Dr.T.KATHIRESAN
Research Associate
Department of Nematology
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Carrier Objective: To acquire a challenging position in the field of biological sciences

Personal details:

Date of Birth	: 14. 02. 1972
Gender	: Male
Marital Status	: Single
Father's Name	: A.Thandavarayan
Nationality	: Indian
Languages Known	: English, Tamil
Passport Details	: Passport # A -8557982
Permanent Address	: Isukkazhi (P.O) Tiruvannamalai (T.K & Dt) Tamil Nadu 606 804

Academic Qualification

Course	University / Institute	Year of Passing	Subject	Marks	Class
Ph.D	Bharathiar University [Sugarcane Breeding Institute (ICAR)]	2000	Nematology	Highly Commented	
M.Sc	Annamalai University	1994	Zoology	68.06	First
B.Sc	Madras University	1992	Zoology	60.1	First

Area of Specialisation

Major	: Nematology
Ancillary	: Molecular biology and Biochemistry

Awards:
Gold medal for best Ph.D thesis in Department of Zoology in Bharathiar University.

RESEARCH EXPERIENCE

Post held	Name of Organization	Duration of periods	Project
Research Associate (Part time)	Division of Nematology Sugarcane Breeding Institute (Indian Council of Agricultural Research) Coimbatore - 641 007	August 1994 to July 1996	Screening &mechanism of resistance in sugarcane clones against lesion nematode *Pratylenchus zeae.*
Research Associate	Division of Nematology Sugarcane Breeding Institute (Indian Council of Agricultural Research) Coimbatore - 641 007	From August 1996 to July 1998	An investigation of the efficacy of entomo pathogenic nematodes for the bio control of white grubs in Indian sugarcane crops.
Research Associate	Division of Cytogenetics Sugarcane Breeding Institute (Indian Council of Agricultural Research) Coimbatore - 641 007	From August 1998 onwards	Molecular finger printing of sugarcane germplasm and initiation of marker assisted breeding for smut resistance

Thesis title

Biochemical mechanism of resistance in sugarcane clones against lesion nematode *Pratylenchus zeae* Graham 1951

Highlights of Thesis

- Lesion nematode Pratylenchus zeae resistant clones were selected from 90 commercial and breeding stocks of sugarcane clones were identified based on growth and juice parameters
- Histopathological response of *Pratylenchus zeae* infected resistant and susceptible sugarcane clones were studied.
- Identify the specificity of resistance imparting biomolecules like Phenylalaine ammoina-lyase, Tyrosine ammoina-lyase, Peroxidase, Polyphenoloxidase,

Superoxide dismutase, Catalase, Chitinase, β - 1,3 - Glucanase, Acid phosphatase and Esterase were studied in early and post infection stages of *Pratylenchus zeae*

- Induction of peroxidase activity by native PAGE analysis was conducted in nematode infected 13 susceptible and 15 resistant clones. The resistant clones showed a specific peroxidase isozyme of Rf value 0.36 was found but the same was not in susceptible clone. Hence this peroxidase isozyme can be used as a **biochemical marker to *P. zeae* resistance in sugarcane clones.**

- The segregation pattern of peroxidase (0.36) loci in the progenies of resistance x resistance and resistance x susceptible crosses showed lesser number of resistant progenies inducing that resistance was conferred by a **recessive gene**(s), which was further conformed through progeny analysis of inbreeds of resistant Co 6304 and susceptible Co 7314 sugarcane clones.

- Western blot analysis was used to detect presence of chitinase isozymes resistant and susceptible sugarcane clones before and after nematode infection. Several isozymes are newly synthesized in both resistant and susceptible nematode infected clones.

Biocontrol of entomopathogenic nematodes

1. Survey for distribution and identification (based on morphometric and RAPD) of entomopathogenic nematodes (*Heterorhabditis* and *Steinernema*) in sugarcane belts of India.

2. Testing the pathogenicity of different species of entomopathogenic nematodes against the important pest of sugarcane.

3. Investigation on the growth pattern of symbiotic bacteria of entomopathogenic nematodes at different temperatures.

Molecular finger printing project

- Characterisation of genetic diversity of *Saccharum spontaneum* (650 clones *i.e* bigest world germplasm collection) using classical and morden methods like RAPD and Isozymes.

