

# Curriculum vitae

## **Prof. Gomathinayagam Subramanian**

M.Sc. (Botany), PhD (Botany –Plant Pathology)

Director

University of Guyana, Berbice Campus, Tain, Berbice, Guyana, South America

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**Working area: Plant Pathology, Biological Control, Soil Microbiology and Molecular biology, Mushroom Cultivation, Antimicrobial activities**

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### **Educational Qualifications:**

- Ph.D., in **Botany** with specialization in **Plant Pathology**, Centre for Advanced Studies in Botany, University of Madras, Guindy Campus, Chennai -600 025, Tamil Nadu, India 2003.
- M.Sc., in **Botany** with **First Division** (66.1%), Ayya Nadar Janakiammal College (Affiliation of Madurai Kamarajar University), Sivakasi, Tamil Nadu, India, 1994.
- B.Sc., in **Botany** with **First Division** (74.19%), Vivekananda College (Affiliation of Madurai Kamarajar University), Thiruvadakam, Madurai, Tamil Nadu, India, 1992.
- Post –Doctoral experience in Biological science from 2003 to 2004, CAS in Botany, University of Madras, Tamil Nadu, India.

### **Merits and Awards:**

- Recipient of Special merit award for outstanding teaching and research year 2008, University of Guyana, Berbice Campus, (2008), Guyana, South America.
- Recipient of Research Associate of Life Science Award in Central Leather Research Institute, Adyar, Chennai, Tamil Nadu, (2003-2004). India.
- Recipient of Award of Council of Science and Industrial Research (CSIR) for Senior Research Fellow (SRF) Life Science (1999-2002), India.
- Recipient of Award of Indian Council of Agricultural Research (ICAR) for Senior Research Fellow (SRF) in Plant Science (1998-1999), India.
- Recipient of Best Behaved student award, Vivekananda College, Thiruvadakam, Madurai, Tamil Nadu, (1989-1992), India.

### **Professional Experience:**

- Currently working as Director, University of Guyana, Berbice Campus, Tain, Berbice, Guyana, South America.
- Visiting Professor and resource person to conduct training to research assistant in Acela Biotech Laboratory from January 29<sup>th</sup> 2016 to March 13<sup>th</sup> 2017, Davis, California, USA.
- Chairman of Campus Coordinator Committee and Campus Board, University of Guyana, Berbice Campus, Tain, Berbice, Guyana.
- I have acted a panel member of Turkeyen and Tain Talks 3 , Topic “ Farming, Profitability and

Food security: A focus on Berbice, on October 20, 2016, Organized by University of Guyana, Berbice Campus, Tain, Berbice, Guyana.

- I have participated Education Resource Ambassadors Conference from June 23-25<sup>th</sup> 2016, Organized by University of Guyana, Guyana.
- I have acted co-chairman for International Conference on Integrated Disease Management in Tropical Vegetables, from June-16-17<sup>th</sup> 2016, Organized by Department of Life Sciences Faculty of Science and Technology, The University of the West Indies, St. Augustine, Trinidad & Tobago, West Indies.
- I have acted Chairman and judge for 51<sup>st</sup> Caribbean Food Crops Society (CFSC) annual meeting oral presentation, from July 19-25<sup>th</sup> 2015, Paramaribo, Suriname.
- I have participated and Chaired session in 2<sup>nd</sup> High Level CARICOM Science and Technology (S&T) meeting on “Strengthening and Utilizing Science & Technology in the Caribbean” March 26-28, 2015, in Grenada. West Indies.
- I have visited and participated “2014 Emerging Leaders in the Americas Program (ELAP)” Collaboration Mission in Canada from November 12-22<sup>nd</sup> 2014. Canada.
- I have visited agriculture farm and given special lecturer in “Diagnosis and control of Black Sigatoka and Moko disease in Banana and Plantain in St. Vincent and Trinidad from September 1 – 5<sup>th</sup> 2014. West Indies.
- I have organized CARISCIENCE Annual General Meeting 2014 (AGM) and National Symposium “Recent Advances in Soil and Disease management in Crop Protection (Issues and Challenges, Towards Sustainable production Practices)” August 29-30<sup>th</sup> 2014, at University of Guyana, Berbice Campus, Tain, Guyana, South America.
- Organized by 15 days training programme on “Crop Protection, Biotechnology and IPM” at Anton Kom Universiteit Van Suriname, from June 9 – 21<sup>st</sup> 2014, Suriname.
- Organized by 20 days training programme on “Plant Protection and Soil Management” at Anton Kom Universiteit Van Suriname, from January 5<sup>th</sup> -25<sup>th</sup> 2013, Suriname.
- Organized one day National symposium in “Rice cultivation of Suriname and Guyana” at Anton Kom Universiteit Van Suriname, January 16<sup>th</sup> 2013, Suriname.
- Worked as Soil-Micro Biotechnologist from Sept. 2011- August 2012, Agriculture Research Centre, Guyana Sugar Corporation Inc. LBI, Guyana. South America.
- Research Associate from 2003-2004 Central Leather Research Institute, Adyar, Chennai, Tamil Nadu, India.
- PhD research scholar from 1998-2002 Development and Molecular Characterization of Fungicide Resistance in plant pathogens; Supervised by Prof. **D. Lalithakumari**, Centre for Advanced Studies in Botany, University of Madras, Guindy Campus, Tamil Nadu, India.
- Molecular Techniques (PCR, RFLP, Sequencing and Blast Program) December 2008- January 2009. Department of Microbiology and Molecular Genetics, Michigan State University, East Lansing, Michigan, USA.
- Advance Molecular Techniques in 2000. At Centre for Plant Molecular Biology, Osmania University, Hyderabad, India.
- Isolation, Purification and Characterization of protein in 1996. Byproducts Laboratory, Central Leather Research Institute (CLRI) Adyar, Chennai, Tamil Nadu, India.
- Plant Horticulture and Molecular Techniques from 1994 – 1996. Horticulture Division, Central Leather Research Institute (CLRI) Adyar, Chennai, Tamil Nadu, India.

#### **Membership of Professional Societies:**

- Member of University of Guyana Council ( 2013- at present)
- Member of Board of Graduate, University of Guyana ( 2013- at present)
- Member of Appointment Committee, University of Guyana (2013- at present)

- Member of Annual Business Committee, University of Guyana, (2013-at present)
- Member of Annual Business and Planning Committee, University of Guyana, (2013-at present)
- Member Board of Director, National Agriculture and Extension Research (NAREI) 2014 to 2015.
- Member of Board of Examiner, University of Guyana, (2011-2014)
- Member of Advisor Board of Bio info Publications (2013-2016).
- Member of CARISCIENCE (2009 to till date).
- Member of International Plant Proteomics Organization (INPPO)( 2011).
- American Plant Pathology Society (2010).
- Member of International Society of Plant Pathology (2009).
- Panel member of Caribbean Food Crops Society (2009).
- Life Member of Caribbean Food Crops Society (2008).
- Life Member of International Society of Conservation of Natural Resources (ISCON) India (2005).
- Member of American Society of Microbiologist (2002-2006).
- Member of Indian Phytopathological Society (1999).

