

## Curriculum–Vitae

### Contact Address:

#### **Dr. Salah eddin Khabbaz**

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### **Summary:**

A doctorate in Agricultural Plant Pathology at Tamil Nadu Agricultural University (TNAU) Coimbatore, India. With a major specialization in biological control and Molecular Biology. Have good experience in characterization, detection and diagnosis of plant pathogens using molecular techniques. Also having good experience in laboratory and field techniques related to biological control of plant pathogens using PGPR and fungal antagonists against Wheat, Rice, vegetable crops and Cotton diseases.

### **Aim:**

To utilize extensive background and experience in Plant Pathology, Microbiology, Biotechnology and Molecular biology techniques to do innovative research.

### **Professional Experience:**

#### **Post-Doctoral fellowship (2011 till now)**

Currently, I am working as post doc. with Dr. Pervaiz A. Abbasi, at Southern Crop Protection and Food Researcher centre (SCPFRC), Agriculture and Agri- Food Canada (AAFC), London, Ontario and in collaboration with Dr. George Lazaroviits Adjunct Professor, Department of Biology, University of Western Ontario, London, Canada. I am working on biological control of soil-borne plant pathogens.

#### **2003-2006: Ph.D. in Plant Pathology, TNAU**

- Undergone courses including Molecular biology of pathogenesis and disease resistance, Work experience in PR-proteins, PCR, RT-PCR, Gene cloning, Hybridization techniques, Phylogenetics.
- Dissertation title: “Selection of Plant Growth Promoting Rhizobacteria (PGPR) through Molecular and biochemical approaches to manage Root Rot and Bacterial Blight of Cotton”

- Synopsis: Characterized various isolates of *Pseudomonas* spp. and *Bacillus* spp. at molecular level by SDS- PAGE analysis of proteins and RAPD-PCR using oligonucleotide primers. Developed management strategies using formulated product of the bio control agent for the management of the disease under lab and field conditions. Developed the consortial formulation of bio control agents and tested against cotton root rot and bacterial blight. Experienced with plant defences enzymes studies.

**2000-2002: M. Sc in Plant Pathology, TNAU.**

- Thesis Title: “Sero-diagnosis of bacterial pathogen *Xanthomonas axonopodis* pv. *malvacearum* (E.F. Smith Vauterin) – A causal agent of bacterial blight of cotton and its management”
- Synopsis: Developed a sand paper inoculation technique for proving the pathogenicity of *Xanthomonas a. pv. malvacearum* (Xam) in cotton as a successful story for the first time. Similarity among the various isolates of Xam was done based on the protein profile. Developed polyclonal antiserum for the specific detection of *X. a. pv. malvacearum*. Standardised the ELISA technique and developed a disease management strategy under greenhouse conditions using antagonistic bacterial formulation.

**Additional Qualification:**

**Advanced Diploma in Bioinformatics (Passed with `A` grade).**

Include Biological concepts, computer concepts, bioinformatics basics, web programming, sequence analysis, structural biology, molecular modeling and phylogenetic analysis. (January to April, 2004)

**Professional Training**

1. Participated in the High level Workshop on "Regional Capacity Building For Detection of Genetically Modified Organisms (GMOs) and Biosafety for Food and Agriculture", General Commission for Scientific Agricultural Research in Cooperation with ICARDA, and sponsored by FAO, Damascus, Syria .on. 16-17 June, 2010.
2. “DNA and protein sequence analysis” organized by Biotechnology information system network, Department of Biotechnology, Centre for Plant Molecular Biology, Tamil Nadu Agricultural University, Coimbatore – 3, sponsored by the Department of Biotechnology, New Delhi, on 24-26 March, 2004.
3. Undergone the professional training on “Isolation of Plant Growth Promoting Rhizobacteria from Syrian Soil” in the International Center for Agricultural Research in the Dry Areas (ICARDA) Aleppo, Syria for the period of 10.05.2004 to 28.07.2004.

### **Computer Literacy:**

- Having International Computer Driving Licence (IDCL), (2009)
- Advanced Diploma in Bio-informatics (January 2004 - April 2004)
- Working knowledge in statistical packages – Irristat , Agres and Statistix 9.

