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PREDATORY BEHAVIOUR OF NEMATODES
I. BIOLOGICAL CONTROL OF *HELICOTYLENCHUS DIHYSTERA*
THROUGH THE PREDACIOUS NEMATODES,
IOTONCHUS MONHYSTERA

BY

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Feeding apparatus and gut content of *Iotonchus monhyстера* show that it is well adapted for predacious mode of feeding. The data on relative population fluctuation of *I. monhyстера* and a plant-parasitic nematode *Helicotylenchus dihyстера* obtained from the field studies show basically two types of population growth forms, i.e., J-shape and S-shape. The S-shape population growth of the predator has significant role in maintaining the predator-prey population as it is evident in pastures. Mathematical models are given for both types of population growth and predator-prey interaction with explanation in the light of field data. These studies reflect on the possibility of significant role of predacious nematodes in the biological control of plant-parasitic nematodes in pastures, and silvi-pastoral systems.

HOST RANGE AND PATHOGENICITY OF *MACROPOSTHONIA*
ORNATA ON RAGI (ELEUSINE CORACANA GIN)

BY

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Among nineteen selected crop plants, tested as possible hosts of *Macroposthonia ornata* only rice was found to be excellent host; while cabbage, cauliflower, corn, okra, cowpea, sorghum, bajra, mustard and ragi were good hosts; brinjal, garden pea, chilli, blackgram, greengram, soybean and tomato were fair hosts; and cucumber and niger were considered to be the poor hosts.

Pathogenic relationship of this ring nematode species with ragi plant was established by releasing nematodes in logarithmic series (0 to 10,000 per pot) around the root zones of one month old ragi plants (Var. T-20) growing in autoclaved soil. After 3 months, the nematodes were found to reduce shoot height from 1.45 to 46.32%, root length from 6.08 to 61.78%; and loss in shoot dry weight averaged from 3.33 to 69.06% and root dry weight from 9.09 to 48.05% corresponding to different levels of inoculum.

THREE NEW AND FIVE NOMINAL SPECIES IN THE FAMILY
TYLENCHORHYNCHIDAE (TYLENCHOIDEA : NEMATODA)
FROM ORISSA, INDIA

BY

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Tylenchorhynchus impar sp.n. is distinguished in having an offset head, more number of tail annules, smaller T/ABW value and larger gubernaculum and spicules *T. cuticaudatus* sp.n. is distinctively by having a prominent tail cuticle, a post-intestinal blind sac past the anal level and smaller 'b' value. Whereas *Quinisulcius paracti* sp.n. in possessing much smaller number of tail annules and in having the areolation of the lateral fields extending beyond the level of the posterior bulb.

TWO NEW SPECIES OF THE SUPERFAMILY LONGIDOROIDEA
(DORYLAIMIDA : NEMATODA) FROM MAHARASHTRA

BY

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Two new species, *Longidorus ishrati* sp. n. and *Xiphinema hayati* sp. n. are described. *L. ishrati* sp.n. is distinctive in having L=3.7-4.6 mm; a=93-115; odontostyle=89-90 μ m; odontophore=60-67 μ m; differently shaped amphids and different location of guiding ring. *X. hayati* sp. n. is differentiated in having L=3-3.6 mm; a=60-77; odontostyle=127-133 μ m; odontophore=60-65 μ m; V=49-52, different head shape and in absence of 'Z' organ.

