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TECHNIQUES IN NEMATOLOGY

I. EFFECT OF TEMPERATURE ON NEMATODE EXTRACTION*

BY

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Studies on the effect of placing the "petri dish assembly" at seven different temperatures showed that maximum number of *Hoplolaimus indicus* and *Helicotylenchus elegans* were recovered at 30°C during the first 48 hours duration. During this period 88.3 per cent of the extracted *H. indicus* and 94.1 per cent of the extracted *H. elegans* were recovered. Maximum number (97.9 per cent) of the recovered *Hemicriconemoides cocophilus* was extracted at 25°C within the first 48 hours. Population of *Rotylenchulus* sp., *Tylenchorhynchus* spp., *Pratylenchus* spp. and other tylenchids was very low and most of them were extracted within the first 24 hours. The optimum temperature for maximum recovery of these nematodes was 30-35, 20-25, 35 and 30°C respectively. Maximum number of saprozoic nematodes were recovered at 35°C with 48 hours as the duration.

Investigation on the effect of placing the petri dish assembly at constant temperature and at room temperature on nematode recovery showed that *Hoplolaimus* sp., *Helicotylenchus* spp. and other tylenchids behaved similarly and their recovery was generally more at room temperature during April (Min. temp. 29°C, and Max. temp. 32°C), June (Min. temp. 33 and Max. temp. 36°C) and August (Min. temp. 31 and Max. temp. 35°C) than at $27 \pm 2^\circ\text{C}$. The extraction of *Tylenchorhynchus* spp. was least at room temperature during June (Min. temp. 33 and Max. temp. 36°C) and maximum during October (Min. temp. 22 and Max. temp. 25°C). Maximum recovery of *Pratylenchus* spp. at room temperature was obtained during October and August.

PLANT PARASITIC NEMATODES ASSOCIATED WITH VEGETABLES,
FRUITS, CEREALS AND OTHER CROPS IN NORTH INDIA
I. UTTAR PRADESH*

BY

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Survey of plant parasitic nematodes associated with vegetables, fruits, cereals and other crops, carried out in 30 districts of Uttar Pradesh revealed that *Tylenchorhynchus* spp., *Meloidogyne* spp., *Hoplolaimus indicus*, *Helicotylenchus* spp., *Rotylenchulus reniformis* and *Pratylenchus* spp. were the most widely distributed forms. On the other hand, *Basiroides* spp., *Rotylenchus* sp. and *Peltamigratus* sp. had very limited distribution. *Tylenchulus semipenetrans* was confined to *Citrus* spp. only.

STUDIES ON THE RENIFORM NEMATODE, *ROTYLENCHULUS*
RENIFORMIS. I. HOST RANGE AND POPULATION CHANGES*

BY

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Rotylenchulus reniformis multiplied in varying degrees on 24 out of 36 plant species tested. An increase in nematode population was found to be correlated with decrease in plant weight. High inoculum level of 10,000 per plant had negative effect on reproduction of this nematode. However, significant damage to plants corresponds with higher inoculum levels. Soil moisture from 25 to 30 per cent, and 30°C soil temperature were optimum for its reproduction on castor. Higher soil temperatures had more adverse effects on its reproduction than lower temperatures.

EVALUATION OF NEMATICIDES FOR THE CONTROL OF
TYLENCHORHYNCHUS BRASSICAE SIDDIQI 1961*

BY

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The application of DD and Vapam was highly effective in controlling the *Tylenchorhynchus brassicae* both in pots and under field conditions. The growth of cabbage and cauliflower plants was significantly high in pots and beds treated with these nematicides. Nemaphos and Thimet were less effective whereas Solvirex and Rogor failed to suppress the nematode population. Solvirex and Rogor were also detrimental to the plant growth.

MULTIPLE CROPPING AND NEMATODES
I-EFFECT OF FERTILITY MANAGEMENT AND INTENSIVE ROTATIONS
ON NEMATODE POPULATIONS AND CROP YIELD

BY

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Two split plot experiments each with three rotations, three fertilizer rates each from three sources and three replications were carried out to study the effect of source of fertilizer(S), rates of fertilizers (R) and cropping patterns (M) on the population of plant parasitic and saprozoic nematodes. Source of fertilizer was the weakest factor affecting the nematode population but wherever there were differences due to this factor, it was mostly urea which was associated with low number of nematodes as against urea + micronutrients (MN) or ammonium sulphate. Rate of nitrogen fertilizer (R) application was the most important factor affecting nematode populations which were lowest for 50 kg N/ha and increased with the amount of nitrogen applied. Mostly there was no difference in the nematode populations amongst sorghum rotations viz. sorghum-wheat-cowpea for grain, sorghum-wheat-cowpea for fodder and sorghum-wheat-fallow or amongst *bajra*¹ rotations viz. *bajra*-wheat-cowpea for grain, *bajra*-wheat-cowpea for fodder and *bajra*-wheat-fallow. But wherever there was a difference, it was mostly in respect of rotations which included fallow. Also, populations in sorghum rotations differed from those in *bajra*-rotations. *Pratylenchus zaei* was more and *Tylenchorhynchus* and *Helicotylenchus* less in respect of *bajra* rotations in comparison to those in sorghum rotations.

TWO NEW SPECIES IN THE SUBFAMILY HOPLOLAIMINAE
FILIPJEV, 1934 FROM NORTH INDIA*

BY

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During the survey of plant parasitic nematodes of North India, some females of *Rotylenchus* Filipjev, 1936 and *Scutellonema* Andrassy, 1958 were collected from *Citrus aurantium* in Almora and *Psidium guajava* in Rampur respectively. They represent two new species and are described here as *R. citri* sp. n. and *S. orientalis* sp. n.

CONTROL OF *HIRSCHMANNIELLA ORYZAE* ASSOCIATED
WITH PADDY

BY

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Studies on the effect of two nematicides (DD and DBCP), six oil-seed cakes (*til*² mustard, groundnut, linseed, cotton and *neem*¹ and one inorganic fertilizer (calcium ammonium nitrate) indicated that (i) soil fumigation in the nursery provided improved and healthy seedlings, (ii) field application of DD and DBCP were very effective in increasing grain yield (iii) *neem* and mustard cakes were very effective in reducing the population of *H. oryzae* and in improving the plant growth and (iv) Calcium ammonium nitrate increased the nematode population considerably.

***TROPHURUS LOMUS* SP. N. (TYLENCHIDA : NEMATODA) FROM
SOIL AROUND ROOTS OF *PRUNUS ARMENIACA* FROM INDIA**

BY

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Trophurus lomus sp. n. collected from soil around roots of apricot (*Prunus armeniaca* L.) at Bakrata Hills, is distinctive by weakly developed cephalic frame work, distinct hemizonid, spear and spicule measuring 16-18 μ and 20-22 μ respectively.

SELECTION OF MEDIA FOR CULTURING FREE LIVING NEMATODES:
AXENIC CULTURE OF *CHILOPLACUS LENTUS* THORNE
(NEMATODA : RHABDITIDAE)¹

BY

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Eight media were tried for culturing free-living nematode, *Chiloplacus lentus* axenically of which four were semisolid with agar base and the rest four were in liquid form. Yeast-extract glucose agar was highly favourable for population growth. Nutrient glucose agar, nutrient broth, supplemented nutrient broth, and yeast-extract glucose broth were suitable, however, gelatin agar proved less favourable, and gelatin broth and soil-extract glucose agar the least and did not support the population. Egg production was proportional to nematode population in respective media. Culture media influenced morphometric values of *C. lentus*.