### **Awards**

Best oral presentation in the National Seminar on” Microbial Technology – mt- 2004” conducted by Dr. G.R. Damodaran Colleges of Science, Coimbatore-14.

### **Participation in the International Seminars:**

1. 83<sup>th</sup> Annual General Meeting of The Canadian Phytopathology Society With International Plum Pox Virus Meeting. Niagara Falls, Ontario, Canada. June 24-27-2012
2. The Second International Conference in Food Industries and Biotechnology and the associated Fair, Al- Baath University - Faculty of Chemical and petroleum Engineering, Homos- Syria ,1- 3- November , 2010.
3. Second International Conference on Food Safety, Al-Baath University- Faculty of Veterinary Medicine, Hama-Syria, 19-21- April, 2010.
3. 10th Arab Congress of Plant Protection, Beirut, Lebanon, 26 - 30, October, 2009
4. First International Conference of Agricultural Science, Strengthening the Role of Scientific Research to Support Plant of Sustainable Agricultural Development, Faculty of Agriculture, Aleppo University, Syria, 13-15 October, 2008.
5. Ninth Arab Congress of Plant Protection, Congress palace, Damascus, Syria, 19-23, Nov, 2006
6. International Conference on Globalization traditional, complementary and alternative systems of medicine held at Faculty of Horticulture, Horticultural College and Research Institute, Tamil Nadu Agricultural University, Coimbatore, India, 16 -18, March, 2006.
7. XVI Annual convention and International Conference on Management of Vector – Borne Viruses held at ICRISAT, Patancheru 502324, Hyderabad, Andhra Pradesh, India, 7-10 February, 2006.
8. International Symposium on Strategies for sustainable cotton production - A global vision, Dharwad, Karnataka, India on 23- 25 November, 2004.
9. Sixth International workshop on Plant Growth Promoting Rhizobacteria (PGPR), Calicut, Kerala, India on 5-10 October 2003.
10. International symposium on molecular approaches for improved crop productivity and quality,

Center for Plant Molecular Biology, TNAU, Coimbatore, India on 22-24 May 2002.

## Work experience

- At present working as Post Doctorate Researcher in the field of biological control of soil borne pathogens at Southern Crop Protection and Food Research Centre, Agriculture and Agri-Food Canada. London, Ontario. Canada.
- Experienced in the identification and characterization of wheat fungal diseases and Mycotoxin and having sound knowledge on conducting the experiments viz., seed health, seeds sterilization and fumigation
- Experienced in grouping and characterization of *Pseudomonas* spp. with Internal Transcribed Spacer (ITS) primers and variability studies.
- Experienced with the isolation, identification of effective microorganisms based on the molecular and biochemical tests and preparation of the EM formulation.
- Experienced in basic bioinformatics program and DNA analysis program (Clustal X, Bio Edit , Sequence management, etc.,).
- Gel electrophoresis for separation of plant and microbial proteins, native gel electrophoresis for several isozymes such as Peroxidase, Polyphenol oxidase,  $\beta$ -1,3-glucanase, Chitinase.
- Western blot, Southern blot and Northern blot analysis
- Polymerase chain reaction studies using DNA and RNA
- Isolation, purification and characterization of fungal toxins and microbial proteins
- Isolation, purification and characterization of endophytic bacteria
- Development of polyclonal antiserum for *Xanthomonas axonopodis* pv. *malvacearum*, serological and immunological studies including ELISA, DIBA etc.,
- Induced Systemic Resistance in plants against pathogens, and antibiotic studies - TLC, HPLC
- Biochemical analysis including defences enzymes, antifungal proteins etc.
- Biological control of plant pathogens using antagonists and plant products
- Gene cloning and sequencing.
- Experienced to detect the antibiotic producing genes of *Pseudomonas* sp, *Bacillus* sp using molecular techniques, extraction of antibiotics and mode of action of biocontrol agents.
- Experienced to find out the genetic relationship among the various isolates of pathogen with protein and nucleotide analysis.

- Developed management strategies using formulated product of the biocontrol agent for the management of the disease under lab and field conditions.

