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**COMPARATIVE EFFICACY OF CERTAIN OIL CAKES AGAINST
MUSHROOM NEMATODE, APHELENCHOIDES SACCHARI
AND THEIR EFFECT ON YIELD OF
AGARICUS BISPORUS**

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Abstract : Castor, coconut, groundnut, karanj and neem cakes were evaluated for their efficacy against the mushroom nematode, *Aphelenchoides sacchari* *in vitro* and in mushroom compost. Their effect on the spawn run and yield of *Agaricus bisporus* were also assessed. Autoclaved, hot water and cold water extracts of karanj cake proved to be highly toxic to nematodes. Coconut and groundnut cakes though toxic to nematodes proved ineffective when extracts were prepared in cold water. Karanj, groundnut and coconut cakes all at 2% were as effective as carbofuran (0.04 %) treatment in reducing *A. sacchari* in the compost. Treatment of compost with neem, coconut and karanj cakes at 1 to 2 % yielded significantly higher crop.

Key words : *Aphelenchoides sacchari*, *Agaricus bisporus*, comparative efficacy, oil cakes, carbofuran, management.

EVALUATION OF THE EFFECTIVE INTEGRATED METHODS FOR THE CONTROL OF ROOT KNOT NEMATODE (*MELOIDOGYNE JAVANICA*) IN TOMATO

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Abstract : Different nursery treatments alone and in combinations with spot application of aldicarb (Temik 5G) @ 1.0 kg a.i./ha and neem (*Azadirachta indica*) leaves @ 50 qts/ha in the field were evaluated for control of root-knot nematode (*Meloidogyne javanica*) infecting tomato (cv HS 101). Reduction of 48.9 and 26.7 per cent in nematode population was obtained in nursery treated with neem + spot application of aldicarb and nursery treated with neem + spot application of neem leaves respectively. Aldicarb treated nursery plus spot treatment with aldicarb at transplanting showed maximum reduction (62.3 per cent) in *M. javanica* population. However, use of uninfected tomato nursery + aldicarb treatment gave highest yield of 7.6 kg per plot (2.0 x 1.5 meters) in comparison to 4.7 kg in plots when infected tomato nursery was transplanted alone.

Key words : Integrated control, 'neem', aldicarb, nursery treatment, spot treatment.

**QUALITATIVE AND QUANTITATIVE CHANGES IN PROTEIN IN
COWPEA INOCULATED WITH ROOT-KNOT NEMATODE,
MELOIDOGYNE INCOGNITA RACE 1.**

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Abstract : Qualitative and quantitative changes of soluble protein of root and shoot of cowpea cultivar Pusa Do Fasli was determined at two intervals following inoculation with root-knot nematode *Meloidogyne incognita* race 1. The infection of cowpea cultivar Pusa Do Fasli with the nematode resulted in considerable increase of total soluble protein during the two post infectional intervals. A comparison of electrophoresed protein profiles obtained from healthy and infected roots and shoots revealed appearance and disappearance of several protein bands during post infection period of observations.

Key words : Protein, *Meloidogyne incognita* , cowpea, SDS electrophoresis.

NEMATICIDAL ACTIVITY OF FEW ESSENTIAL OILS AGAINST ROOT-KNOT AND CYST NEMATODE SPECIES

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Abstract : Nematicidal activity of seven essential oils was evaluated against *Meloidogyne incognita*, *Heterodera avenae*, *H. cajani* and *H. zaeae*. Only two oils viz. Indian basil and sacred basil were effective at all concentrations tested. The two fractions of Indian basil-methyl chavicol and linalool, were effective only in combination but individually had no appreciable nematicidal activity. Both the portions of sacred basil-eugenol and non-eugenol, were effective individually as well as in combination, the effectiveness being enhanced in the latter case.

Key words : Essential oils, Nematicidal activity.

**EFFECT OF DIFFERENT SOURCES AND LEVELS OF
NITROGEN ON THE INCIDENCE OF ROOT-KNOT
OF BETELVINE (*PIPER BETLE* L.)**

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Abstract : Efficacy of different sources and levels of nitrogen in the control of root-knot nematode on betelvine cv. Godibangla and their effect on plant growth parameters were studied. Among the four sources of nitrogen e.g., urea, urea + FYM, neem cake and FYM, neem cake proved to be most effective in reducing nematode infestation in soil and root and also increasing the growth attributes governing yield of betelvine. Of the four levels of nitrogen, application of 200 kg of neem cake demonstrated to be the best in decreasing the root-knot disease incidence and boosting up growth of betelvine.