### Computer Skills:

- Basic Microsoft Word,
- Microsoft Excel,
- Microsoft Power Point.

### Research publication and Participations:

### Annexure-I

➤ Symposia/Seminars/Conference/ Workshop attended	-66
➤ Abstract paper published in conference/seminar	
• International	-30
• National	-36
➤ Books	- 2
➤ Books Chapters	- 2
➤ Laboratory Manuals	- 5
➤ Research Papers	
• Published	- 43
• Accepted	-1

### Patent Filed :

➤ International	-0
➤ National	-3

### Certificate course:

- Certificate course in Photography.
- Certificate course in Advanced Level Photography.
- Certificate course in Deed Drafting and Legal Guidance.

### External and Foreign Examiner for Doctorate thesis (PhD.,)

- Thesis entitled “ **Survey and systemic studies on *Cercopegia species*( Apocynaceae) along the part of Southern and Western Ghats of Tamil Nadu, India and *in vitro* propagation of *C. bulbosa roxb*”** by Mr Subbaiyan, PG and Research Department of Botany, Kongunda Arts and Science College( Autonomous), Affiliation of Bharathira University, Coimbatore, Tamil Nadu, India ( March 2017).
- Thesis entitled “**Pharmacognostical, Phytochemical and Antimicrobial activity of Double Flower of *Punica granatum L.* with special reference to Urinary tract infection**” by Mrs. P. Meera Devi Sri, Captain Srinivasa Murthi Research Institute for Ayurveda and Siddha Drug Development, Central Council for Research in Ayurvedic Sciences, Ministry of AYUSH, Government of India, Arignar Anna Hospital Campus, Arumbakkam, Tamil Nadu, Chennai, India. (June 2016).
- Thesis entitled “**Comparative studies on the phytochemical content, biological activity and anti-inflammatory activity of leaf and callus of *Pisonia alba span*”** by Mrs. B. Saritha, Queen Mary’s College (Autonomous) affiliated to University of Madras, Chennai, Tamil Nadu, India. (June 2016).
- Thesis title “**Ethnobotanical, Phytochemical and Antimicrobial analysis of selected medicinal plants in Gingee Hills, Tamil Nadu**” by Mr. Thamacin Arulappan, St. Joseph’s College (Autonomous) affiliated to Barathidasan University, Tiruchirappalli, Tamil Nadu, India. (January 2015).
- Thesis title “**Toxicity study of two organophosphate pesticides: Chlorpyrifos and Profenofos in individual and Combination exposure on paddy field freshwater carb *Spiralothelphusa hydodroma* (Herbst, 1794) in relation to different physiological functions**” by Mrs. R. Banumathi, Queen Mary’s College (Autonomous) affiliated to University of Madras, Chennai, Tamil Nadu, India. (January 2015).
- Thesis title “**Comparative studies on the Anatomy, Phytochemistry and biological activity of the leaf and flower of five species of Cassia**” by Mrs. V. Selvi, Sir Theagaraya College, affiliated to University of Madras, Chennai, Tamil Nadu, India. (January 2015).
- Thesis title “**Pharmacological insights of pACC1 peptide loaded polymeric nanoparticles on mammary carcinoma**” by Mr. K. Jagatheesh, Periyar University, Salem, Tamil Nadu, India. (November 2014).
- Thesis title “**In-vitro and In-vivo studies on therapeutic efficacy of fungal Taxol against liver cancer**” by Mrs. P. Rajapriya, Madurai Kamaraj University, Madurai, Tamil Nadu, India. (October 2014).
- Thesis title “**A study on correlation between nerve fibers and muscle spindles in selected muscles of a few mammalian species**” by Mr. M. Surendran, Voorhees College, affiliated to Thiruvalluvar University, Vellore Tamil Nadu, India. (October 2012).

## Supervised and Co-supervised

- Supervised three (3) B.Sc., Agriculture student's final year projects between 2013-2014.
- Supervised three (3) B.Sc., Biology student's final year projects between 2011-2012.
- Supervised three (2) B.Sc., Agriculture student's final year projects between 2010-2011.
- Supervised three (3) B.Sc., Agriculture student's final year projects between 2009-2010.
- Co supervised eight (8) B.Sc., Biology student's final year projects between 2008-2009.
- Supervised two (2) B.Sc., Biology students' final year projects between 2008-2009.
- Supervised six (6) B.Sc., Agriculture Science students' final year projects between 2005-2008.
- Supervised two (2) M.Sc., Botany students' dissertation between 1999-2000.

## Techniques Know and Equipment used

- **MICROBIOLOGY**
  - i. Isolation (Enrichment culture technique) and identification of Microorganismes
  - ii. Microbial culture techniques
  - iii. Mutation - UV, Chemical and Adaptation
  - iv. Mushroom cultivation (Oyster and Paddy Straw Mushroom)
- **MOLECULAR BIOLOGY/GENETICS/ BIOTECHNOLOGY**
  - i. Isolation and purification of nucleic acids
  - ii. Agarose gel electrophoresis
  - iii. Restriction digestion of DNA
  - iv. Transformation and conjugation
  - v. Hybridization techniques (Southern & Western)
  - vi. Polymerize Chain reaction (PCR) techniques
  - vii. Cloning of recombinant DNA.
  - viii RFLP
  - ix. BLAST program
  - x. Colony PCR
- **BIOCHEMISTRY**
  - i. Purification of proteins using gel-filtration, ion- exchange, affinity columns
  - ii. Separation techniques:
  - iii Thin Layer Chromatography (TLC)
  - iv Polyacrylamide Gel Electrophoresis (PAGE)
  - vi. Enzyme assay
- **BIOTECHNOLOGICAL STRATEGY**
  - i. Immobilization Techniques
  - ii. Protoplast release and fusion- bacteria and fungi
- **PLANT PATHOLOGY**
  - i. Biocontrol studies - Dual plate assay, poison plate assay
  - ii. Colonization studies - Spherosphere & Rhizosphere
- **EQUIPMENT USED**
  - i. High Pressure Liquid Chromatography (HPLC)
  - ii. Gas Chromatography (GC)
  - iii. Polymerize Chain Reaction (PCR)
  - iv Mass Spectroscopy analysis (MS)
  - v. Gel documentation

