Biodata of the Scientist

Division/Section:___Crop Protection

A.Personal information

1.Name(With Title): _Dr. M. L. Jeeva

1.a. Qualification: __Ph. D in Plant pathology

2. Designation: __Principal Scientist and Head (Acting), Crop Protetion

3. Address(Personal): _CRA C44, LG Home, Cheruvickal Sreekariyam Thiruvananthapuram 695 017

4. Phone Numbers:

(a)Residence0471-2593934 (b)Intercom_04712598551 (211,240) (c)Mobile_9446102163

5. Email: _jeeva.ml@icar.gov.in

6. Countries visited: Ghana, Columbia

B. Professional information

1. Area of specialization: Disease diagnosis, Integrated and bio intensive management of tropical tuber crops diseases

2. Area of interest: Management of plant diseases

3. Number of institute projects completed(Add list):13

4. Number of Institute projects being handled(Add list):_5

5.Number of externally funded projects completed(Add list):_4

Completed Institute projects

1. Cassava mosaic disease in India : Transmission, purification and serodiagnosis
2. Diseases of sweet potato
3. Identification of vectors in CMD transmission and significance of biotypes in whitefly
4. Histopathological and fluorescence studies on cassava mosaic disease
5. Characterization and management of sweet potato virus diseases
6. Tuber rot of cassava : Etiology, epidemiology and management of the disease
7. *In vitro* studies for virus diseases management in tuber crops
8. Development of biologically based IDM strategy for cassava mosaic disease
9. Diseases of yams and minor tuber crops
10. Epidemiology and Management of *Colletotrichum gloeosporioides* causing anthracnose in Greater Yam
11. Characterisation of Yam Viruses in India
12. Virus elimination in tuber crops using *In-vitro* techniques
13. Exploitation of Toxic Metabolites of *Colletotrichum gloeosporioides* and Bio intensive Methods in the Management of Greater Yam Anthracnose

On going institute projects

1. Development and refinement of integrated disease management and forecasting system for improved tuber crop production (PI)

2. Development of innovative technologies for the intensification of pest management in tuber crops through biorational approach (Co-PI)
3. Conservation and utilization of germplasm of tuber crops for sustaining production (Co-PI)
4. Quality planting material production of tropical tuber crops (Co-PI)
5. Developing Methodologies and Tools for Assessment and Transfer of Tuber Crops Technologies

Externally funded projects (**Completed) 5**

1. Molecular diagnosis of fungal diseases of cassava, taro, amorphophallus and yam: DBT (PI)
2. Development of virus free greater yam through molecular based techniques : NFBSFARA, ICAR (PI)
3. IISR outreach project on *phytophthora, Fusarium* and R*alstonia* diseases of Horticultural and field crops (PI)
4. Nutrient management, pgpr and biocontrol in tropical tuber crops : AMAAS ICAR net work project under NBAIM, Mau (PI)
5. AP Cess fund project on collar rot of Amorphophallus (Co-PI)

Number of externally funded projects being handled(Add list):1

1. CRP on Vaccines and Diagnostics

7. Number of students guided for a) Ph.D-5 b) M.Phil_____c) M.Sc: -5

8. Number of students being guided for a) Ph.D-3 b) M.Phil_____c) M.Sc-1

8.a. information about the students under your guidance

Name of the student	Course undergoing (Ph.D/M.Phil/M.Sc)	Title of the project/Thesis	E-mail address
P.R. Amrutha	Ph.D	Regulating pathogenesis of *Colletotrichum gloeosporioides* causing anthracnose in greater yam (*Dioscorea alata.* L.) employing endophytes	amrutharulez@gmail.com

Tom Cyriac	Ph.D	Molecular characterization and diagnosis of *Yam mild mosaic virus* (YMMV) infecting Yams (*Dioscorea* spp.)	tomcyriac2112@gmail.com
S.U. Shilpa	Ph.D	Deciphering the mechanism of suppressing the pathogenecity of P*hytophthora colocasiae* by endophytes	shilpasree18@gmail.com

9. Information on guide ship

Guide ship for Ph.D/ M.Phil/	University	Subject
Ph. D	University of Kerala	Plant Biotechnoogy
M.Sc	Kerala Agricultural University	B.Sc –M. Sc Integrated Biotechnology

10. Number of Research papers(Add list): 72

Arya, R.S., M.N. Sheela, **M.L. Jeeva** and Abhilash, P.V. 2019. Identification of Host Plant Resistance to Anthracnose in Greater yam (*Dioscorea alata* L.). *Int.J.Curr.Microbiol.App.Sci.* 8(08): 1690-1696. doi: https://doi.org/10.20546/ijcmas.2019.808.199

Viji,V.S. **Veena, S.S**., Karthikeyan, S. and **M.L. Jeeva.** 2019. Cassava based substrates - conducive media for mass multiplication of *Trichoderma asperellum. J. of Root Crops* **44 (1)** 41-46.