Key words : Betelvine, *Meloidogyne incognita*

**EFFECT OF DATE OF TRANSPLANTING OF BASMATI RICE
CULTIVARS AND SPACING ON THE POPULATION
BUILD UP OF RICE-ROOT NEMATODE,
*HIRSCHMANNIELLA ORYZAE***

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Abstract : Population build up of rice root nematode, *Hirschmanniella oryzae* on basmati rice cultivars in relation to the different dates of transplanting and two spacings revealed that there was more build up of *H. oryzae* in crop transplanted in middle June or late July in basmati cultivars. Spacing of 15x15 cm and 20x15 cm in Basmati 370 and Pusa 615 had no effect in population build up of *H. oryzae*. Comparatively higher population of *H. oryzae* was observed in Pak Basmati followed by Basmati 370. Basmati 385 supported minimum population of *H. oryzae*.

Key words : *Hirschmanniella oryzae*, sowing dates, spacing, rice basmati cultivars and population

EFFECT OF *MELOIDOGYNE INCOGNITA* ON THE EMERGENCE AND GROWTH OF SOYABEAN SEEDLINGS AND THE RELATIONSHIP BETWEEN SEEDLING AGE AND NEMATODE INVASION

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Abstract : Soil population densities of *Meloidogyne incognita* upto 32 J2/cc soil did not suppress or delay the emergence of soyabean seedlings. The growth of seedlings was suppressed at inoculation levels of 4 or more J2/cc soil. The total number of juveniles invading the root increased with the level of inoculation, incubation period and the age of the seedlings. However, there was a shift in the period of peak invasion from 3 - 24 hr in 2 day old seedlings to 24 - 48 hr in 11 day and 48 - 96 hr in the 21 day old seedlings. The extent of juvenile invasion was proportional to the number of new growing roots.

Key words : Soyabean, *Meloidogyne incognita*, seedling age, seedling emergence.

**PATHOGENICITY OF ROOT-KNOT NEMATODE,
MELOIDOGYNE INCOGNITA ON PEA**

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Abstract : Pathogenicity of *Meloidogyne incognita* on pea variety Boneville was studied with four inoculum levels viz. 10, 100, 1000 and 10,000 larvae of *M. incognita* per 500 g soil alongwith check. Significant plant growth reduction was found with an initial inoculum of 1000 larvae of *M. incognita* per plant per 500 g of soil. Maximum number of galls and egg masses were found at 1000 larvae per 500 g of soil. The reproductive rate of nematode was maximum at the lowest inoculum density and minimum at the highest inoculum density.

Key words : *Meloidogyne incognita*, Pathogenicity, pea.

**SOURCES OF RESISTANCE TO CEREAL CYST
NEMATODE (*HETERODERA AVENAE*) IN WILD
TRITICUM AND *AEGILOPS* SPECIES**

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Abstract : Evaluation of ten species of *Aegilops* and five species of *Triticum* for resistance to Punjab population of cereal cyst nematode, *Heterodera avenae*, has revealed that species with C and M genomes were a good source of resistance.

Key words : *Aegilops*, cereal cyst nematode, *Heterodera avenae*, *Triticum*, wheat germplasm.

**COMPARATIVE VIRULENCE OF *STEINERNEMA GLASERI*
STEINER AND *STEINERNEMA CARPOCAPSAE* (WEISER)
TO THE CHAFER *HOLOTRICHIA CONSANGUINEA*
(COLEOPTERA : SCARABAEIDAE)**

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Abstract : A laboratory test was made to assess the virulence of *Steinernema glaseri* (Strain NC-34) and *S. carpocapsae* (Strain DD-136) to the final instar grub of the chafer, *Holotrichia consanguinea*, using filter paper exposure method at 25°C, at dosage levels of 0, 5, 10, 20 and 40 infective juveniles (IJs) per grub. LC₅₀ values were 15.38 and 33.84 IJs for grub and LT₅₀ values ranged from 152.0-85.0 -h and 223.8-119.1 -h, both being dosage dependent, for *S. glaseri* and *S. carpocapsae*, respectively, thus establishing that the former was more virulent.

Key words : *Steinernema glaseri*, *S. carpocapsae*, *Holotrichia consanguinea*.

LIFE CYCLE OF *HETERODERA SORGHI* ON MAIZE

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Abstract : The life cycle studies of *H. sorghi* carried out on maize (*Zea mays* L.) cultivar Deccan-103 indicated that the nematode is able to complete its life cycle from the second-stage juvenile (J-2) to next generation J-2 in 24 days at a temperature range of 28-36°C. The emergence of J-2 was immediate even before the cysts turned into yellow or brown stage. Males were observed 11 days after inoculation. Majority of the eggs were retained in the cyst body while the loosely attached gelatinous egg sac contained very few (upto 13) eggs as against 275 inside the cyst. More than 4 generations may be completed by nematode in maize cropping season of 100-110 days duration during *Kharif* season.

Key words : *Heterodera sorghi*, life cycle, biology, maize.