## Areas of interest:

- Plant Pathology
- Molecular Biology and Biotechnology (Plant/Microbe)
- Soil Microbiology
- Fungal biology and Industrial Fungal Biotechnology
- Biological control
- Medicinal Plants
- Antimicrobial activities
- Mushroom cultivation
- Molecular Biotechnology and Industrial Biotechnology

## Annexure –I

### Publications:

1. **Gomathinayagam, S.** Brij B. Tewari and G. Rekha (2017), “Heavy Metal and Phytochemical Studies of Crude Leaf Extract of Tamarind (*Tamarindus indica*), Journal of Advances in Life Sciences, 7(1): pp 1-4.
2. **Gomathinayagam, S.** Brij B.Tewari and G. Rekha (2017) “Phytochemical, heavy metals and N.P.K analysis of crude leaf extract of almond (*Terminalia catappa* L.). International Journal of Applied and Pure Science and Agriculture (IJAPSA), Volume 03, Issue 2, [February- 2017], pp 17-21.
3. **Gomathinayagam Subramanian** Brij B.Tewari and Rekha Gomathinayagam (2016), ‘ Phytochemicals, Heavy metals and N.P.K analysis of crude leaf extract of Noni (*Morinda citrifolia*), Asian Journal of Biochemical and Pharmaceutical Research (AJBOR), Issue 1(Vol. 7), pp 1-12.
4. Jaikushun,S, N. Hunte, A.A. Ansari and **S. Gomathinayagam** (2015) “ Effect of vermiwash from different sources ( Bagasse, Neem , Paddy straw in different combinations) in controlling fungal diseases and growth of Tomato ( *Luopersicon esculentum*) fruits in Guyana”. Journal of Biological Science, vol. 14(8) pp. 501-507.
5. Brij B.Tewari, **Subramanian Gomathinayagam** (2014), “A critical review on *Ocimum tenuiflorum, Carica papaya* and *Syzygium cumini*: The medicinal flora of Guyana”. Bolivian Journal of Chemistry, Vol.31, No.2, pp.28-41.
6. **Gomathinayagam Subramanian**, Brij B.Tewari and Rekha Gomathinayagam (2014), “Studies of antimicrobial properties of Different leaf Extract of Tulsi (*Ocimum tenuiflorum*) against Human pathogens”. American International Journal of Contemporary Research (AIJCR), Vol. 4, No.8.pp149-156.
7. Brij B. Tewari, **Gomathinayagam Subramanian** and Rekha Gomathinayagam (2014). “ Antimicrobial properties of *Carica papaya* ( Papaya) Different leaf extract against *E. Coli*, *S. aureus* and *C. albicans*”. AJPP (1) (1). Pp 025-039.
8. **Gomathinayagam, S.**, M.Rekha and Lydia Ori (2013), “Antibacterial Activities of Ethanolic Extract of *Carica papaya* on *Escherichia coli* and *Staphylococcus aureus*”, Journal of Pure and Applied Microbiology, Vol.7 (Spl. Edn). pp 471-474.

9. **Subramanian Gomathinayagam**, Murugesan Rekha and Lydia Ori (2013), "Spot diagnosis of fungicide (carbendazim) resistance in rice by using PCR with reference to *Pyricularia oryzae*" International Journal of Science, Environment and Technology, Vol. 2, No 5, 2013, pp 1039 – 1058.
10. Raja, V, Da Silva, P, Flory, P. **Gomathinayagam, S** and Narine, C. (2013). A statistical survey of knowledge, attitude and practice (KAP) of cash crop farmers in Black Bush Polder (Region 6) Guyana, South America. Abstract. Journal of Applied Statistical Association of Sri Lanka (JASAS).
11. **Gomathinayagam, S.**, Sherena Amela Persaud and M. Rekha (2012), "Comparative study of biological agents, *Trichoderma harzianum* and *Trichoderma viride* for controlling Brown spot disease in rice". Journal of Bio Pesticide, 5 (Supplementary): pp 28-32.
12. Raymond.C. Jagessar and **S. Gomathinayagam**, (2012). "Antimicrobial activity of 2, 2-Bipyridinedichloroplatinum (ii), C<sub>10</sub>H<sub>8</sub>Cl<sub>2</sub>N<sub>2</sub> PT, IJPSR, 2012; Vol. 3(12): pp 4725-4729.
13. Balasubramanian, N., V, Thamil Priya, **S. Gomathinayagam** and D. Lalithakumari (2012). "Fusant Trichoderma HF9 with Enhanced Extracellular Chitinase and Protein Content". Journal of Applied Biochemistry and Microbiology, Vol.48, No. 4, pp 409-415.
14. Raymond. C. Jagessar & **Subramanian Gomathinayagam** (2012) "Antimicrobial activity of Benzene Ruthenium (II) chloride dimer". Journal of Pharmacy and Clinical Sciences (JPCS), Vol. (4), pp 1-6.
15. **Subramanian Gomathinayagam** & Raymond. C. Jagessar (2011) "Antimicrobial activity of 2,2-Bis (3-hydrox-1,4-naphthoquinone" Journal of Pharmacy and Clinical Sciences(JPCS), Vol.(2), pp 1-8.
16. Jagessar, R.C., and **S. Gomathinayagam** (2011) "Antimicrobial activity of amide, N<sup>4</sup> – Benzoylcytosine". Journal of Pharmacy and Clinical Sciences (JPCS), Vol. (1). pp 12-19.
17. **Gomathinayagam. S.**, and Raymond C. Jagessar (2011) "Enhanced Antimicrobial Activity of a Supramolecular System formed via Hydrogen Bonding Interaction of a 5, 10, 15, 20 *Meso tetrakis* Pentafluorophenyl 21H, 23H Porphine with Mesoporphyrin (ix) Dihydrochloride". Journal of Pure and Applied Microbiology, Vol.5 (1). pp 31- 37.
18. Raymond.C. Jagessar, Akini. Mars and **S. Gomathinayagam** (2011) " Selective antimicrobial properties leaf extract of *Samane saman* against *Candida albicans*, *Staphylococcus aureus* and *Escherichia coli* using several microbial methods" Journal of American Science, 7 (3): pp 108-119.
19. Jagessar, R.C., and **Gomathinayagam, S** (2010) " Mesoporphyrin (ix) Dihydrochloride as a Non-Selective Antimicrobial Agent". Journal of Pure and Applied Microbiology, Vol.4 (2). pp 507-512.
20. Orson La Rose, **S. Gomathinayagam**, Gregory Blyden and Phillip Da Silva (2010) " A Study of Antimicrobial Activities of Plant Extracts (*Talisia squarrosa* and *Mora gonggrijpii*)". Journal of Pure and Applied Microbiology, Vol.4 (2).pp517-523.

