SHORT COMMUNICATION

COMMUNITY ANALYSIS OF NEMIC FAUNA AROUND THE RHIZOSPHERIC ZONE OF *MANGIFERA INDICA*

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Abstract: The plant Nematodes are microscopic animal and interact with other living and non-living components of soil environment for their energy requirement. Apart from the numerical superiority of nematodes, the species numbers are also unbelievable very high, close on the heels to that of insects. The latter; as is commonly known, make up nearly 80% or about 8,00,000 known species out of a total of a little over one million species of all groups of animals. The remaining 20% or about 2,00,000 species also include nematode species, that are known so far. (Jairajpuri, 1990). The study of population dynamics of all those types of nematodes. Parasitic, free living and predatory held on to analyse number of different nematodes at a definite distance. Plant parasitic and predatory nematodes found mostly in deep zone, around soft roots but more number of free-living nematodes present in 20-30 cm depth and take part in the decomposition of dead organic materials. Hence the choice of specific depth that taken in this study because-free-living found abundantly in 20-30 cm depth and concerned with the study of those types of nematodes population.

Keywords : Mango Orchard, Nemic Fauna

INTRODUCTION

The plant nematodes are tiny, round-bodied, unsegmented worms and found in enormous number in soil environment. Nematodes are the major component of animalia. All the nematodes survive either of any physical phase, free-living in soil and parasitic in animal and plant both. Plant parasitic nematodes because of their hidden habitates, they are not very well understand outside the scientific community. They are usually microscopic, triploblastic, bilateral symmetrical, pseudocoelomate and dimorphic thread like invertebrate (Chitwood & Chitwood, 1950).

Nematodes interact with other living and non-living components of the soil environment for their energy requirement. On the basis of the feeding habits, the nematodes are categorized in parasitic, free-living and predatory (Overgaard & Neilson, 1949, Wieser, 1952b & Yeasts *et. al.*, 1971). Out of the total known nemic fauna, about 10% are plant parasitic are equipped with stylet through which they are able to feed on secondary roots of plant together with other plant pathogenic micro-organisms such as fungi.

The majority of nematode spp. are free-living in soil and water of these 50% are marine & 25% dwell in soil & fresh water. Generally fungal and bacterial feeding nematodes are the abundant trophic groups in forest and agricultural fields respectively (Popovici *et.al.* 1984). Most plants are probably infected by one or more species one time and yet to majority of them do not appear to be disease. Severe damage may result due to high infestation level in soil where the susceptible crops are planted.

Besides the fungal and bacterial feeder nematodes (Predatory) are also one of the components of the soil ecosystem. They feed on other nematodes and small creatures living in soil. Predatory nematodes can control the population of bacteria, fungal or root-feeding nematodes.

Nematodes play an important role in ecosystem function by regulating decomposition and also used as biomarker for monitoring the soil health (Beare *et.al.* 1992). They phytonematodes (Soil nematodes) typically have a patchy distribution within infested (Basker & Campell 1991; Goodell & Ferris 1980; Mc Sorley & Parado 1982). This characteristic affects the precision of sample estimates of nematode population densities (McSorley & Parrado 1982; Nor & Basker 1985) and accuracy of resulting yield-loss estimates in management advisory systems. Analysis of the relationship between variation in soil parameters and the irregular spatial patterns of plant-parasitic nematodes should lead to an improved understanding of how these organisms interact with the soil environment (Malhotra & Chaubey, 1990).

The vertical & horizontal distribution of nematodes must also be taken in to account because same species appear to prefer certain depths. Richter (1969) found that Trichodours occurred in greater numbers in deeper soil layer compound with species of Tylenchorhynchus and Paratylenchus. Flegg (1968) found that Xiphinema diversicaudatum & X. vuittienezi decreased in number with increasing depth where as longdours macrosoma increased with depth up to 70cm. Koen (1966) found that the seasonal variations from summer to winter and the consequent change of soil temperature and soil moisture influence the pattern of vertical distribution of Meloidogyne javanica in the soil.

MATERIAL AND METHOD

To study the different forms of nematodes (Nemic Fauna) around the rootzone of mango plants (*Mangifea indica*), at 20cm. vertical depth & 0-20cm.

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horizontal distance, select the mango orchards, were adjacent to Khurja City near district Bulandshahar U.P. The area of the orchard was of 1-5 acre and the plants were of the age of 20 years. There was 30 healthy plants selected in the orchard. Soil-samples (250 gm. each) were collected randomly fornightly with the help of augar at one vertical and one horizontal distance (0-20 cm each) and were stored in a well labeled polythene bags at temperature of 5-10^{0}C. Now the collected samples were extracted by Decanting & Sieving Method (Cobb, 1918).