Denis Filloux, Emmanuel Fernandez, Etienne Loire, Lisa Claude, Serge Galzi, Thierry Candresse, Stephan Winter, M.L. Jeeva, T. Makeshkumar, Darren P. Martin and Philippe Roumagnac. (2018). Nanopore based detection and characterization of yam viruses. *Scientific Reports* 8: 17879 | DOI:10.1038/s41598-018-36042-7. (NAAS rating: 10.12).

George, A., Jeeva, M.L., Nath, V.S., Sreelatha, G.L., Sujina, M.G. and Makeshkumar, T. (2017). Morphological and molecular characterization of *Phytophthora colocasiae* obtained from fine spatial scale. *J. of Root Crops* 43(2): 33-40. (NAAS rating: 3.86).

Sujina, M.G., Sreelatha, G.L., Jeeva, M. L., Nath, V.S., George, A. and Veena, S.S. (2017). Studies on endophytes associated with medicinally important *Saraca asoca* (Roxb.) Willd and their antagonistic activity against *Phytophthora colocasiae*. *J. of Root Crops* 43(2): 76-83. (NAAS rating: 3.86).

Nath, V.S., Shyni, B., **Jeeva, M.L**., Veena S. S. 2016. Genetic and Phenotypic characterization of *Phytophthora colocasiae* in taro growing areas of India. *Journal of Plant Pathology & Microbiology*, DOI: 10.4172/2157-7471.1000383.

Saranya, G., Vishnu, S. Nath., **Jeeva, M. L**. M. N. Sheela and Makeshkumar, T. 2016. Mining of resistance genes associated with anthracnose infection in greater yam (*Dioscorea alata* L.). ***Journal of Root Crops***, 2016, Vol. 42 (2):115-120

Lakshmipriya, P., Vishnu. S. Nath., Veena, S.S., Anith, K.N., Sreekumar, J and **Jeeva, M.L**. 2016. *Piriformospora indica*, a cultivable endophyte for growth promotion and disease management in taro (*Colocasia esculenta (*L.). ***Journal of Root Crops***, 2016, Vol. 42 (2): 107-114. NAAS rating- 3.86

Neetha Soma John Anjanadevi I.P. Vishnu Sukumari Nath , Senthil Alias Sankar , **Muthulekshmi Lajapathy Jeeva** Susan John, K. Raj Shekhar Misra. 2015. Characterization of Trichoderma isolates against Sclerotium rolfsii, the collar rot pathogen of Amorphophallus – A polyphasic approach. *Biological Control* , 90: 164–172

Pravi, V., **Jeeva M. L.** and Archana P. V. 2015. Exploration of D1/D2 domain of large-subunit ribosomal DNA for specific detection of *Sclerotium rolfsii* by polymerase chain reaction assay ,Eur. J. Plant Pathol. DOI 10.1007/s10658-015-0633-8

Pravi, V., **M. L. Jeeva** & P. V. Archana. 2015. Nucleic acid spot hybridization based species-specific detection of *Sclerotium rolfsii* associated with collar rot disease of *Amorphophallus paeoniifolius* .World J Microbiol Biotechnol DOI 10.1007/s11274-014-1783-0

Pravi, V., Jeeva M. L. and Archana P. V. 2015. Exploration of D1/D2 domain of large-subunit ribosomal DNA for specific detection of *Sclerotium rolfsii* by polymerase chain reaction assay ,Eur. J. Plant Pathol. DOI 10.1007/s10658-015-0633-8

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Amorphophallus paeoniifolius .World J Microbiol Biotechnol DOI 10.1007/s11274-014-1783-0

Nath V. S., Shyni, **Jeeva M. L.,** Hegde V. M., Devi, A., Misra R. S., Veena S. S., Raj M. (2016) A rapid and efficient method for *in vitro* screening of taro for leaf blight disease. Journal of Phytopathology. DOI: 10.1111/jph.12477.

Nath V. S., Rajitha M., Darveekaran S. S., Hegde V. M., Jeeva M. L., Misra R. S., Veena S. S., Raj M. 2015. Identification of *Phytophthora colocasiae* genes regulated during infection on taro (*Colocasia esculenta*). **Physiological and molecular plant pathology**. 89:78- 86

Archana,P. V, Jeeva, M. L. and Pravi, V. 2014. A Simple, Economical and Rapid Method to Isolate High Quality DNA from Oomycetes . J. Root Crops 40(1): 80-84.