21. Balasubramanian, N., V. Thamil Priya, **S. Gomathinayagam**, V. Shanmugaiah, J. Jashnie, D. Lalithakumari (2010) "Effect of Chitin Adapted and Ultra Violet Induced Mutant of *Trichoderma harzianum* Enhancing Biocontrol and Chitinase Activity". Australian Journal of Basic and Applied Sciences, 4(10): pp 4701-4709.
22. **Gomathinayagam. S**, M. Rekha, S. Sakthivel Murugan and R.C. Jagessar (2010) "The biological control of paddy disease brown spot (*Bipolaris oryzae*) by using *Trichoderma viride* in vitro condition" . Journal of Biopesticide (1Special Issues) pp. 093-095.
23. **Gomathinayagam. S**, Chanda Kissoon, M. Rekha, S. Sakthivel Murugan and Mahendra Persaud (2010) " The screening and in vitro development of fungicide resistance to sheath blight disease (*Rhizoctonia solani*) of rice" e- journal of the Caribbean Academy of Sciences, Vol-4, No.1.
24. **Gomathinayagam, S** and R.C.Jagessar (2010) " Selective Antimicrobial Activity of 5,10,15,20-meso-tetrakis Pentafluorophenyl 21H,32H- prophine". Journal of Pure and Applied Microbiology, Vol.4 (1).pp 41-46.
25. Jagessar R.C and **Gomathinayagam, S** (2010) " Antifungal vs Antibacterial Activity of  $\alpha$ ,  $\beta$ -unsaturated Carbonyl Compound". Journal of Pure and Applied Microbiology, Vol.4 (1). pp 63-68.
26. Manoharan, P.T., V. Shanmugaiah, N. Balasubramanian , **S. Gomathinayagam**, Mahaveer P. Sharma, K. Muthuchelian (2010). "Influence of AM fungi on the growth and physiological status of *Erythrina variegata* Linn. grown under different water stress conditions" European Journal of Soil Biology 46: pp151-156.
27. **Gomathinayagam, S**. M.Rekha, S. Sakthivel Murugan and R. C. Jagessar (2009) " Biological control of rice disease (Blast) by using *Trichoderma viride* in laboratory conditions". Proceedings of the Caribbean Food Crops Society, 45: pp79-86.
28. Shanmugaiah.V, N. Balasubramanian, **S. Gomathinayagam**, P. T. Manoharan and A. Rajendran (2009). "Effect of single application of *Trichoderma viride* and *Pseudomonas fluorescens* on growth promotion in cotton plants". African Journal of Agriculture Research Vol.4 (11), pp 1220-1225.
29. Raymond C. Jagessar and **S. Gomathinayagam**, N. Balasubramanian, V. Shanmugaiah and P.T.Manoharan (2009). "Synthesis of  $\alpha$ ,  $\beta$  -unsaturated carbonyl compound and effect on antifungal and antibacterial activity". Journal of Pure and Applied Microbiology, Vol. 3(2), pp 415-420.
30. Jagessar, R.C, A. Mars and **S. Gomathinayagam** (2009) " Leaf extract of *Smilax schomburgkiana* exhibit selective antimicrobial properties against pathogenic microorganisms". Life Science Journal .6(1): pp 76-83.
31. **Gomathinayagam, S** (2008). "Microbial population of Guyana Soils". In Proceedings of Caribbean Food Crops Society 44<sup>th</sup> Annual Meeting, University of Florida, Miami, USA, Vol. XLIV – Number 2, pp 317-332.



32. Shanmugaiah, V., N. Balasubramanian, **S. Gomathinayagam**, P. T. Manoharan and A. Rajendran (2008). "Effect of *Pseudomonas fluorescens* and *Trichoderma viride* on growth promotion in Sorghum" Ind. J. Bot. Res. Volume-4 (.3&4), pp 453-460.
33. Manoharan, P. T., M. Pandi, V. Shanmugaish, **S. Gomathinayagam** and N. Balasubramnian (2008). Effect of vesicular arbuscular mycorrhizal fungus on the physiological and biochemical changes of five different tree seedlings grown under nursery conditions. African Journal of Biotechnology, Vol.7 (19), pp 3431-3436.
34. Raymond C. Jagessar, Arjoon Mohammed and **S. Gomathinayagam** (2008). Antibacterial and antifungal activity of leaf extracts of *Peltophorum pterocarpum*, against *Staphylococcus aureus*, *Escherichia coli* and *Candida albicans* CAS -009. In the 16<sup>th</sup> CAS Biennial Conference on Science and Technology, Grenada Proceedings, pp-25-33.
35. Raymond C. Jagessar, Arjoon Mohammed and **S. Gomathinayagam** (2008). Antibacterial and antifungal activity of leaf extracts of *Luffa operculata* against pathogenic *Candida albicans*, *Staphylococcus aureus* and *Escherichia coli* CAS -009. In the 16<sup>th</sup> CAS Biennial Conference on Science and Technology, Grenada Proceedings, pp-53-60.
36. Jagessar, R.C., A. Mohamed, and **S. Gomathinayagam** (2008) "Selective antimicrobial properties of *Phyllanthus acidus* leaf extract against *Candida albicans*, *Escherichia coli* and *Staphylococcus aureus* using Stock diffusion, Well diffusion, Streak plate and a dilution method" .Journal of Nature and Science, 6(2): 24- 38.
37. Jagessar, R.C., A. Mohamed, and **S. Gomathinayagam** (2008) "An evaluation of the Antibacterial and Antifungal activity of leaf extracts of *Momordica charantia* against *Candida albicans*, *Staphylococcus aureus* and *Escherichia coli*" Journal of Nature and Science, 6(1): 1- 14.
38. Jagessar, R.C., A. Mohamed, and **S. Gomathinayagam** (2007) " Antibacterial and Antifungal activity of leaf extract of *Luffa operculata*, vs *Peltophorum pterocarpum*, against *Candida albicans*, *Staphylococcus aureus* and *Escherichia coli* " .Journal of Nature and Science, 5(4): 81-93.
39. **Gomathinayagam, S.**, S. P. Kamala Nalini and J. Lalithakumari (2005). "A novel bacterium for biological control of broad spectrum of pathogens". Mitt. Biol. Bundesanet.Land-orstwirtschaft.408, pp 314-319.
40. Sastry. T. P., C. Rose., **S. Gomathinayagam**., and Ganga Radhakrishnan (1998) " Chemically Modified Fibrin-Gelatin Composites: Preparation and Characterization". J. App. Poly. Sci. 68, pp 1109-1115.
41. Sastry.T.P., C. Rose., **S. Gomathinayagam**., , M. Noorul Nazer, and Vijayalakshimi Madhavan (1997). "Graft- Copolymerization of Feather Keratin hydrolyzate: Preparation and Characterization". J. Poly .Mater. 14, pp 177-181.
42. Sastry.T.P., Vijalakshimi Madhavan, M. Noorul Nazer, **S. Gomathinayagam**, C. Rose, and N. Muralidhara Rao (1997). "Graft copolymerisation of Glycidyl Methacrylate onto the Fibrin Prepared from slaughterhouse waste". J. Macromol. Sci. Pure and Appl. Chem. A34 (5), pp 915-925.

