropping Sequences

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ABSTRACT : Effect of different paddy-based cropping sequences on nematode population was studied in previously sugarcane grown microplots infested with *Tylenchorhynchus mashhoodi, Helicotylenchus indicus, Hoplolaimus indicus Meloidogyne incognita, Rotylenchulus reniformis, Pratylenchus zeae* alongwith non-parasitic forms for two consecutive years. Following paddy, 83 per cent decrease in total population of parasitic and 467 per cent increase in non-parasitic forms were observed. After paddy, monoculture of sugarcane tremendously increased total population followed by rotations of maize and wheat but remained less than initial level with rotations of mustard, garlic, pulses and fenugreek. Maximum reduction in total nematode population was noticed in paddy - gram rotation.

Key words: Nematode population, cropping sequence.

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Community Analysis of Plant-parasitic Nematodes in Yamuna Khadar Region of Delhi

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ABSTRACT : **An exploratory survey of the vegetable belt of Yamuna Khadar region of Delhi was conducted to assess the nematode community structure. Soil and root samples, representing 20 locations, were examined. Five important genera of plant-parasitic nematodes, namely, *Meloidogyne incognita, Tylenchorhynchus vulgaris, Hoplolaimus indicus, Helicotylenchus indicus* and *Heterodera cajani* were widespread. *M. Incognita* was present in 12 fields surveyed where brinjal (*Solanum melongena* L.), tomato (*Lycopersicon esculentum* L.), chilli (*Capsicum frutescens* L.) and poi (*Basella rubra* L.) were being cultivated. The relative density and prominence value of *M. incognita* was 63.6 and 628.9 reapectively. Heavy root-knot galling on brinjal roots was observed at 3 locations where the population density of second-stage juveniles (J2) was 1698, 5573 and 3525 per 200 cm^3 soil. In a tomato field, the number of juveniles of *M. incognita* was as high as 5440 per 200 cm^3 soil. The relative densities of *T. vulgaris, Helicotylenchus indicus* and *Hoplolaimus indicus* were 13.5, 13.4 and 5.4 and prominence values were 139.5, 101.2 and 59.7, respectively. The juveniles of *Heterodera cajani* were found at only two locations giving relative density of 3.9 and prominence value of 25.5 Most of the vegetable crops grown in this area showed yellowing of foliage, stunting and patchy growth.**

Key words: Community analysis, *Meloidogyne incognita, Tylenchorhynchus vulgaris, Hoplolaimus indicus, Helicotylenchus indicus* and *Heterodera cajani*

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Efficacy of Nematicides Applied at Different times in Bidi Tobacco Nursery for Management of Nematodes

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ABSTRACT : Plant Parasitic nematodes (*Meloidogyne incognita,, M. javanica, Tylenchorhynchus vulgaris, Rotylenchulus reniformis*) are great menace in successful raising of bidi tobacco nursey. An experiment was conducted to determine the most appropriate time of nematicidal application for protecting the germinating seeds as well as early growth of bidi tobacco seedlings from nematode attack. Pooled results revealed that between phenamiphos @ 5 kg/ha and carbofuran @ 3 kg/ha, phenamiphos was effective in the management of nematodes. Its application ten days prior to seeding (10DPS), at seeding, ten days after seeding (10DAS), 10DPS+10DAS, at seeding+10DAS has identical effect with regard to root-knot disease and bidi tobacco transplants. Phenamiphos was at par with soil solarization, which was the most effective treatment. Carbofuran was ineffective.

Key Words : Phenamiphos, carbofuran, soil solarization, time of applcation, root-knot, stunt, reniform nematodes.

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