John, N.S., Anjanadevi, I. P. and Jeeva, M.L. 2014. Efficacy of cassava by-products as carrier materials of *Trichoderma harzianum*, a biocontrolAgent against*Sclerotium rolfsii* causing collar rot in elephant foot yam. *J. Root Crops*, **40**(1): 74-79.

Nath V. S., Hegde V. M., Jeeva M. L., Misra R. S., Veena S. S., Raj M., D. S. Sankar (2014) Morphological, pathological and molecular characterization of *Phytophthora colocasiae* responsible for taro leaf blight disease in India. **Phytoparasitica**. 10.1007/s12600-014-0422-5

John, N.S., Anjanadevi, I.P., Suja, S. P., Jeeva, M.L. and Misra, R.S. 2014. Biochemical changes induced in *Amorphophallus* in response to treatment with biocontrol agent and pathogen. *Int. J. Biotechnol. Biochem.*, **10**(1): 35-45

Nath V. S., Hegde V. M., Jeeva M. L., Misra R. S., Veena S. S., Raj M., Unnikrishnan S.K., D. S. Sankar (2014) Rapid and sensitive detection of *Phytophthora colocasiae* responsible for the taro leaf blight using conventional and real-time PCR assay. **FEMS microbiology letters**. 352: 174–183. DOI: 10.1111/1574-6968.12395.

Nath V. S., Hegde V. M., Jeeva M. L., Misra R. S., Veena S. S., Raj M., D. S. Sankar (2013) Genetic Diversity of *Phytophthora colocasiae* causing Taro Leaf Blight using Start Codon Targeted (SCoT) Polymorphism. **Journal of Root Crops** 39(2): 168-177.

Neetha Soma John, I. P. Anjanadevi and M.L. Jeeva. 2014. Efficacy of Cassava By-products as Carrier Material of Trichodermaharzianum, a Biocontrol Agent Against Sclerotiumrolfsii Causing Collar Rot in Elephant Foot Yam , Journal of Root Crops, 40 (1) : 74-79

Neetha Soma John, I.P. Anjanadevi and M.L. Jeeva. 2014. Isolation and Characterization of N Fixing Bacteria from Elephant Foot Yam (*Amorphophalluspaeniifolius* (Dennst.)Nicolson) Growing Regions of South India. Journal of root crops, 40 (1):74-79

Neetha Soma John,, I. P. Anjanadevi, S.P. Suja, M.L. Jeeva and R.S.Misra (2014) Biochemical Changes Induced in Amorphophallus in Response to Treatment with biocontrol Agent and Pathogen. International Journal of Biotechnology and Biochemistry. 10 (1): 35-45

Nath V S., Senthil M., Hegde V M., Jeeva M L., Misra R S., Veena SS., Raj M (2013) Molecular evidence supports hyper variability in *Phytophthora colocasiae* associated with leaf blight of taro. **European Journal of Plant Pathology**. DOI: 10.1007/s10658-013-0181-z.

Nath V S., Senthil M., V M Hegde., M L Jeeva., R S Misra., SS Veena., Raj M (2013) PCR-based approach for mining of resistant gene analogues in taro (*Colocasia esculenta*). **Archives Of Phytopathology And Plant Protection**, DOI:10.1080/03235408.2012.752608.

Nath V S., Senthil M., V M Hegde., M L Jeeva., R S Misra., SS Veena., Raj M (2012) Evaluation of fungicides on Indian isolates of *Phytophthora colocasiae* causing leaf blight of taro, **Archives Of Phytopathology And Plant Protection**, DOI:10.1080/03235408.2012.749688

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Vishnu Sukumari Nath, Muthukrishnan Senthil *alias* Sankar, Vinayaka Mahabaleswar Hegde[1], **Muthulekshmi Lajapathy Jeeva,** Raj Shekar Misra, Syamala Swayamvaran Veena, Mithun Raj. 2012.Analysis of Genetic Diversity in *Phytophthora colocasiae* using RAPD Markers. Asian and Australasian Journal of Plant Science .6(1); 38-43

Mithun Raj, **Jeeva M. L.,** Hegde V., Pravi Vidyadharan, Archana P. V., Senthil alias Sankar M., Vishnu Nath S. 2012. Polymerase Chain Reaction Assay for Rapid, Sensitive Detection, and Identification of *Colletotrichum gloeosporioides* causing Greater Yam Anthracnose. *Mol Biotechnol*, 52(3): 277-284 **;**DOI: 10.1007/s12033-012-9496-9.