43. **Gomathinayagam, S.,** S. Pitchai, Mahadeswara Samy and N. Muralidhara Rao (1997) “ A simple method for recovery of chromium from tannery effluents using Cynobacteria” . Proceedings of 5<sup>th</sup> National Symposium on Environment. Tamil Nadu Agriculture University, Coimbatore, Tamil Nadu, India. pp 105-106.

**Patents filed:**

1. “Process for preparation of chemically modified Fibrin **Sheet** prepared from slaughterhouse waste” Ref. No. SCIM/ P96 PSE 6a/03, Central Leather Research Institute, Adyar, Chennai – 600 020 (1998).
2. “Process for preparation of chemically modified Fibrin **Powder** prepared from slaughterhouse waste” Ref. No. SCIM/ P96 PSE 6b/04, Central Leather Research Institute, Adyar, Chennai – 600 020 (1998).
3. “Process for preparation of chemically modified Fibrin **Sponge** prepared from slaughterhouse waste” Ref. No. SCIM/ P96 PSE 6c/05, Central Leather Research Institute, Adyar, Chennai – 600 020 (1998).

**Laboratory manuals:**

1. Selvakumari G and **S. Gomathinayagam** (2007). Study aid for the fundamentals of soil science.
2. Selvakumari G and **S. Gomathinayagam** (2007). Practical record for Soil fertility for Agriculture students.
3. Selvakumari G and **S. Gomathinayagam** (2007). Laboratory Guide for soil and water analysis for management of problem soils.
4. Lalithakumari D and **S. Gomathinayagam** (2005). Laboratory manual for Edible Mushroom cultivation.
5. Lalithakumari D and **S. Gomathinayagam** (2005). Manual Cultivation of Edible mushroom.

**Books :**

1. **Gomathinayagam, S.,** (2013) “Molecular Characterization of plant pathogens”. In LAP LAMBERT Academic Publishing is an imprint of AV Akademikerverlag GmbH & Co. KG Heinrich-Böcking-Str. 6-8, 66121, Saarbrücken, Germany. pp 1-144.
2. Lalithakumari D., V. R. Prabavathy, K. Mathivanan, P. Vijayapalani, A .Elavarasan, S. **Gomathinayagam,** T. Ganesan and Mathivanan (2003). Intelligent chemicals for integrated disease management In: Innovative Methods and Techniques for Integrated Pest and Disease Management. (Eds. Mathivanan N., V.R. Prabavathy, and **S. Gomathinayagam**), Centre for Advanced Studies in Botany, University of Madras, Chennai, India, pp.109-126.

**Chapter in Books:**

1. **Gomathinayagam\*, S.,** N. Balasubramanin, V. Shanmugaiah M.Rekha and P. T. Manoharan (2011)“ Molecular characterization of Carbendazim resistance of plant pathogen (*Bipolaris oryzae*”) in Fungicide –Beneficial and Harmful aspects (Ed. Dr. Noorudin Thajuddin),

Publisher *Intec*- Open Asser Publisher, Croatia. pp 197- 218.

2. Lalithakumari D and **S. Gomathinayagam** (1998). "Evaluation of Fungicide Resistance Risk in Phytopathogenic Fungi". Chapter – 17. Ed, S. Nagarajan and D.P. Singh, Kalyani Publishers, Ludhiana – 141 008, India, pp 177- 182.

#### **International (Research paper Presentation)**

1. **Gomathinayagam, S** and Devindra Khedna, " Control of brown spot (*Bipolaris oryzae*) disease in rice using a biological control agent *Trichoderma viride*" in International Conference on Integrated Disease Management on Tropical Vegetates, Organized by Departments of Life Sciences, Faculty of Sciences and Technology, The University of the West Indies, St. Augustine Campus, from 16-17<sup>th</sup>, June 2016, Trinidad & Tobago, West Indies.
2. Ansari, A.A. N. Hunte, S. Jaikishun and **S. Gomathinayagam**, " Control of fungal disease of tomato (*Lycopersicon esculentum*) fruits using vermiwash produced from medicinal plants in Guyana". " in International Conference on Integrated Disease Management on Tropical Vegetates, Organized by Departments of Life Sciences, Faculty of Sciences and Technology, The University of the West Indies, St. Augustine Campus, from 16- 17<sup>th</sup> , June 2016, Trinidad & Tobago, West Indies.
3. **Gomathinayagam, S.** and Hema Leonard, "The control of sheath blight (*Rhizoconia solani*) disease in rice using a biological control agent *Trichoderma viride* in vitro condition and pot culture" in CARISCIENCE Annual General Meeting(AGM) and Conference, Organized by The University of West Indies, St. Augustine Campus, Trinidad, from 25-27<sup>th</sup> November 2015. Trinidad, West Indies.
4. **Gomathinayagam, S.** "Uses of soil microorganism with reference to H2K agro" in Lunching H2K Agro, Organized by the Health Care Jamaica. From July 7-11<sup>th</sup> 2015, Jamaica. West Indies.
5. **Gomathinayagam, S,** Rekha,G and Lydia Ori. "The use of *Trichoderma harzianum* as a biological control agent for *Sagittaria guayanensis* (duckweed) found in rice cultivation by *in vitro* method" in 51<sup>st</sup> Caribbean Food Crops Society (CFSC) Annual meeting, organized by University of Suriname from 19-25 July 2015. Paramaribo, Suriname.
6. **Gomathinayagam, S** and G. Rekha "Biological control of red rot disease in sugarcane by using *Trichoderma viride* in vitro condition" Commonwealth Science Conference, organised by The Royal Society of London collaboration with Department of Science and Technology, Government of India, from 25-28<sup>th</sup> November 2014, The Lalit Ashok Hotel, Bengaluru, India.
7. **Gomathinayagam, S** and G. Rekha " Biological control of rice disease (Balst) by using *Trichoderma harzianum* in vitro condition" Research Conference organized by Ministry of Agriculture, Guyana from October 20-22<sup>nd</sup> 2014, Guyana International Conference Centre, Georgetown, Guyana, South America.
8. **Gomathinayagam, S.** "Biological control of red rot of sugarcane disease by using *Trichoderma harzianum* in vitro condition" 1<sup>st</sup> International conference in Sustainable Development Science Education, Research, and Innovation & Enterprise" Organized by Faculty of Natural Science, University of Guyana, Turkeyen, August 12-14<sup>th</sup>, 2013, International Conference Center, Georgetown, Guyana, South America.