### **Employment History**

- Expert in wheat processing and wheat disease, General Establishment for Processing and Trade, Ministry of Economics Trades, Syria, (1996-2000).
- Academic and research work in the field of plant protection, Tamil Nadu Agricultural University, Coimbatore, India, (2000-2006).
- Lecturer (partial time) Plant Cellular Biology and Plant Groups Courses, Faculty of Science, Al-Baath University (2008-2010).
- Researcher, General Commission for Scientific Agricultural Research (GCSAR), Ministry of Agriculture and Agrarian Reform (MAAR), Syria, (2006-2011).
- Post Doctorate Researcher in the field of biological control of soil borne pathogens at Southern Crop Protection and Food Research Centre, Agriculture and Agri-Food Canada. London, Ontario. Canada. (2011-2012)

### **Publications:**

Research Papers	: 7 Nos. (International: 7)
International Symposium (Full Paper)	: 4
Published Sequences in GenBank	: 29 Nos.
New Disease Reports	: 3 Nos. (International)
Notes in Manual	: 1
Abstracts	: 38 Nos. (International: 11; National: 27)

### **Declaration**

I consent that the personal information given in this form is truly correct and complete to the best of my knowledge

London-Ontario  
Date: 12-12 -2012

( **Salah eddin Khabbaz** )

### International full papers:

1. **Salaheddin K.**, Valluvaparidasan V., Ladhakshmi D., Velazhahan R. 2010. Management of bacterial blight of cotton using a mixture of *Pseudomonas fluorescens* and *Bacillus subtilis*. Plant Protect. Sci., 46(2): 41–50.
2. **Salah Eddin, K.**, Marimuthu, T., Ladhakshmi, D. and Velazhahan, R. 2007. Biological control of bacterial blight of cotton caused by *Xanthomonas axonopodis* pv. *malvacearum* with *Pseudomonas fluorescens*. Archives of Phytopathology and Plant Protection. 40(4): 291 – 300.
3. **Salah Eddin, K.**, Marimuthu, T., Ladhakshmi, D., Rabindran, R. and Velazhahan, R. 2005. A simple inoculation technique for evaluation of cotton genotypes for resistance to bacterial blight caused by *Xanthomonas axonopodis* pv. *malvacearum*. Journal of Plant Diseases and Protection. 112 (4):321-328.
4. **Salah Eddin Khabbaz**, Valluvaparidasan,V., Ladhakshmi, D., Karthikeyan, R. and Velazhahan, R. Eco-friendly management of bacterial blight of cotton by *Pseudomonas fluorescens*.2005. Journal of Agricultural Resource Management 4 (Suppl.): 311-312.
5. Velazhahan, R., Jayaraj, J., **Salaheddin Khabbaz**, Sandoss Kumar, R. and Muthukrishnan, S. 2006. *Xanthomonas oryzae* pv.*oryzae* infection triggers accumulation of phenolics, defense-related enzymes and thaumatin like proteins in rice leaves. Archives of Phytopathology and Plant Protection. 39 (5): 329-339.
6. Ladhakshmi, D., Ramiah, M., Ganapathy, T., Krishna Reddy, M., **Khabbaz, S. E.**, Karunakaran, S. and Kamalakannan. 2005. Occurrence of new necrosis viral disease of Blackgram (*Vigna mungo*) and identification using electron microscopy and ELISA technique. Acta Phytopathologica et Entomologica Hungarica. 40 (3-4): 213-223.
7. Muthusamy Karthikeyan, Rajendran Sandosskumar, Raju Radhajeyalakshmi, Subramanian Mathiyazhagan, **Salah Eddin Khabbaz**, Kulandaivelu Ganesamuthy, Balasubramanian Selvi and Rethinasamy Velazhahan. 2007. Effect of formulated zimmu (*Allium cepa* L. x *Allium sativum* L.) extract in the management of grain mold of sorghum. Journal of the science of food and Agriculture. 87: 2495 – 2501.
8. **Salah Eddin Khabbaz**, D. Ladhakshmi, Merinbabu, A. Sajeena, A. Manickam, R. Samiyappan and Marimuthu, T. 2004. Studies on the variation among the isolates of *Xanthomonas axonopodis* pv. *malvacearum* (E.F. Smith) and its management. International Symposium on Strategies for sustainable cotton production - A global vision, 23- 25, November, Dharwad, Karnataka, India. pp 304-311.
9. **Salah Eddin Khabbaz**, Marimuthu, T., Samiyappan, R., Nakkeeran, S., Ladhakshmi, D. and Merinbabu. 2003. *Pseudomonas fluorescens* mediated systemic resistance for the management of Blackarm of cotton caused by *Xanthomonas axonopodis* pv. *malvacearum*. 6<sup>th</sup> International workshop on Plant growth promoting Rhizobacteria. Calicut, India. Oct 5-10. pp 564-570.
10. Iman bilto, Faten hamed and **Salaheddin khabbaz**. 2010. Investigation on fungi and aflatoxin in sesame paste (Tahini) samples taken from local market. The Second International Conference in Food Industries and Biotechnology and the associated Fair , 1- 3- November, Al-Baath University , Homos- Syria .pp 233-244.

