



Research Article

PREVALENCE OF PLANT PARASITIC NEMATODES IN ACID LIME ORCHARDS OF NELLORE DISTRICT

KAVITHA M.* AND GOVINDA RAJULU B.

Plant Pathology Division, Citrus Research Station, Pettur, 516000, Nellore, Dr Y.S.R. Horticultural University, Venkataramannagudem, Andhra Pradesh, 534101, India

*Corresponding Author: Email - kavithamaram@gmail.com

Received: May 01, 2018; Revised: May 07, 2018; Accepted: May 09, 2018; Published: May 15, 2018

Abstract- Seven genera of nematodes were isolated from the soils of acid lime gardens of SPSR Nellore district. *Meloidogyne spp.*, *Longidorus spp.*, *Trichodorus spp.*, *Rotylenchulus spp.*, *Xiphinema spp.*, *Helicotylenchus spp.*, and *Tylenchulus semipenetrans*. The most predominant genera were *Tylenchulus semipenetrans* which recorded highest absolute frequency (89.57), absolute density (750.3) and highest prominence value (7100.90) followed by *Meloidogyne spp.* The highest nematode population of 4200 nematodes/kg soil and 538/gm root sample was recorded in the gardens of Balayapalli mandalam followed by Dakkili, Rapur and Podalakur mandals of Nellore district.

Keywords- Survey, Acid lime, Plant parasitic nematodes, *Tylenchulus*, Nellore(dt)

Citation: Kavitha M. and Govinda Rajulu B. (2018) Prevalence of Plant Parasitic Nematodes in Acid Lime Orchards of Nellore District. International Journal of Agriculture Sciences, ISSN: 0975-3710 & E-ISSN: 0975-9107, Volume 10, Issue 9, pp.-5943-5944.

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Academic Editor / Reviewer: Dr Naveen Kumar Singh

Introduction

Acid lime is an important fruit crop in Nellore district occupied 50% of the fruit crop area. In recent years due to pest and diseases, declining of acid lime orchards with in a period of 12-15 years. During diagnostic field visits and surveys carried out in different Mandals of Nellore district revealed that nematode infestation is a major cause for slow decline of Acid lime orchards. After that, Nathan Cobb, (1914) [1] described this *Tylenchulus semipenetrans* nematode as new spp. and identified as the causal agent of slow decline in citrus. Since then, citrus nematode has been found in every citrus growing region of the world [2,3] But there was no report on the frequency /intensity of occurrence of economically important plant parasitic nematodes associated with acid lime. To study the association of the nematodes in acid lime orchards and to know the frequency and type of nematodes the soil and root samples were collected in Nellore district, so that the management package may be evolved according to the data collected during the period of study.

Materials and Methods

The survey was carried out in nine mandals of Nellore district during the year 2016-17 and recorded the visual external symptoms. During survey soil and root samples were collected and observed for nematodes. A total of 50 soil samples and 50 root samples were collected along with the soil type, age of the garden and external growth of the trees were recorded. Each sample was a composite sample drawn from 2-3 trees of similar age, the fields were selected randomly in nine major acid limes growing mandals of Nellore district. The soil samples (250 cm³ each) were processed by modified Cobb's sieving and decanting technique and the nematode population was estimated. The frequency, density and prominence value of the nematodes were calculated following Norton's formulae [4].

Results and Discussion

The nematodes associated with the acid lime were isolated from the soil samples collected from rhizosphere of acid lime. *Meloidogyne spp.*, *longidorus spp.*, *Trichodorus spp.*, *Rotylenchulus spp.*, *Xiphinema Spp.*, *Helicotylenchus spp.* and *Tylenchulus semipenetrans* was identified as the most predominant nematode

genera encountered in more than 30.0 per cent of the samples. *Tylenchulus semipenetrans* recorded the highest absolute frequency (89.57), absolute density (750.3) and prominence value of 7100.90 followed by *Meloidogyne spp.* The results clearly revealed that *Tylenchulus semipenetrans* and *Meloidogyne spp.* were the major plant parasitic nematodes recorded which might affect the citrus production in the Nellore district as observed earlier [5,6]. Mani, (1981) [7] stated that *Meloidogyne spp.* found widely distributed in coastal Andhra Pradesh may also equally affect the citrus production. Khanzada, (2007) found that *Tylenchulus semipenetrans* major nematode and caused slow decline in citrus in Punjab. *Tylenchulus semipenetrans* was found distributed in majority of acid lime gardens and the highest nematode population of 4200 nematodes/kg soil and 538/gm root sample was recorded in the gardens of Balayapalli Mandal followed by Dakkili, Rapur and Podalakur [8]. *Tylenchulus* and *Radopholus spp.*, were the most common on citrus trees in Lebanon [9]. In Egypt, citrus nematode *Tylenchulus semipenetrans* is major one and caused slow decline disease and caused yield losses ranging from 8.7 to 14.2%. It was also observed in general, apparently healthy trees supported more nematode population than the declined trees it may be due to non- availability of fresh roots for further infection and feeding by nematodes.

Conclusion

Survey of acid lime orchards in different Mandals of Nellore district revealed that nematode infestation is recorded in all orchards surveyed and it also one of the reason for citrus decline in Nellore district. Among various species *Tylenchulus semipenetrans* is predominant one next one is *Meloidogyne spp.*

Application of research: Survey of acid lime orchards and nematode infestation

Research Category: Plant Parasite

Acknowledgement / Funding: Author thankful to Dr Y.S.R. Horticultural University, Pettur, 516000, Venkatagiri (Mandal), Nellore, India

Table-1 Frequency, density and prominence value of plant parasitic nematodes associated with acid lime in Nellore district

Nematode general/species	Absolute frequency	Relative frequency	Absolute density	Relative density	Prominence value
<i>Tylenchulus semipenetrans</i>	89.57	23.82	750.3	57.8	7100.9
<i>Meloidogyne spp</i>	25.59	6.8	196.7	15.2	995.03
<i>Helicotylenchus spp.</i>	17.12	4.55	98.5	7.6	407.55
<i>Longidorus spp.</i>	15.47	4.11	14.5	1.12	57.03
<i>Trichodorus spp.</i>	3.65	0.97	22.8	1.76	43.55
<i>Rotylenchus spp.</i>	20.15	5.35	184.5	14.31	828.19
<i>Xiphinema</i>	4.24	1.12	10.2	0.79	21
Other nematodes	9.76	2.59	11.5	0.89	35.92

Table-2 Population of *Tylenchulus semipenetrans* in association with acid lime trees in different Mandals of Nellore district

Name of the mandal	No of samples collected	No of samples infested	Mean population	Mean population
			/kg soil sample	/g root sample
Balayapalli	20	18	4200	538
Dakkili	15	11	3680	340
Podalakur	18	16	2690	459
Chejarla	12	8	1590	230
Ozili	7	5	1100	315
Gudur	14	13	745	145
Sydapuram	9	5	345	159
Rapur	11	9	2900	367
Kaluvoy	5	3	390	190

***Research Guide or Chairperson of research: Dr K Gopal**

University: Dr Y.S.R. Horticultural University, Venkataramannagudem, Andhra Pradesh 534101

Author Contributions: All author equally contributed

Author statement: All authors read, reviewed, agree and approved the final manuscript

Conflict of Interest: None declared

Ethical approval: This article does not contain any studies with human participants or animals performed by any of the authors.

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