9. Raja, V, Da Silva, P, Flory, P. **Gomathinayagam, S** and Narine, C. (2013): A statistical survey of knowledge, attitude and practice (KAP) of cash crop farmers in Black Bush Polder (Region 6) Guyana, south America. Statistics, Science, and Society: New Challenges and Opportunities: 2013 IISA Conference January 2-31, 2013, International Indian Statistical Association Chennai, India.
10. **Gomathinayagam, S.**, Rawl Phillips and M. Rekha, "Survey and Identification of microbial population in Sugarcane Estate soils", 18<sup>th</sup> General meeting and Conference in "Hazard Mitigation: Protecting Caribbean Infrastructure- Securing Caribbean Communities" organized by The Caribbean Academy of Sciences, November 2-4<sup>th</sup> 2012, Bridgetown, Barbados, West Indies.
11. **Gomathinayagam, S.**, Sherena Amela Persaud and M. Rekha "Comparative study of biological agents, *Trichoderma harzianum* and *Trichoderma viride* for controlling Brown spot disease in rice", 3<sup>rd</sup> Biopesticide International Conference, organized by St. Xavier's College (Autonomous) November 28<sup>th</sup> -30<sup>th</sup>, 2011, at Palayamkottai, Tamil Nadu, India.
12. **Gomathinayagam, S.**, Theradi Mani, Juliet Hepziba and M. Rekha, "Eco-friendly management of fruit rot disease chili (*Capsicum annum* L) caused by *Colletotrichum capsici*". In 47<sup>th</sup> Caribbean Food Crops Society, July 3<sup>rd</sup>-9<sup>th</sup>, 2011, Organized by Ministry of Agriculture, Government of Barbados, The Lloyd Erskine Sandiford Centre, Bridgetown, Barbados, and West Indies.
13. **Gomathinayagam, S.** "Spot diagnosis of fungicide resistance by using PCR" in Caribbean Science Foundation, September 21<sup>st</sup> -23<sup>rd</sup>, 2010, Organized by CARISCIENCE, The Grafton Beach Resort, Tobago, Trinidad & Tobago, West Indies.
14. **Gomathinayagam, S.**, M. Rekha and S. Sakthivel Murugan "Application of PCR for Diagnosis of Fungicide Resistance in the Rice Pathogen" in 5<sup>th</sup> International Rice Blast Conference, August 12<sup>th</sup> -14<sup>th</sup>, 2010, Organized by USDA-ARS and University of Arkansas Division of Agriculture, The Peabody Hotel, Little Rock, Arkansas, USA.
15. Manoharan, P.T. Shanmugaiah, V. Balasubramanian, N. **Gomathinayagam, S.** Sharma, M.P. Muthuchelian, K. Presentation of poster "Effect of vesicular arbuscular mycorrhizal fungus on the growth and physiological status of *Sterculia foetida* L., grown in different soil conditions" in The 9<sup>th</sup> International Mycological Congress, The Biology of Fungi. 1<sup>st</sup> -6<sup>th</sup>, August, 2010, Edinburgh, United Kingdom,(UK).
16. **Gomathinayagam, S.**, Chanda Kissoon, M. Rekha, S. Sakthivel Murugan, and Mahendra Persaud "The screening and in vitro kit development of fungicide resistance to sheath blight disease (*Rhizoctonia solani*) of rice" in A workshop on Strengthening the Research Culture in the Caribbean and A TWAS- ROLAC Caribbean Young Scientist & Technologist Conference, hosted by the University of Technology, January 20<sup>th</sup> -22<sup>nd</sup>, 2010 at Ocho Rios, Jamaica, West Indies.
17. **Gomathinayagam, S.**, M. Rekha and S. Sakthivel Murugan. "Biological control of paddy disease (Brown spot) by using *Trichoderma viride* in vitro condition" 2<sup>nd</sup> Biopesticide International Conference, organized by St. Xavier's College (Autonomous) November 26<sup>th</sup> –

28<sup>th</sup>, 2009, at Palayamkottai, Tamil Nadu, India.

18. **Gomathinayagam, S.**, “Biological control of rice disease (Blast) by using *Trichoderma viride* in laboratory condition” Caribbean Food Crops Society, 45<sup>th</sup> Annual Meeting, Organized by University of Puerto Rico, July 12<sup>th</sup> -17<sup>th</sup>, 2009, at St. Kitts and Nevis, West Indies.
19. **Gomathinayagam, S** and Chandratte Thakoordeen. “An evaluation of the fertility status of soils and the quality of irrigation water from number 52-74 Village (Region 6)” on International Conference on Tropical Agriculture “Overcoming Challenges to Developing Sustainable Agri-Food System in the Tropic” November 30<sup>th</sup> –December 3<sup>rd</sup> 2008, The University of the West Indies, St. Augustine, Trinidad, West Indies.
20. **Gomathinayagam, S** “ Biological control of paddy diseases (Brown spot) by using *Trichoderma harzianum* in vitro condition” an International Rice Conference on “ Meeting Rice Market Demands” November 7<sup>th</sup> -8<sup>th</sup> , 2008, organized by Guyana Rice Development Board and the University of Guyana, at Guyana International Conference Centre, Turkeyen, Greater Georgetown, Guyana.
21. **Gomathinayagam, S.** “Microbial population of Guyana Soils” on Caribbean Food Crops Society ,44<sup>th</sup> Annual Meeting, Organized by University of Florida from July 13<sup>th</sup> -17<sup>th</sup> ,2008, at Miami, Florida, USA.
22. Jagessar R.C., A. Mohammed, **S. Gomathinayagam**, “Antimicrobial activities of selected tropical plants”, 1<sup>st</sup> International conference on the status of Biological Sciences in the Caribbean and Latin America Societies, Buddy’s International hotel, Providence, September 24-25, 2007, Guyana. South America.
23. **Gomathinayagam S.**, S. P. Kamala Nalini, and. D. Lalithakumari, “A novel Bacterium for biocontrol of broad spectrum of pathogens” 1<sup>st</sup> International Symposium on “Biological control of Bacterial Plant disease” October 23<sup>rd</sup> –26<sup>th</sup> , 2005, Organized by Federal biological Research Centre for Agriculture and Forestry (BBA), Institute for Biological control, Heinrichstr.243, 64287, Darmstadt, Germany.
24. **Gomathinayagam S.**, and D. Lalithakumari, “Fungicide resistance in *Fusarium oxysporum* *F. sp. Lycopersici* (SACC.)” International Symposium on “ Milestones in the Development of Mycology and Plant Pathology” March 28<sup>th</sup> – 30<sup>th</sup> 2002, Organized by Centre for Advanced Studies in Botany, University of Madras, Guindy Campus, Chennai- 25. India.
25. **Gomathinayagam S.** and D. Lalithakumari “Morphological and sensitivity variations in Hexaconazole resistant mutant of *Bipolaris oryzae* and *Fusarium oxysporum*”. SAARC Conference on “Biotechnology in Agriculture, Industry and Environment” December 28<sup>th</sup> –30<sup>th</sup> 2001, Organized by All India Microbiologists Association, Karad. Maharashtra. India.
26. **Gomathinayagam S.**, and D. Lalithakumari, “Development of resistance in *Bipolaris oryzae* and *Fusarium oxysporum* to Bavistin –Monitor and control Strategies”. International Conference on “New Horizons in Biotechnology” April 18<sup>th</sup> – 21<sup>st</sup> 2001, Organized by Regional Research Laboratory, Trivandrum, Kerala. India.