BIOMASS OF SOME SELECTED PLANT-PARASITIC AND SOIL NEMATODES

BY

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Biomass of 235 plant-parasitic and soil nematode species has been determined with the help of Andrassy's formula. The lightest nematode species recorded in this study is *Disco-tylenchus attenuatus* Siddiqi, 1980, with biomass of its female and male being 0.0346 and 0.0232 μg , respectively. *Longidorus saginus* Khan *et al.*, 1971 weighs 15.4983 μg , and is apparently heaviest of all the 235 species. Ratio between the biomass of the former and latter species was found to be 1 : 448. This study indicates that biomass is not characteristic of a species and due evidently to the ecological factors can differ in representatives of the same species if they have been collected from different localities. Further, biomass of ten nematode species is plotted against their stages and found that the geometric growth rate for biomass varied within species. Five nematode genera : *Tylenchorhynchus*, *Bastrolaimus*, *Helicotylenchus*, *Rotylenchus* and *Xiphinema*, are selected for determining their relative frequencies (RF), prominence values (PV) and importance values (IV). It is noted that the sequence of arrangement of these genera does not change if arranged according to their 'RF' or 'PV'. But the arrangement is slightly altered if they are arranged according to 'IV'.

LIFE HISTORY OF *HETERODERA MOTH* KHAN & HUSAIN, 1965 ON
CYPERUS ROTUNDUS L.

BY

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Heterodera mothi completed its embryonic development in about a week. Hatching occurred in distilled water in March April, Larvae penetrated roots of *Cyperus rotundus* in 48 h without preference for any tissue. Second moult occurred in 96 h and third moult 6 days after inoculations. Males developed faster than females and adult males could be seen on 8th day whereas female larvae took 14 days to reach adult stage. Males usually coiled around a female inside the root until a very late stage. Egg laying started on 17th day and eggs were deposited within the roots. Females erupted out of the roots leaving eggs attached there to and only in few instances (2%) a female was found with egg masses in a gelatinous matrix which was larger than the adult size. An egg mass contained 110 eggs and a cyst 188. Brown phase of cysts was reached on 30th day. In October-November, both egg laying and hatching did not occur.

EFFECT OF ROOT-KNOT NEMATODE *MELOIDOGYNE INCOGNITA*
ON THE TOTAL PROTEIN, CARBOHYDRATE AND LIPID IN
ROOTS AT DIFFERENT GROWTH STAGES OF *HIBISCUS ESCULENTUS*

BY

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Changes in the total protein, carbohydrate and lipid in the roots of *Hibiscus esculentus* resulting from infection with root-knot nematodes were studied at 15, 30, 45 and 60 days after inoculation. The effect of a nematicidal plant extract of *Anthocephalus cadamba*, applied 10 days after inoculation, on the test plants during their growth was also studied. The galls appeared on root within 15 days after inoculation and increased in number very rapidly as the plants grew. The treated plants had always fewer galls. The population of root-knot nematodes inside the roots rose to a peak in 45 days and declined thereafter. The treated plants had fewer nematodes at all the observed growth stages. The total protein, carbohydrate and lipid in roots increased in amount with the growth of test plants, both inoculated and uninoculated. The inoculated plants had always higher amount of protein but lower amount of carbohydrate and lipid in roots than the uninoculated ones. The effect of treatment could be measured with root-protein only. The root-carbohydrate and root-lipid, which are thought to be reduced due to feeding by nematodes, provide additional biochemical parameters for evaluating the intensity of infection with root-knot nematodes.

STATISTICAL ANALYSIS OF VARIABILITY IN *XIPHINEMA
AMERICANUM* COBB, 1913 *SENSU* SIDDIQI, 1959

BY

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The variability of morphological characters of *Xiphinema americanum* was studied in a population of the species from the campus of the Aligarh Muslim University. The studies show that different characters vary to different degrees. In adults, height and width of lip region, length of functional odontostyle and the position of vulva are least variable. The total body length and odontophore, position of guiding ring from anterior extremity, length of rectum and tail show a lesser degree of variability. The lengths of anterior and posterior gonads and ovaries show highest degree of variation. The extent of variability among the juveniles and adults for a particular character is more or less same except for the length of tail which is highly variable in adults.

DEVELOPMENT OF ROOT KNOT NEMATODE AND MORPHOMETRICS
OF FEMALES OF THE NEMATODE *MELOIDOGINE INCOGNITA*, AS
INFLUENCED BY DIFFERENT CUCURBITS

BY

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Different Cucurbits were inoculated with single egg mass population of *Meloidogyne incognita* in order to determine the extent of morphometric and allometric variation caused by rearing on different hosts. Smaller females were produced on *Momordica charantia*, a relatively tolerant plant to nematode attack whereas large females were produced on highly susceptible cucurbits like *Benincasa hispida* and *Cucurbita moschata* thereby indicating that size of females is somewhat correlated with the degree of susceptibility of the host plant.

