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CHANGES IN THE NEMATODE POPULATION OF UNDISTURBED  
LAND WITH THE INTRODUCTION OF LAND DEVELOPMENT  
PRACTICES AND CROPPING SEQUENCES

BY

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Effect of various land development practices (burning of vegetative cover, ploughing plus levelling, green manuring and summer fallowing) and cropping sequences (mono-cropping, mixed cropping and crop rotation recommended for the region) on population dynamics of plant parasitic nematodes was studied on land which had remained without any cultivation since long time. All land development practices were found to decrease the numbers of most of the nematode species encountered. Ploughing plus levelling followed by summer fallowing and green manuring with *Crotalaria juncea* almost completely eliminated the nematodes. Amongst various cropping sequences, specific crop rotations were found most effective in keeping nematode populations below the damaging levels while monocropping with six successive crops of tomato highly favoured the population increase of *Meloidogyne incognita*, making the land unsuitable for growing a susceptible crop in the next season.

MORPHOLOGY AND MORPHOMETRICS OF *PRATYLENCHUS*  
*BRACHYURUS* AND *P. ZEA* I. EFFECT OF FIXATIVE  
AND PROCESSING

BY

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No one fixative out of F. 4%, F.P. 4 : 1, F.A. 4 : 1, F.A. 4 : 10, T.A.F. and F.A.A gave the best definition of all morphological features examined in *Pratylenchus brachyurus* (Godfrey, 1929) Filipjev & Schuurmans Stekhoven, 1941 and *P. zea* Graham, 1951, but results with F. 4% and F.P. 4 : 1 were most satisfactory. Nematodes stored in plain fixative deteriorated less than those stored in glycerol following processing by Seinhorst's technique. Specimens fixed in T.A.F. and stored in glycerol became transparent but those fixed in F.P. 4 : 1 before processing retained their features best. All fixatives caused changes in dimensions but F. 4% and F.P. 4 : 1 affected them least. Seinhorst's technique caused more shrinkage but preserved morphological features better than Baker's technique.

**EMERGENCE OF JUVENILES FROM ANGUINA TRITICI GALLS,  
NUMBERS REACHING GROWING POINT OF WHEAT SEEDLINGS  
AND RELATIONSHIP BETWEEN INOCULUM LEVELS AND NUMBER  
AND SIZE OF GALLS PRODUCED**

**BY**

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Emergence of juveniles from nematode galls was initiated on 4th day in alternate wetting and drying conditions but in water alone, emergence was superior. The number of tillers infected with juveniles had a direct relation with the inoculum level, as also the number and size of galls produced. Up to 3 gall level, more and bigger galls were produced than at lower or still higher levels.

PATHOGENICITY OF *MELOIDOGYNE JAVANICA* TO CHICKPEA  
(*CICER ARIETINUM*) IN RELATION TO SOIL TYPES, *RHIZOBIUM*  
TREATMENT, SIZE OF POTS AND TIME INTERVAL\*

BY

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An experiment was carried out to see the pathogenicity of *Meloidogyne javanica* in relation to soil types, size of pots and time interval in taking various observations on growth parameters in chickpea. It was found that initial inoculum of 10,000 larvae/plant in smaller pots (15 cm) after two months of inoculation and 1000 and 10,000 larvae/plant in large pots (25 cm) after five months of inoculation proved to be pathogenic in all the three type of soils. Although, plant growth characters were better in sandy loam soil but pathogenic level remained the same in all types of soil. Similarly, *Rhizobium* treated seeds showed better growth characters than untreated seeds but there was no difference in pathogenic level in both the treatment (treated and untreated). However, fresh root weight was more in plants where treatment was done with *Rhizobium* culture.

## IDENTIFICATION SCHEME FOR *HETERODERA* SPECIES IN INDIA

BY

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A compendium of all the cyst forming species recorded from India has been given. Identification keys based on larvae, cysts alone, hosts alone as also taking all the parameters together have been formulated for the six tested species as well as for all the other species recorded from the country. A proposal has been put forward to modify Mulvey's groups with addition of Group VI and re-definitions of Groups IV and V. *Heterodera chaubattia* is being considered as species inquirende because of inadequate description and non-availability of types.

REVISION OF THE GENUS *CALOOSIA* SIDDIQI & GOODEY, 1963  
(CALOOSIIDAE : NEMATODA)

BY

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The type specimens of the nominal species of *Caloosia*, along with seven other populations (from A.P., Goa, Kerala, Tamil Nadu and West Bengal) were studied, and conventional taxonomic characters used for species identification were evaluated. Morphometric parameters, 'b', 'V', spear length, 'Rst', 'Roes' and 'VR' are found to be the most stable out of the twelve characters studied. A positive correlation exists for the length of body and spear, body and tail, vulva and tail, and ratios 'c' and 'V'. Regression equations for the significantly correlated characters are given to project the magnitude of relationship. The reliable morphological characters listed are : head annules, vulval sleeve and sometimes anastomoses of body annules of females; lip region, lateral field and cloacal lips of males. Seven species, *C. brevicaudata*, *C. exilis* (= *C. indica*), *C. longicaudata*, *C. paralongicaudata*, *C. parlona*, *C. paxi* (= *C. parapaxi* and *C. hetrocephala*) and *C. triannulata* are found to be valid. A diagnostic key to the valid species is provided. Closely related genus *Hemicaloosia* Ray & Das, 1978, is confirmed to form a distinct group. Lastly, the phylogenetic relationships of this group are discussed.

**PURIFICATION AND SOME PROPERTIES OF RIBONUCLEASES  
FROM TOMATO PLANTS SUSCEPTIBLE AND RESISTANT TO  
THE ROOT-KNOT NEMATODE (*MELOIDOGYNE INCOGNITA*)**

**BY**

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Ribonucleases from tomato cultivars 'Pusa Ruby' and 'SL-120', susceptible and resistant respectively to the root-knot nematode, *Meloidogyne incognita*, were purified to homogeneity. The tomato RNase was seen to possess high thermal stability and a pH optimum at 5.7. The susceptible cultivar retained the whole activity at higher temperatures compared to the resistant one. The results are discussed in the light of the role of this enzyme in the biochemical mechanism of resistance of plants to phyto-parasitic nematodes.