11. Ladhakshmi, D., Rabindran, R. and **Salaheddin Khabbaz**. 2012 Occurrence of Rice tungro disease in southern parts of Tamil Nadu and molecular variability of Rice tungro bacilliform virus. Journal of Indian Society of Mycology and Plant Pathology (submitted).

#### International New Disease Reports.

1. Ladhakshmi. D., Ramiah, M., Ganapathy, T., Krishna Reddy, M., Salaheddin K, Merin B. and Kamalakannan. A. 2006. First report of the natural occurrence of Tobacco streak virus on blackgram (*Vigna mungo*). Plant Pathology, 55: 569
2. Kamalakannan. A., Valluvaparidasan, V., Rabindaran, R., Salaheddin, K and Ladhakshmi, D. 2006. First report of Bipolaris leaf blight of coconut (*Cocos nucifera*) caused by *Bipolaris incurvata* in main land India. Plant Pathology, 55: 579
3. Kamalakannan. A., Valluvaparidasan, V., Chitra, K., Rajeswari, E., Salaheddin, K Ladhakshmi, D., Chandrasekaran, A. 2007. First report of root rot *Stevia* caused by *Sclerotium rolfsii* in India. Plant Pathology. 56: 350

#### Notes in Manuals.

1. Ramiah, M., Krishnaveni, S., Karunakaran, S., Merinbabu, Sindhu, R.V., Salah Eddin Khabbaz and Ladhakshmi, D. 2003. Molecular tools- a boon for plant virus detection. Winter school on Detection of plant viruses by PCR and Nucleic acid probes, Dept. of. Plant Pathology, TNAU, CBE- 3, Nov 8- 28.

#### International Symposium (Abstract).

1. **Salaheddin Khabbaz** and Abbasi, P. A. 2012. Biological Control Potential of Soil Bacteria Isolated from a Commercial Potato Field for The Management of Seedling Damping-off and Root Rot Diseases. 83th Annual General Meeting of The Canadian Phytopathology Society With International Plum Pox Virus Meeting. Niagara Falls, Ontario, Canada. June 24-27.
2. **Salaheddin Khabbaz**. 2010. Mycotoxins—main determinants of food safety. Second International Conference on Food Safety, Al-Baath University- Faculty of Veterinary Medicine, Hama-Syria ,19-21- April . p55
3. **Salaheddin Khabbaz**, Ladhakshmi, D and Valluvaparidasan, V. 2009. Eco-Friendly Approaches For The Management Of Bacterial Leaf Blight Of Cotton Using A Mixture Of *Pseudomonas Fluorescens* And *Bacillus Subtilis*. 10th Arab Congress of Plant Protection, Beirut, Lebanon, 26 - 30 , October.p148-149.
4. **Salaheddin Khabbaz**, Valluvaparidasan, V., Ladhakshmi, D. and Velazhahan, R. 2008. Antagonistic Activity of *Pseudomonas* sp. and *Bacillus* sp. against Bacterial Blight and Root Rot of Cotton, First International Conference of Agricultural Science, Faculty of Agriculture, Aleppo University , Syria ,13-15October. p99.
5. **Salah Eddin Khabbaz**, Ladhakshmi, D and Valluvaparidasan, V. 2006. Recent trends in the management of wheat diseases in global level. 9th Arab Congress of Plant Protection, Congress palace, Damascus, Syria 19-23, November.p197
6. **Salah Eddin Khabbaz**, Ladhakshmi, D., Valluvaparidasan, V., Bassam Bayaa and Ahmed El- Ahmed. 2006. Plant Rhizobacteria (PR) for the management of cotton Fusarium



