

A CASE STUDY

Distribution of plant- parasitic nematodes in selected agroecosystems

■P. VINDHYA RANI AND G. RAGHU RAMULU

Author for Correspondence :-

P. VINDHYA RANI

Department of Zoology,
Kakatiya University,
WARANGAL (A.P.) INDIA
Email : visuchetan@gmail.com

See end of the paper for

Coopted authors

ABSTRACT : Nematode association with economically important plants reduces the yield. A systematic survey was carried out in the selected crops like *Gossypium arboreum*, *Zea mays*, *Solanum esculentum*, *Solanum melogena*, *Capsicum annuum* and *Abelmoschus esculentum*. Several species of plant parasitic nematodes like *Meloidogyne*, *Heterodera*, *Pratylenchus*, *Helicotylenchus*, *Hoplolaimus*, *Xiphenema*, *Rotylenchus*, *Tylenchorhynchus*, were noticed in the survey. The dominant species was identified in each of the selected crops to help in their management. The intensity of infection in different phases of crop growth was also ascertained to help in treatment methods. The survey also helped in adopting different management techniques for eradication of the nematodes.

Key words : Plant-parasitic nematodes, Root-knot nematode, Predominant specie

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INTRODUCTION

Plant parasitic nematodes are more divergent group and are economically important. Some of the plant parasitic nematodes have wide host - range with abundant distribution. Nematode problem is often overlooked in these regions due to their symptoms which mimics the nutritional disorders. Though several workers reported nematode problems in different crops, all those surveys were either location or crop specific. Understanding the species diversity is more important for developing the effective management tactics. Therefore, a survey was conducted in different areas to reveal the different species distribution of plant-parasitic nematodes.

RESEARCH METHODS

About 10 samples were collected from the rhizosphere region of different crops at the depth of 10-20 cm. These samples were stored at 10-15°C to avoid the decay and drying of specimens and were processed immediately. About 200 of soil sample was processed by Cobb's decanting and sieving method (Cobb,1920) followed by Modified Baermann's funnel method. This method is mainly based on the difference in size and gravity between the nematodes and other soil components. Nematodes are extracted using hot water and then fixed

in 4 per cent Formalin (90°C) for one day. Then, a temporary mount is prepared and sealed with nail polish. The nematodes were identified and the data were presented in Table 1. The predominant species and other species were classified according to the state of infestation.

RESEARCH FINDINGS AND ANALYSIS

The present study revealed that all soil samples were found to for plant-parasitic nematodes. A total of eight genera of plant-parasitic nematodes were found in this survey viz., *Meloidogyne*, *Heterodera*, *Pratylenchus*, *Helicotylenchus*, *Hoplolaimus*, *Xiphenema*, *Rotylenchus*, *Tylenchorhynchus*, were recorded. The distribution of plant parasitic nematodes and their association with the plant species is shown in Table 1.

Meloidogyne incognita was having a wide host range. 70 per cent of infection was recorded for this root-knot nematode. It is found to associate with the crops like *Gossypium arboreum*, *Solanum lycopersicum*, *Solanum melogena*, *Zea mays*, *Abelmoschus esculentum* and *Capsicum annuum* and visible in the form of galls on the root system. *M. incognita* has the greatest frequency distribution in warm temperate to tropical agroecosystems, accounting for more than 60 per