- Currently involved molecular basis of smut resistance in sugarcane using RFLP markers.

Technical Expertise

1. Native and SDS-PAGE Analysis
2. Western blot analysis
3. Plant and Nematode DNA isolation and purification

4. Plasmid-Isolation and purification
5. RAPD analysis (both plant and nematode genome)
6. Mass production of entomopathogenic nematodes and symbiotic bacteria of EPN

Computer Experience

Operating Systems known: MS-DOS, Windows, Fox pro, Adobe, Leica image analysing system.

Symposia attended

1. Attended "Third international Symposium of Afro - Asian Society of Nematologist" Organised by Sugarcane Breeding Institute Coimbatore 641 007. India.

2. National Symposium on Biological Control of Insects in Agriculture, Forestry, Medical and Veterinary Science. Organised by Department of Zoology, Bharathiar University, Coimbatore 641 046

List of Publication

1. Mehta Usha K and **T. Kathiresan** 1998 Changes of peroxidase activity in resistant and susceptible sugarcane clones inoculated with P*ratylenchus zeae.* **J. Nematology. 31**: 554-555.

2. Mehta Usha K and T. Kathiresan 1997. Population dynamics of plant parasitic nematodes in Sugarcane Maize - Cotton rotation fields. **Bharathia Sugar 17**: 7-10

3. Mehta Usha K and T. Kathiresan 1998. Penetration and multiplication of lesion nematode *Pratylenchus zeae* in resistant and susceptible sugarcane genotype. Paper presented in Third international symposium of Afro- Asian Society of Nematolagist, India. pp 52.

4. **Kathiresan. T** and Usha K Mehta 2000. Histopathological response of *Pratylenchus zeae* infected resistance and susceptible sugarcane roots**. International Journel of Nematol**. (Accepted for publication dt.21.1.01)

5. Mehta Usha K and **T. Kathiresan**. 2000. Induction of peroxidase activity in resistant and susceptible sugarcane clones infected with P*ratylenchus zeae.* **Nematol. Medit**. (Accepted for publication dt.10.01.01)

6. Mehta Usha K and **T. Kathiresan**. 2000. Penetration multiplication and infectivity of lesion nematode *Pratylenchus zeae* in resistant and susceptible sugarcane clones. **Nematolgy** (Accepted for publication dt. 28.01.01)

7. **Kathiresan. T** and Usha K Mehta 2000. Activity and differential induction of chitinase in resistance and susceptible sugarcane clones infected by *Pratylenchus zeae*. **Nematology.** (Accepted for publication dt. 28.01.01)

8. **Kathiresan. T** and Usha K Mehta 2000. Effects of *Pratylenchus zeae* infection on the expression of superoxide dismutase isozymes in roots and leaves of resistant and susceptible sugarcane clones. **Physiol.Mol.Plant.pathol**. (in press)

9. **Kathiresan. T** and Usha K Mehta 2000. Changes in phenylalanine and tyrosine ammonia-lyase activities in resistant and susceptible sugarcane clones infected with P*ratylenchus zeae.* **Physiol.Mol.Plant.pathol**. (in press)

Reference

1. Dr. Usha K. Mehta, Principle Scientist, Head Division of Crop Protection, Sugarcane Breeding Institute, Coimbatore 614 007, India Phone: 0422 - 431179

2. Dr. Sad L. Hafez Professor of Nematology, Research extension centre, Idaho University, Idaho, Parma, U.S.A. Phone: 001 - 208 - 722 6701

3. Dr .D. Raski. Rtd. Professor, University of California , Davis California 95616 Residential Address: 1912 Alpine place Davis California 95616.Phone: 530 - 756 - 5289

4. Dr. Franco Lamberti, Instuto Nemstologia Agraria del, C.N.R. -Via, G Amendola, 165/A 70126 Bari, Italy. Phone 39 - 80 - 5484186, FAX 39 - 80 - 5484165 e.mail: f.elia @ area.ba.cnr.it