TAXONOMIC STUDIES ON TYLENCHIDAE (NEMATODA) OF INDIA
III : TWO NEW SPECIES OF *CEPHALENCHUS* ALONG WITH
DESCRIPTION OF *FILENCHUS CONICEPHALUS* SP. N. (NEMATODA :
TYLENCHIDAE) FROM INDIA

BY

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Two new species of the genus *Cephalenchus* (Goodey, 1962) Golden, 1971 namely, *C. rotundus* sp.n. and *C. planus* sp.n. and one new species belonging to the genus *Filenchus* (Andrassy, 1954) Meyl, 1961 namely, *F. conicephalus* sp. n. are described in this paper. In having long stylet, broad and rounded head, basal oesophageal bulb pyriform and in the position of excretory pore, *C. rotundus* sp.n. is distinct from its closest relative *C. leptus* (Siddiqi, 1963) Golden, 1971. *C. planus* sp.n. comes closest to *C. leptus* (Siddiqi, 1963) Golden, 1971 but is distinctive in having smaller body and anteriorly flat head. *Filenchus conicephalus* sp. n. comes closest to *F. ruatus* Egunjobi, 1967 but is distinctive in having smaller body, 'a' value, larger 'c' value and more posteriorly placed vulva.

TAXONOMIC STUDIES ON TYLENCHIDAE (NEMATODA) OF
INDIA IV : TWO NEW SPECIES OF *MALENCHUS* WITH REPORT OF
M. NANELLUS SIDDIQI, 1979

BY

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Two new species of the genus *Malenchus* Andrassy, 1968 viz. *M. eslami* sp. n., *M. moini* sp. n. and one known species of this genus *M. nanellus* Siddiqi, 1979 were encountered during the survey of soil and plant parasitic nematodes in Jabalpur (Madhya Pradesh). *M. eslami* sp. n. comes close to *M. sulcus* (Wu, 1970) Siddiqi, 1979, *M. pachycephalus* Andrassy, 1981 and *M. cognatus* Andrassy, 1981 but is distinguished by having smaller body, smaller stylet and smooth head. *M. moini* sp. n. comes close to *M. bryanti* Knobloch, 1976, and *M. truncatus* Knobloch, 1976 but is distinctive by having smaller stylet, more anteriorly placed vulva and smaller 'c' value. A population of *M. nanellus* Siddiqi, 1979 agreeing well with the original description of this species was also recorded from the rhizosphere of Piper betle at Jabalpur (M.P.) India.

TAXONOMIC STUDIES ON TYLENCHIDAE (NEMATODA) OF INDIA
V : THREE NEW SPECIES OF THE GENUS *LELENCHUS*
(ANDRASSY, 1954) MEYL, 1960 FROM INDIA

BY

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Three new species of the genus *Lelenchus*, namely, *L. aunulatus* sp. n., *L. crassus* sp. n. and *L. tenuis* sp. n. are described and illustrated. *L. aunulatus* sp. n. comes close to *L. cynodontus* Husain & Khan, 1967; *L. mirus* Husain & Khan, 1967, and *L. microdorus* Chawla *et al.*, 1969; but differs from them in having longer stylet and two pairs of cephalids on neck. *L. crassus* sp. n. is closest to *L. microdorus* Chawla *et al.*, 1969, but differs from it mainly in having more posteriorly located vulva. *L. tenuis* sp. n. comes close to *L. cynodontus* Husain & Khan, 1967, *L. minutus* (Cobb, 1893) Andrassy, 1954, and *L. annulatus* sp. n.; but differs from them in having relatively low and rounded head, two pairs of cephalids and excretory pore located anterior to nerve ring.