Genera wise nematodes were counted from each sample. The isolated nematodes were killed with Fixative (FAG) to prevent twisting and contraction of tissues and remained in the Fixative for 48 hours. After dehydration of nematodes, 5-10 nematodes of equal-size were placed on glass slide in a single drop of Lactophenol in a wax block and slide to be cold. After that drawing have to be done and measurement was done with the help of Camera Lucida under $10\times10_x$ and $10\times40_x$ magnification of various parameters. viz. total body length, body width, stylet length and Oesophageal length, position of vulva in female, anterior & posterior and etc. was measured.

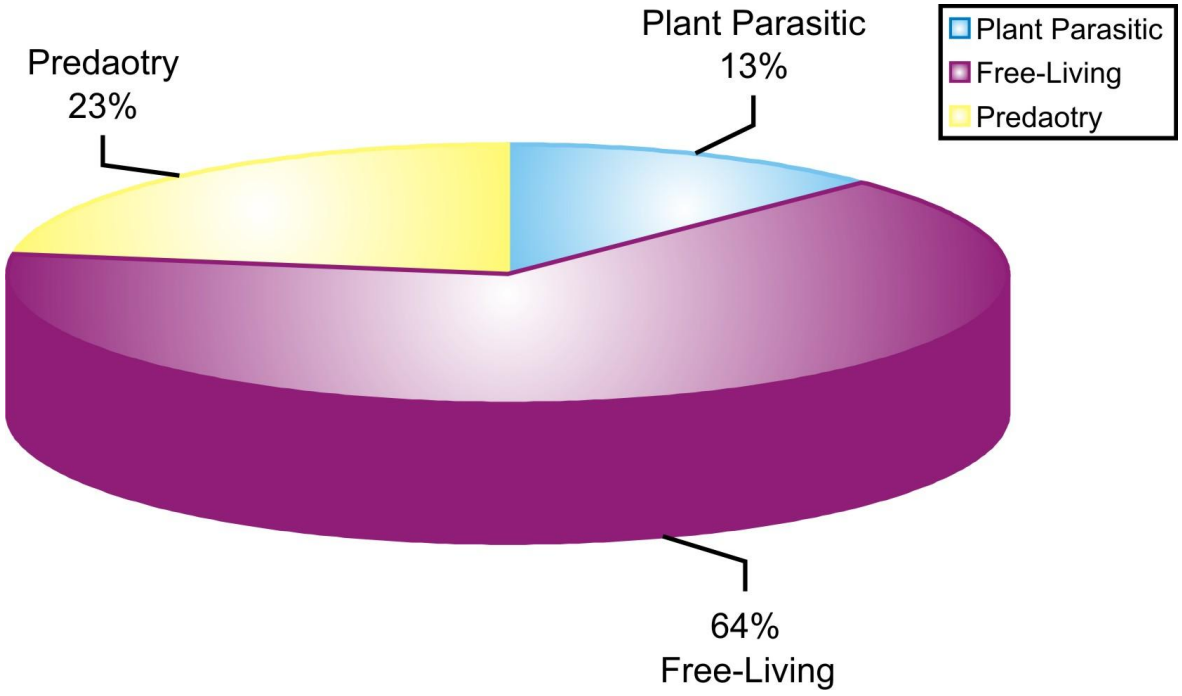
RESULT AND DISCUSSION

In the present investigation the distribution of nemic community around the rhizospheric rots of *Mangifera Indica* was not uniform. The free-living forms of nematodes were observed in enamors number near by the color-region of the host plant at 20 cm vertical and 0-20 cm horizontal distance, might be due to food resources and nature of host responce-like micro-organisms, specially bacteria, in which these free-living nematodes feed and perform their live activities (Wardle & Yeates, 1993). Due to such relationship in soil-ecosystem, most of the free-living forms shifted towards bacterial and fungal-feeding. In the present study the increased number of different communities can be correlated with the work of (Bradford *et.al.*, 2002).

The absolute frequency (A.F.), relative frequency (R.F.), relative density (R.D.) and prominence value (P.V.) were also much higher percentage at 20cm vertical depth and 0-20 cm. horizontal distance as compare to plant parasitic and predatory forms of nematodes.

Table: Distribution of different forms of nematodes occupying the soil environment at 20cm vertical depth and 0-20 cm horizontal distance around the root system of Mangifera Indica

S.No.	Nemic-Community	Nematode-Population/250 gm soil	Absolute Frequency %	Relative Frequency %	Relative Density %	Prominence Value	CDI
1.	P.P.	20.25	62.50	27.77	12.61	99.73	0.8738
2.	F.L.	104.12	87.50	38.88	64.87	606.84	
3.	Pre.	36.12	75.00	33.33	22.50	194.91	



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