# Study of Free-Living Plant Nematodes around the Mango Plant (Mangifera Indica) in Hapur Region

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**Abstract**
Free living Phyto nematodes are small sized microscopic round worm Cosmopolitan in distribution they found very where in Nature. Their density depends upon many factors like flora, type of soil etc. free-living Plant nematodes are ectoparasite, they feed upon bacteria and fungi and freely move in soil. many of plant nematodes causes various disease such as stunting growth, gall formation, mechanical damage and wilting of plant while free living nematodes are beneficial to growth of plant because of the decompose organic matter recycling nutrients.
In this present study samples were Collected from 0-30 cm vertical depth and 30-60m horizontal depth from root zones of host plant at Hapur region. Extraction of plant nematodes from July to November nematodes was Carried by decanting and sieving Technique (Cobb 1918). by microscopic study of Plant nematodes were recorded as minimum percentage of free-living plant nematodes 14.2%, and 8.88%, at both Vertical and horizontal depth in Comparatively to other nematode population at different depth which is affected by different edaphic factors such temperature. moisture and seasonal changes and Absence of Different food Resources.

**key words:**
plant nematodes, Bacteria, community, Edaphic factors

**Introduction:**
Phyto nematodes are worm like organism they are rounded body ubiquitous in Nature they are dominant, diverse group of organism
underground Communities in any. Argo ecosystem. plant Nematodes Community is depending upon different factors such as ecological habitat, trophic group, Life history and food web. Phyto nematodes (free living) good indicator of quality of soil and atmosphere (Ferries etal 2001, Yeates 2003, Bonger 1990, Liang etal 2009). They are divided into five a different Categories' according to their feeding habit (Yeates 1993) Such fungal feeder, algal feeds, omnivores, Sedentary Predatory, and bacterial feeder pattern of free living Nematodes depend upon different factor such as breakdown of organic matter, and nutrient cycle (Sochova etal 2006) plant Nematodes act as major pest and affect agricultural production and Causing major disease to plant while according to many Researchers plant nematodes are beneficial to plant because they Improve the ecological mechanism of decomposition, disease supression and nutrient mineralization Nature of host plant is also affected bay to Communities of nematodes, perennial crops are more beneficial because they have more long Root system and complexity in food web long growing season for free living nematodes (Glover JD Cox CM 2007, Vanbruggen AHC 1995). Soil density also affect occurrence of free-living Nematodes in top soil is 15 cm. due to Small Size 40 to 10 mm length they are Unable to reshape in soil, use the occurrence of pore, space, water channels in soil (Griffith B.S1994). Those nematode occurrence


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in top soil also reflect according to food resources.

Free living plant nematodes are harmless and they are act as Bioindicator. It also records good health of Soil they having Important role in ecosystem for regulating the de composition (Beare etal 1992) (Nelson Winding 2002). They attack all kind of plants with wide range of host!

In this Study to investigate the free-living Plant nematodes was done around rhizosphere root of mango plant and identify the free-living roots of *Mangifera indica (*mango plant), nematodes~ population Categorised as free living, sluggish, a parasitic nematode was analysed.

Material methods: -

In this study sample were collected form rhizosphere root zones of mango Plant at Hapur region from July to November. Soil Samples (250gm) were collected from 0-30cm vertical depth and 30-60 horizontal depth away from host Plant. During the study period decanting and sieving Technique (Cobb 1918) was Applied for extraction of plant nematodes per 10 gm root samples taken 250 gm soil Samples • nematodes were Counting in Counting chamber disc under binocular microscope Population densities were Calculated by formula by Norton in 1978.

1.Relative Frequency (R.F.)= Frequency of sp X100

Sum of frequency all the sp

2. Absolute frequency (A.F) = No of samples Containing X100

No of samples collected

3. Relative density (RD) = No. of individuals of sp.in samples X100

Total No. of all individuals of sample

4.Prominence value = Density $\sqrt{\ }$ Frequency

Discussion

During Study distribution of free-living Plant nematodes was not uniform. Minimum percentage of free-living plant nematode at 30-60 cm depth. because free living plant nematodes occurs at bottom Stratum deeper stratum as well as Lower Stratum, they Exhibit Co- relationship between plant nematodes as well as food material present in minimum amount. Different factors such as Temperature PH of soil etc. free-living nematodes are different types fungivores and bacterivores, these nematodes are also

Control growth of bacteria fungi through grazing mechanism-but they also control fungi by affecting outcome of fungal bacterial Competition. (Wardle, and Yeates 1993) .maximum number of free living nematodes were recorded Comparatively to others because of their feeding habit, fungivores, bacterivores, omnivores, high per cent age of free living nematodes were recorded due to high application of fertilizers, and other manures high nutrients in soil (Tomar 2006) on analysis of free living nematodes, worker has been founded The population of free living nematodes were existing in both terrestrial as well

as aquatic environment. they are playing important role in recycling of nutrients and minerals in

agricultural field. In many have of India application of fertilizers in soil significantly affect the Abundance of bacterivores, fungivores, Nematode Channel ratio (NCR) and bacterivores were Corelated to soil organic total NORP (Pan 2010).

In Present investigation the Nemic community was studied around rhizosphere root of Mangifera indica. The free living form of Nematodes were identified as *PangroliamusSp. AcrobeloiderSp. RhabditisSp, and saprortabditismsp., Seinura* sp. were found in the deeper as well as upper strata of soil. These free-living forms were present upper strata due to soil factor ,availability food resources and emergence of secondary rootlets and organic carbon.

**Result:**

In the present study the free-living nematode constituted the lower segment 14.2% and 8.88% of whole Nemic fauna at both vertical depth& horizontal depth, followed by other plant parasitic nematodes and sluggish forms of plant nematode . The result showed that population of free-living form was lower in comparison to other forms of nematodes at both depths (Table 1&2).


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| Nematode community | Nematode/250gm soil | R.F% | A.F% | P.V% | R.D% |
|---|---|---|---|---|---|
| Free-living | 140 | 29.0 | 80 | 79.3 | 8.80 |

Table 1
Distribution of free-living plant nematodes occurring in soil environment at different depths (30-60) cm vertical depth and 30 cm horizontal distance around rhizosphere root of Mango plant *(Mangifera indica).*

A. F=Absolute Frequency
R. D=Relative density
P. V=Prominence value
R. F=Relative frequency

Table -2

| Nematode community | Nematode/250gm soil | R.F% | A.F% | P.V% | R.D% |
|---|---|---|---|---|---|
| Free-living | 180 | 30.9 | 85 | 130 | 14.2 |

Distribution of free-living plant nematodes occurring in soil environment at different depths (0-30-) cm vertical depth and 30 cm horizontal distance around rhizosphere root of Mango plant (*Mangifera indica*).

A. F=Absolute Frequency
R. D=Relative density
P. V=Prominence value
R. F=Relative frequency
Keywords: - plane Nematode, bacteria, fungi

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