wilt and bacterial leaf streak of wheat under in vitro conditions in Syria. 9th Arab Congress of Plant Protection, Congress palace, Damascus, Syria 19-23, November.p220.

6. Kamalakannan. A., Valluvaparidasan, V., Chandrasekaran, A., Chitra, K., Rajeshwari, **Salah Eddin Khabbaz** and Ladhakshmi, D. 2006. Occurrence of Sclerotium root rot of Stevia (Stevia rebaudiana Bertoni) in India. International conference on traditional, Complementary and alternative systems of medicine held at Faculty of Horticulture, Horticultural College and Research Institute, Tamil Nadu Agricultural University, Coimbatore, India on March 16-18.
7. **Salah Eddin Khabbaz**, T. Marimuthu. 2002. Bioassay for assessment of virulence of Xanthomonas axonopodis pv. malvacearum isolates. International Symposium on Molecular approaches for improved crop productivity and quality, Center for Plant Molecular Biology, TNAU, Coimbatore – 641 003, May 22-24. P129.

### National Abstracts

1. Mahabah ghanam, Muhamed adnan nehlawi and **Salaheddin khabbaz**. 2010. Using of Plant Growth Promoting Rhizobacteria (PGPR) Against vascular wilt disease of lentil under in vitro conditions. General Commission for Scientific Agricultural Research (GCSAR), Dumaa ,Damascus, Syria, September, 29-30, p61.
2. **Salaheddin Khabbaz**, Valluvaparidasan, V., Ladhakshmi, D., Rabindran, R., and Velazhahan, R. 2008. Induction of systemic resistance using consortial application of Pseudomonas and Bacillus against cotton bacterial blight and root rot. National seminar on Advances in Plant Pathology for Sustainable Agriculture, Organized by Indian Phytopathological Society (southern chapter) and Tamil Nadu Agricultural University, Coimbatore, India. November,24 - 25, p70.
3. **Salaheddin Khabbaz**, Valluvaparidasan, V. and Ladhakshmi, D. 2007. Management of bacterial leaf blight and root rot of cotton using PGPR. National seminar on Molecular Plant pathology and biotechnology for sustainable crop production, Organized by University of Mysore and Indian Phytopathological Society, at University of Mysore, November, 28-29, p45.
4. **Salah Eddin Khabbaz**, Valluvaparidasan, V., Gopalakrishnan, C Ladhakshmi, D., Rabindran, R. Rajinimala, N. and Velazhahan, R. 2005. Screening of plant growth promoting bacteria against major fungal disease of rice under in vitro conditions. Organized by Indian Society of Mycology and Plant Pathology. Second Global Conference on Plant health – Global health Udaipur, India, Nov 25-29th, p204.
5. **Salah Eddin Khabbaz**, Valluvaparidasan, V., Ladhakshmi, D., Velazhahan, R. and Rabindran, R. 2005. Isolation of Plant growth promoting antagonistic bacteria for eco-friendly management of major fungal disease of rice. Annual meeting of Indian society of Plant pathologists (INSOPP) and Centenary symposium on plant pathology, Central Potato research Institute, Shimla, H.P, India. Apr 7-8, p60.
6. **Salah Eddin Khabbaz**, Marimuthu, T., Rbindran, R., Ladhakshmi, D., Muthukumar, A .and Merin babu. 2005. Induction of systemic resistance in cotton plants treated with biocontrol agents against Xam. National seminar on Emerging trends in Plant Pathology and their Social Relevance (ETPPSR), Department of plant pathology, Annamalai University, Annamalai Nagar, Tamil Nadu, India. March 7-8, p3.
7. **Salah Eddin Khabbaz**, Sandoss Kumar, R., Jayaraj, J., Muthukrishnan, S. and Velazhahan.



