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TWO NEW SPECIES OF *HELICOTYLENCHUS* STEINER, 1945
FROM NORTH INDIA

BY

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Helicotylenchus girus sp. n. is characterised by smooth head lacking labial disc, hemispherical to slightly clavate tail with indistinct fine transverse striations, phasmid at anal latitude to 4 annules anterior, spear = 23-25 μ , 0 = 34-38, c = 56-67, c' = 0.6-0.8. *H. paragirus* sp. n. is differentiated by absence of hemizonid, truncate head with 3 annules, phasmid 11-17 annules anterior to anus, 0 = 64.

**SURVIVAL AND HOST RANGE OF THE RICE ROOT NEMATODE,
*HIRSCHMANNIELLA ORYZAE***

BY

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For the survival of the rice root nematode in host-free soil 15°C was found to be the most favourable temperature. In water suspension maximum number of nematodes survived in screw-capped vials which were aerated once a week. A few live specimens of *H. oryzae* were recovered from soil samples which were kept in the laboratory for about 8-12 months and were completely dry. It was also observed to survive in the field during May-June and December-January, when the temperatures are very high (35°—45°C) and very low (8°—12°C) respectively. This nematode did not multiply on any one of the 11 plant species tested for host range. From fields it was recovered from the roots of four weeds.

INHIBITORY EFFECT OF CULTURE FILTRATES OF SOME RHIZOSPHERE
FUNGI OF OKRA ON THE MORTALITY AND LARVAL HATCH
OF CERTAIN PLANT PARASITIC NEMATODES

BY

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The effect of culture filtrates of *Helminthosporium nodulosum*, *Trichoderma lignorum*, *Curvularia tuberculata*, *Penicillium corylophilum*, and *Aspergillus niger*, obtained from the rhizosphere of okra, on the mortality of *Hoplolaimus indicus*, *Tylenchorhynchus brassicae*, larvae of *Meloidogyne incognita* and the larval hatch of *M. incognita* was studied. Culture filtrates of all the fungi demonstrated toxic effect and killed the nematodes and inhibited the larval hatch to a varying degree. The lapse of time and higher concentrations increased this effect. Culture filtrates also exhibited selectivity.

STUDIES ON THE BIOLOGY OF *HETERODERA VIGNI*
(HETERODERIDAE : NEMATODA)
I—LIFE CYCLE

BY

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Life cycle of *Heterodera vigni* associated with roots and rhizosphere soils of cowpea plants was studied. The species is described in detail with range of measurements given for different developmental stages.

EFFECT OF SOME NEMATICIDES ON NEMATODES AND SOIL MICRO-ORGANISMS

BY

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The effect of some nematicides on nematodes and soil micro-organisms was studied on *mung* (field and pot) and wheat (pot). The nematicides used were : DD, EDB, DBCP, aldicarb, dazomet, carbofuran, thionazin, phorate, fensulfothion, disulfoton, dimethoate and thionazin+phorate. Of these, DD, DBCP, aldicarb, dazomet, carbofuran, thionazin and fensulfothion were used in more than one experiment with similar or varying dosages. The nematodes observed in these studies were : *Tylenchorhynchus* (*T. indicus* and *T. brassicae*), *Meloidogyne* (*M. incognita* and *M. javanica*), *Hoplolaimus indicus*, *Helicotylenchus indicus*, *Rotylenchulus reniformis*, *Pratylenchus* sp., *Heterodera* sp., *Tylenchus* sp., and saprozoic nematodes. *Tylenchorhynchus*, *Meloidogyne* and saprozoic nematodes were predominant in all the experiments, except in the *mung* field experiment, in which case *Meloidogyne* spp were few in number. In addition to these, others predominant in respect of *mung* (field) were *Hoplolaimus indicus* and *Helicotylenchus indicus*. Soil micro-organisms studies included total population of bacteria, *Azotobacter*, fungi and actinomycetes. In addition to these, the Most Probable Number of *Nitrosomonas* and *Nitrobacter* were also recorded in the *mung* field experiment. In *mung* pot experiment the studies were extended on root nodulation by rhizobia and seedling survival against *Macrophomina phaseoli*. Dazomet was most effective in reducing the nematode population and in preventing the build up of plant parasitic nematodes. It was also most suppressive and inhibitory to soil micro-organisms. With DD there was a high initial reduction in the nematode population but subsequent build up was rapid. It was also initially toxic to soil micro-organisms, but subsequently build up was rapid. EDB, dimethoate, aldicarb, disulfoton, DBCP and phorate were moderately effective in reducing the population of soil micro-organisms and also in keeping down their population at low levels. DBCP, carbofuran, phorate, fensulfothion and aldicarb were moderately effective in reducing the nematode population, but subsequently they prevented their buildup only for a short period. EDB was effective in reducing and preventing the build up of nematode population. *Azotobacter*, *Nitrosomonas* and *Nitrobacter* were most susceptible to nematicidal treatment and took time to get re-established.

**EFFECT OF CERTAIN ORGANIC CHEMICALS ON THE MORTALITY
OF *HELICOTYLENCHUS* SP.**

BY

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The different molar concentrations of certain organic chemicals have been tested on the mortality of *Helicotylenchus* sp. in vitro. Formaldehyde, Ammonia, Diastase, Salicylic acid, Propionic acid, Acetic acid. Isopropyl alcohol and Methyl alcohol have been found possessing marked nematicidal properties.

**IN VITRO STUDIES ON THE FEEDING HABITS OF PRATYLENCHUS
MULCHANDI AND HOPLOLAIMUS INDICUS ON PEARL
MILLET ROOTS**

BY

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Pratylenchus mulchandi feeds mainly on the main roots, and rootlets, occasionally on root hairs and rarely on root cap cell mass. Choice site is near the root tip between the meristematic region and region of differentiation. Feeding may be superficial, confined to epidermal cells only, or deeply embedded to cortical cells. Only one-fourth of the stylet is protruded and this is thrust into cells and withdrawn in rapid succession during feeding. *Hoplolaimus indicus* feeds on main roots and rootlets only ; never on root hairs and cap cell cell mass. Feeding is always confined to cortical cells with head embedded. The stylet remains protruded into the cell while feeding. Compared to *H. indicus*, *P. mulchandi* is more mobile and vagrant.