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POTASSIUM NUTRITION OF CASTOR IN RELATION TO
INFESTATIONS BY *MELOIDOGYNE INCOGNITA* AND
ROTYLENCHULUS RENIFORMIS

BY

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The growth of castor (*Ricinus communis*) increased with an increase in potassium supply to plants upto 1K followed by a decrease at 2K at all the initial inoculum densities. There was no effect of *Meloidogyne incognita* on the growth of plants but *Rotylenchulus reniformis* brought about a significant reduction in the growth of plants at an inoculum density of 1000 larvae/2 kg sand. The final populations of *M. incognita* were always less than the initial inoculum levels and no mature females were recovered from the roots. However, the final population at 2K was higher than at other potassium levels. On the other hand, the final population of *R. reniformis* increased many fold at all the potassium levels, highest being at 2K. Root-knot nematode did not alter the NPK status significantly, but in case of reniform nematode infested plants, there was less concentration of N, P and K in roots as well as in shoots thus showing adverse effect on absorption and translocation of these elements.

REVISED CLASSIFICATION OF THE SUPERFAMILY BELONDIROIDEA
THORNE, 1964 WITH NOTES ON THE SYSTEMATICS OF
DORYLAIMELLUS COBB, 1913 (NEMATODA : DORYLAIMIDA)

BY

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A revised classification of the superfamily Belondiroidea Thorne, 1964 has been provided and only three families Belondiridae, Dorylaimellidae and Swangeriidae have been recognized under it. Swangeriidae has two subfamilies, Swangeriinae and Roqueinae, but Belondiridae and Dorylaimellidae do not contain any subfamilies under them. The families Axonchiidae, Mydonomidae, Oxydiridae, Falcihastidae, Roqueidae and the subfamilies Belondirinae, Axonchiinae, Dorylaimellinae and Falcihastinae have not been recognized. An outline classification of Belondiroidea up to genera and the diagnoses of familial groups that have been recognized are being provided. Genera of uncertain position under Belondiroidea have been listed separately. The genus *Dorylaimellus* Cobb, 1913 is split into nine subgenera based on the size of body, shape of lip region, length of oesophagus, female reproductive system, shape of spicules, number and arrangement of ventromedian supplements and the shape of tail.

COMPARATIVE EFFECTS OF EXTRA AMMONIACAL FERTILIZATION
ON GROWTH OF NEMATIZED AND NON-NEMATIZED TOMATOES
FOR LIMITING DAMAGE BY *ROTYLENCHULUS RENIFORMIS*

BY

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Ammoniacal nitrogen maintained in amounts upto 576 kg/ha at two intervals decreased damage caused by *Rotylenchulus reniformis* to tomato. Nitrogen in excess showed that rates between 108 and 288 kg counter balanced nematode loss and resulted in a total shoot+root growth insignificantly different from that utilized by healthy plants receiving 72 and 108 kg. The application of 432 and 576 kg N enabled infected plants to produce total growth at par with that developed by healthy plants supplied with as much as 288 and 432 kg N.

Ammoniacal nitrogen in excess eliminated soil and root populations of *R. reniformis* significantly. The lower dosages of 72 and 144 kg N reduced nematode density slightly, whereas the higher dosages of 216 to 576 kg N depressed infestation considerably. The female/male ratio was also more seriously affected by higher rates of N. The results indicate that dressings with 288 to 576 kg N at two intervals could minimize losses in agro-systems where nematicides pose limitations.

TWO NEW SPECIES OF *AGLENCHUS* AND RECORD OF *CEPHALENCHUS*
LEPTUS (TYLENCHIDAE : NEMATODA) FROM ASSAM¹

BY

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Aglenchus muktii sp. n. collected from soil around roots of peach (*Prunus persica*) is distinctive in having non-annulated lip region, three incisures in lateral field and a long filiform tail. *A. assamensis* sp. n. from soil around roots of Frenchbean (*Phaseolus vulgaris*) is characterized by annulated lip region, four incisures in lateral field, 18-20 distinct longitudinal striae on body cuticle, and by the slightly overlapping basal bulb. A population of *Cephalenchus leptus* (Siddiqi, 1963) Golden 1971, showing some differences from the original description of the species, was also recorded from the rhizosphere of *Citrus* spp. at Jorhat.

EFFECT OF DIFFERENT CROPPING SEQUENCES ON THE POPULATION OF PLANT PARASITIC NEMATODES

BY

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The population densities of *Hoplolaimus indicus*, *Tylenchorhynchus brassicae*, *Tylenchus filiformis*, *Meloidogyne incognita* and *Trichodorus mirzai* were influenced by different cropping sequences. Monocultures brought about considerable increase in the population of nematodes. Marigold reduced the population of all the nematodes except *H. indicus*. Considerably low population densities of *M. incognita* larvae were observed on garlic, wheat and mustard, whereas that of *T. brassicae* on potato and tomato ; *H. indicus* on cabbage, chilli and eggplant ; *T. mirzai* on wheat and *T. filiformis* on eggplant.