27. **Gomathinayagam S.**, and D. Lalithakumari, “Rapid field Diagnosis of Benzimidazole Resistance in Rice Pathogen”. Asia-pacific International Congress on the Biology of the Environment, November 21<sup>st</sup> – 24<sup>th</sup> 1999. National University of Singapore (NUS), Singapore.

### **National**

1. Shanmugaiah, V., Mathivanan, N., Balasubramanian, N., **Gomathinayagam, S** and P.T Manoharan, 2010. “Diversity of Chitinolytic Bacteria from Diverse Agriculture field Rhizosphere. “National Conference on Biodiversity for sustainable Development: Threats, Indicators, Climate Change, Poverty Alleviation and Targets for Safeguarding Biodiversity”. August 25-27, 2010, Madurai Kamarajar University, Madurai, Tamil Nadu, India.
2. **Gomathinayagam, S.** “Evaluation of Vegetative growth of selected crops in hydroponics method” in Annual Research Conference organized by National Agricultural Research Institute (NARI), Mon Repos, Guyana, October 12<sup>th</sup> -13<sup>th</sup> 2009, at Guyana School of Agriculture, Guyana, South America.
3. **Gomathinayagam, S.** “Intelligent chemical for pest and disease management’s” In NARI Annual Research conference October 13<sup>th</sup> -14<sup>th</sup> 2008, National Agricultural Research Institute, Mon Ropes, Guyana, South America.
4. **Gomathinayagam. S.**, K. Mathivannan and D. Lalithakumari. “Beneficial chemicals used for eco-friendly disease Management”. National Symposium on “Eco-friendly Approaches for Plant Disease Management” January 22<sup>nd</sup> –24<sup>th</sup> 2001. In Centre for Advanced Studies in Botany, University of Madras, Chennai- 600 025. India.
5. **Gomathinayagam. S.**, and D. Lalithakumari. “Level of resistance in the laboratory mutants resistant to Bavistin” National symposium on “Role of Resistance in Intensive Agriculture” February 15<sup>th</sup> – 17<sup>th</sup> 2000. The Directorate of Wheat Research, Karnal – 132 001. India.
6. Sastry. T.P, C. Rose, M. Noorul Nazer, **S. Gomathinayagam** and Muralidhara Rao. N. “Recovery of Fibrin from slaughterhouse waste to minimize Pollution”. LERIG – 1997, Central Leather Research Institute (CLRI), Adyar Chennai – 600 020. India.
7. Sastry. T.P, C. Rose, and **S. Gomathinayagam.** “Preparation of Chemically modified Fibrin-Gelatin composite and its possible use as a wound dressing” IX national Conference on New Horizons in Biomaterials Research, October 3<sup>rd</sup> – 4<sup>th</sup> 1997, Indian Institute of Chemical Technology (IICT), Hyderabad – 7. India.
8. **Gomathinayagam. S.**, S. Pichai, Mahadeswara Swamy and N. Muralidhara Rao. “Simple method for recovery of Chromium from Tannery Effluents Using Cyanobacteria”. 6<sup>th</sup> National Symposium on Environment, January 6<sup>th</sup> –9<sup>th</sup> 1997, Tamil Nadu Agricultural University (TNAU), Coimbatore-6 India.
9. **Gomathinayagam. S.**, Pichai. S. Mahadeswara Swamy and N. Muralidhara Rao. “Use of Cyanobacterial Culture in Vegetative Propagation of Ornamental Plants”. 37<sup>th</sup> Association of

Microbiologist India (AMI) Conference, December 4<sup>th</sup> - 6<sup>th</sup> 1996, Indian Institute of Technology (IIT), Chennai- 600 030. India.

**Symposium/Workshop/Training conducted:**

1. I have visited and gave special lecturer in “Diagnosis and control of Black Sigatoka and Moko disease in Banana and Plantain in St. Vincent and Trinidad from September 1 – 5<sup>th</sup> 2014. West Indies.
2. I have organized CARISCIENCE Anural General Meeting and National Symposium “ Recent Advances in Soil and Disease management in Crop Protection ( issues and Challenges, Towards Sustainable production Practices) “ August 29-30<sup>th</sup> 2014, at University of Guyana, Berbice Campus, Tain, Guyana, South America.
3. I have conducted training programme in “ **Crop Protection, Biotechnology and IPM**” from 9<sup>th</sup> June to 21<sup>st</sup> 2014, in AdeK Kom University, Suriname.
4. Organized one National symposium in “Rice cultivation of Suriname and Guyana” at Anton Kom Universiteit Van Suriname, Suriname, January 16<sup>th</sup> 2013.
5. I have conducted training programme in “Plant **Protection and Soil Management**” from 5<sup>th</sup> - 25<sup>th</sup> January 2013, in AdeK Kom University, Suriname.
6. I have acted co- organizer of “Trouble shooting in Mushroom cultivation” Workshop on Edible mushroom cultivation, June 20<sup>th</sup> -30<sup>th</sup> 2005. University of Guyana, Berbice Campus, Tain, Guyana, South America.
7. Workshop on “**Edible mushroom cultivation**”, June 20<sup>th</sup> -30<sup>th</sup> 2005. University of Guyana, Berbice Campus, Tain, Guyana, South America.
8. Workshop on “**Protoplast Fusion Technology for Strain Improvement in Filamentous Fungi**”, December 16<sup>th</sup> – 21<sup>st</sup> 2002. Centre for Advanced Studies in Botany, University of Madras, Chennai –600 025, India.
9. Workshop on “**Protoplast Fusion Technology for Strain Improvement in Filamentous Fungi**”, May 22<sup>nd</sup> – 27<sup>th</sup> 2000. Centre for Advanced Studies in Botany, University of Madras, Chennai –600 025. India.
10. Workshop on “**Protoplasts Fusion Technology for Strain Improvement in Filamentous Fungi**”, April 5<sup>th</sup> - 26<sup>th</sup> 1999. Centre for Advanced Studies in Botany, University of Madras, Chennai – 600 025. India.