2005. Induction of defense –related enzymes and Thaumatin – like proteins in rice plants in response to inoculation with *Xanthomonas oryzae* pv. *oryzae*. National Seminar on Emerging Trends in Plant Pathology and their social relevance (EPPTSR), Annamalai University, Annamalai Nagar, Tamil Nadu, India. March 7-8, p19.
8. **Salah Eddin Khabbaz**, Marimuthu, T., Ladhakshmi, D., and Velazhahan, R. 2005. Development of phylogenetic tree for various isolates of *Xanthomonas axonopodis* pv. *malvacearum*. National Symposium on Microbial and Plant biotechnology, Dept. of. Plant biology and biotechnology, Loyolla college (Autonomus) Chennai, India Feb 17-19, p24.
  9. **Salah Eddin Khabbaz**, Marimuthu, T., Rabindran, R., Ganapathy, T., Amutha, G. and Ladhakshmi, D. 2004. ELISA- A powerful tool for detection of bacterial blight of cotton caused by *Xanthomonas axonopodis* pv. *malvacearum*. National Seminar cum Workshop on Molecular tools in Immunodiagnosis MID- 04, Dept. of. Microbiology, Dr. G. R. Damodaran College of Science, Coimbatore, Oct 11-14, p65.
  10. **Salah Eddin Khabbaz**, Marimuthu, T., Nagarajan P. and Ladhakshmi, D. 2004. Artificial Intelligence in Biosciences. National Seminar cum Workshop on Bioinformatics for Biosciences. Bioinformatic center and Dept. of. Microbiology, Dr. G. R. Damodaran College of Science, Coimbatore, Mar 22-24, p32.
  11. **Salah Eddin Khabbaz**, Marimuthu, T., Nagarajan, P. and Ladhakshmi, D. 2004. Genetic relatedness among the isolates of *Xanthomonas* sp. using similarity index. National Seminar cum Workshop on Bioinformatics for Biosciences, Bioinformatic center and Dept. of. Microbiology, Dr. G. R. Damodaran College of Science, Coimbatore, March 22-24, p33.
  12. **Salah Eddin Khabbaz**, Marimuthu, T., Kannan, R., Suganthi, C., Latha, P. and D. Ladhakshmi. 2004. Detection of Xam in Cotton by using ELISA technique National Conference on Biotechnology – Present Prospectives and Future Challenges. Erode Arts College, India, Mar 19, p7.
  13. **Salah Eddin Khabbaz**, Ladhakshmi, D. Kannan, R., Marimuthu, T., Varavanasiappan, S. and Ramiah, M. 2004. Screening of cotton varieties against *Xanthomonas axonopodis* pv. *malvacearum*. National Symposium on Crop Surveillance: Disease forecasting and Management. Organized by Indian Phytopathological Society, Division of Plant Pathology, Indian Agricultural Research Institute, New Delhi, India, Feb. 19-21, p41.
  14. **Salah Eddin Khabbaz**, Marimuthu, T., Ramiah, M., Mohan, L., Ladhakshmi, D., Rajinimala, N., Varavanasiappan, S. and Sajeena. A. 2004. Expression of virulence of *Xanthomonas axonopodis* pv. *malvacearum* isolates on green French bean pods. National Seminar on Microbial Technology, Dept. of. Microbiology, Dr. G. R. Damodaran College of Science, Coimbatore- 14, Feb. 12-13, p153.
  15. **Salah Eddin Khabbaz**, Marimuthu, T., Ramiah, M., and Ladhakshmi D., Madhubala, R. and Karunakaran, S. 2003. Sandpaper method inoculation- a new technique for pathogenicity studies of bacterial leaf blight of cotton. Annual meeting and symposium on Recent developments in the diagnosis and management of plant diseases for meeting global challenges, Dept. of Plant Pathology, University of Agricultural Sciences, Dharwad, India, Dec 18-20, p77.