POPULATION STUDIES ON *MELOIDOGYNE INCOGNITA* ON EGG PLANT
(*SOLANUM MELONGENA*) AND ITS EFFECT ON THE HOST

BY

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The relationships between the population density of *Meloidogyne incognita* and damage to egg plant (*Solanum melongena*) has been investigated. Symptoms were more pronounced of damage with ageing of the crop, but indicative only at population levels above that initiated damage. A population density above 1,000 second stage juveniles/plant hastened maturity of the crop resulting in shortened duration of fruiting. Because of the long duration of the crop, even the low density of 250 juveniles/plant, introduced into the rhizosphere, caused significant damage, which increased to about 80 per cent yield reduction at 4,000 juveniles/ plant. The growth and yield were negatively correlated with the initial as well as the final population. 'Dispersed inoculation' has been considered closer to the field conditions than the 'localized inoculation', i. e., introducing the nematode into the rhizosphere of established seedlings. The former indicated higher tolerance level (0.75 to 2.25 juveniles/cm³ of soil) than the latter (0.25 to 0.75 juveniles cm³ of soil).

INFLUENCE OF DIFFERENT CROPPING SEQUENCES ON THE
POPULATION OF ROOT-KNOT NEMATODE, *MELOIDOGYNE*
INCOGNITA AND THE PERFORMANCE OF THE
SUBSEQUENT MUNGBEAN CROP

BY

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The effect of four *Kharif* crops viz., groundnut, sesamum, soybean, tomato and four *Rabi* crops viz., wheat, mustard, gram and tomato in different combinations on the population of root-knot nematode, *Meloidogyne incognita* and on the performance of a susceptible host (mungbean) was studied in microplots. Several-fold increase in the larval population was obtained with tomato monoculture, followed by a substantial increase in tomato-gram and soybean-tomato rotations. Larval population was reduced considerably under groundnut-mustard rotation. High galling index and low yield of mungbean was observed in monoculture plots of tomato or when tomato was grown in rotation with soybean, gram and groundnut. Groundnut-wheat rotation resulted in maximum yield of mungbean. Growing of mungbean only for a season resulted in substantial increase in *M. incognita* population.

THREE NEW SPECIES OF THE SUPERFAMILY CRICONEMATOIDEA
(TYLENCHIDA : NEMATODA) FROM TAMIL NADU (INDIA)

BY

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Three new species viz, *Caloosia indica* sp. n., *Discoericonemella barberi* sp. n. and *Madinema theobromi* sp. n. of the superfamily Criconematoidea are described and illustrated. *Caloosia indica* has no longitudinal lines on body cuticle, first head annule 18-20 μm across, directed forward and outward, while the second one 20-24 μm across, outwardly directed ; L=1.04-1.64mm; stylet=90-95 μm ; c=4.0-6.0 ; V=64-76, with a thin pre-vulval flap ; Rex=35-42 and spicule=45 μm . *D. barberi* sp. n. is distinguished by having L=0.215-0.3 mm ; a=7-10 ; b=2.0-3.9 ; V=90-93 ; stylet=52-60 μm ; R=97-109 ; Rv=13-15 ; body not abruptly narrowing behind vulva and with 4th-23rd ventrally non-retrorse annules. *D. repleta* Pinochet & Raski, 1976 is considered as a synonym of *D. limitanea* (Luc, 1959) de Grisse & Loof, 1965. *M. theobromi* sp. n. is separated by its stylet=65-81 μm ; b=2.5-2.9 ; c=24-28 and spermatheca present.

EVALUATION OF NEMATICIDAL ACTION OF SOME SYNTHETIC CHEMICALS AGAINST *MELOIDOGYNE JAVANICA*

BY

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Aldicarb, carbofuran, disulfoton, fensulfothion and ethoprop as granular soil application and dimethoate, methyl-O-demeton, menocrotophos and phosphamidon as foliar application were used for control of *M. javanica*. In pre-and post-inoculation granular soil treatment, fensulfothion @ 30 and 60 kg/ha and ethoprop @ 30 and 60 kg/ha only in pre-inoculation soil treatment reduced root-knot galls significantly. In foliar application, none of the chemicals as pre-and post-inoculation treatment was effective. However, pre-inoculation foliar treatment with methyl-O-demeton at 0.05% was superior to other chemicals.

EVALUATION OF ANALYTICAL TECHNIQUES FOR ESTIMATING PERSISTENCE OF 1, 2 DIBROMO-3-CHLOROPROPANE IN SOIL*

BY

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Comparison of four methods, namely, U. V. spectrophotometric, colorimetric, TLC and GLC of DBCP residue analysis showed that, GLC with Ni-63 electron capture detector was most sensitive method for analysis of DBCP residues in soil. As low as 100 picogram of DBCP could easily be detected by this method. Persistence of DBCP in sandy loam soil as applied by sprinkling and drench methods under field conditions and analysed by GLC showed that residues of the chemical were more in the upper layer (0-15 cm) as compared to lower (15-30 cm) upto 60 days in drench method and upto 30 days in sprinkling method. However, persistence in general was for a longer period *i.e.* upto 90 days in case of sprinkling method wherein residues of the order of 0.01 ppm could be observed from the lower layers. Both the methods were found to be equally efficient for reducing the populations of plant parasitic nematodes.