**Conference participated/ Attended**

1. Attended and Participated CARISCIENCE conference and Annual General Meeting (AGM), from October 6-8<sup>th</sup> 2016, Organized by University of Suriname (Anton Kom University), Paramaribo, Suriname.
2. Participated and Chaired Session in 2<sup>nd</sup> High Level CARICOM Science and Technology (S& T) Meeting on “ Strengthening and Utilizing Science & Technology in the Caribbean” organized by

CARICOM Science, Technology and Innovation Committee jointly with CARISCIENCE, UNESCO Cluster Office for the Caribbean & TWAS Regional Office for Latin America and the Caribbean, from March 26-28<sup>th</sup>, 2015, Grenada, West Indies.

3. Attended Canadian Bureau for International Education (CBIE's) 48<sup>th</sup> Annual Conference, from November 19-22<sup>nd</sup> 2014, The Westin Hotel, Ottawa, Canada.
4. Attend and participated CARISCIENCE conference and AGM 2013, November 14-17, 2013, Hotel Riu, Mantego Bay, Jamaica, West Indies.
5. Attended and participated 2<sup>nd</sup> International Conference for Sustainable Agriculture, February 20-21, 2013, Mississippi Coast Coliseum & Convention Centre, Biloxi, Mississippi, USA, Hosted by Bio Soil Enhancers, Inc. Hattiesburg, MS 39401, USA.
6. Attended and participated CARISCIENCE Annual General Meeting (AGM), November 11-12<sup>th</sup> 2012. Organized by INRA Antilles-Guyane Centre, Domaine Duclos-Prised Eau, Peti-Bourg, Guadeloupe. West Indies.
7. Attended the "2<sup>nd</sup> National level conference in Nanotechnology: Application and Its advantages in natural Science" February 4-5<sup>th</sup> 2011. Sri Paramakalyani Centre of Excellence in Environmental Sciences, Manonmaniam Sundaranar University, Alwarkurichi-627 412, Tamil Nadu, India.
8. Attended the one day conference on "40th Independence Anniversary conference on Sugar in the Caribbean Challenge and Prospective." May 25<sup>th</sup> 2006. Faculty of Social Sciences, Department of Economics, Turkeyen, Guyana, South America.
9. Participated in a two -day symposium on "CARISCIENC" November 3<sup>rd</sup> - 4<sup>th</sup> 2005. Faculty of Natural Sciences, University of Guyana, Turkeyen, Guyana, South America.
10. Participated in a one-day National Conference on "Recent Trends in Condensed Matter Physics (NCCM)" July 6<sup>th</sup> 2002. In Department of Nuclear Physics, University of Madras, Chennai – 25, India.
11. Participated in the National Symposium on Role of Microbes in the Management of Environmental Pollution, November 13–14<sup>th</sup> 1998. Department of Microbiology, Punjab University, Chandigarh. India.
12. Participated in the one day seminar on "Career Decision" March 18<sup>th</sup> 1994. Thiyagarajar College of Preceptors, Madurai, Tamil Nadu, India.

#### **Workshop participated/Attended**

1. **"Agroecology workshop"** from 12-17<sup>th</sup> November 2015, Organized by INRA Antilles-Guyane Centre, Domaine Duclos-Prised Eau, Peti-Bourg, Guadeloupe. West Indies.
2. **"Competition law and policy in CARICOM"**, August 12<sup>th</sup>, 2009. Guyana and CARICOM Competition Commissions and the 9<sup>th</sup> European Development Fund, International Conference Centre, Liliendall, Guyana.
3. **"Overcoming Challenges to Developing Sustainable Agri.-Food System in the tropic"**



December 4<sup>th</sup>–5<sup>th</sup> 2008, The University of the West Indies, St. Augustine, Trinidad, West Indies.

4. “**Radiochemistry & Application of Radioisotopes**”, September 12<sup>th</sup> – 20<sup>th</sup>, 2001. 45<sup>th</sup> BRNS- IANCAS National Workshop. Indian Institute of Horticultural Research (IIHR), Bangalore. India.
5. “**Methods of Gene Cloning**” January 20<sup>th</sup> – 31<sup>st</sup> 2000. Centre Plant Molecular Biology, Osmania University, Hyderabad – 7. India.

### **Synopsis of Ph.D., thesis work**

Benzimidazole compounds are widely used as fungicides and antihelmintics in agriculture. They have a unique site specific mode of action; point mutation in the  $\beta$ -tubulin gene has been shown to confer the resistance to the benzimidazole fungicide benomyl. However resistance to benzimidazoles may also be due to alteration in membrane permeability.

A simple technique has been developed in my research to evaluate the resistance of various plant pathogens to benzimidazole compounds in the field. With this method, the level of resistance can be evaluated as well as the mechanism of resistance can be detected. These findings may suggest alternate chemical approaches to breaking the resistance.

The objective of the work was to detect the level of benzimidazole resistance in rice the using Allele Specific Oligonucleotides analysis. The appropriate DNA sequence of two 22 mer oligonucleotides was amplified using PCR techniques, which were identical bete-tubulin gene in sequence to codon 359-365 of *Venturia inaequalis*, were used as primers. The amplification product were subjected to hybridization with ASO probes (ASO probes were designated as ASO-S (Sensitive) ASO -LR (Low Resistance), ASO-MR (Moderate Resistance), ASO-HR (High Resistance) and ASO -VHR (Very High Resistance). With this PCR/ASO analysis, any infected sample from the filed can be immediately evaluated and suggestions can be given to control the disease using alternate chemicals depending on the mechanism of resistance.

**Key words:** Resistance, ASO, Benzimidazole, *Venturia inaequalis* PCR