Mithun Raj, Hegde V., **Jeeva M. L.,** Archana P. V., Pravi Vidyadharan, Vishnu Nath S., Senthil alias Sankar M. 2012. Rapid and Efficient Method for the Extraction of Genomic DNA from *Colletotrichum* spp. Suitable for PCR Analysis. *Dynamic Biochemistry, Process Biotechnology and Molecular Biology*, 6 (Special Issue 2),

Vishnu Sukumari Nath, Muthukrishnan Senthil *alias* Sankar, Vinayaka Mahabaleswar Hegde, **Muthulekshmi Lajapathy Jeeva**, Raj Shekar Misra, Syamala Swayamvaran Veena.. 2012. A Simple and Efficient Protocol for Rapid *in vitro* Regeneration and Propagation of Taro (*Colocasia esculenta* (L.) Schott.). *International journal of Plant Development biology* 6(4): 64- 66

Binoy Babu, Hegde, V., Makeshkumar, T.**, Jeeva, M.L.** 2012. Rapid and sensitive detection of Potyvirus infecting tropical tuber crops using genus specific primers and probes – *African Journal of Biotechnology* 11(5):1023-1027

Babu Binoy, Hegde, V**.,** Makeshkumar, T., **Jeeva, M.L.** 2011. Molecular Detection and identification of *Dasheen mosaic virus* infection *Amorphophallus paeoniifolius- Archives of Phytopathology and Plant* Protection. 44(13),1248-1260; http://dx.doi.org/10.1080/03235408.2010.490398

Babu Binoy, Hegde, V., Makeshkumar, T., **Jeeva, M.L**. 2011. Development of non-radioactive probes for specific detection of *Dasheen mosaic virus* infecting *Amorphophallus paeoniifolius* - *Current Science* 100(8): 1220 – 1225

Babu Binoy, Hegde, V., Makeshkumar, T., **Jeeva, M.L**.2011 Detection and Identification of *Dasheen mosaic virus* infecting *Colocasia esculenta* in India- *Indian Journal of Virology* 22(1):59-62.

Dhanya Jayaseelan, Rajitha, M., , Dhanya, M. K. , Vinayaka Hegde, **M. L. Jeeva**. 2011. Hot water treatment: an efficient method for elimination of yam mild mosaic virus in *Dioscorea alata* . *Journal of Root Crops* **37(1):** 60-64

Rajitha, M., Dhanya Jayaseelan, Dhanya, M. K. , Vinayaka Hegde, T. Makeshkumar, **M. L. Jeeva.** 2011. *In vitro* growth response of different varieties of greater yam *(Dioscorea alata* L. *) Journal of Root Crops* **37(1):** 54-59

Babu Binoy, Hegde Vinayaka, Makeshkumar, T. and **Jeeva M.L.** 2010. Rapid detection and identification of potyvirus infecting *Colocasia esculenta* (L.) Schott. by reverse transcription –polymerase reaction. *Journal of Root Crops* 3691): 88-94

Muthulekshmi Lajapathy Jeeva, Ajay Kumar Mishra, Pravi Vidyadharan, Raj Shekhar Misra and Vinayaka Hegde (2010). A species-specific polymerase chain reaction assay for rapid and sensitive detection of *Sclerotium rolfsii*. *Australasian Plant Pathology*, 2010, 39, 517–523.

Hegde Vinayaka, **Jeeva, M. L.** and Edison, S.2009. Yam Diseases: Ecology and Management. Encyclopedia of Pest Management, 1: 1, 1-10

Raj Shekhar Misra, Ajay Kumar Mishra, **Muthulekshmi Lajapathy Jeeva,** and Vinayaka Hegde (2009). Characterization of *Phytophthora colocasiae* isolates associated to leaf blight of taro in India. ***Archives of Phytopathology and Plant Protection***. 44 (6): 581-591(11).

Ajay Kumar Mishra, **Muthulekshmi Lajapathy Jeeva,** pravi Vidyadharan, Raj Shekhar Misra and Vinayaka Hegde (2009) Rapid and sensitive detection of *Phytophthora colocasiae* associated with leaf blight of taro by species specific polymerase chain reaction assay. ***Annals of Microbiology.*** 60 (2): 209-215.

Jeeva Muthulekshmi Lajapathy, Kamal Sharma, Ajay Kumar Mishra and Raj Shekhar.2008. Misra. Rapid extraction of genomic DNA from *Sclerotium rolfsii* causing collar rot of *Amorphophallus*. ***Gene, Genomes and Genomics.*** 2(1): 60-62.

Jeeva M. L., Hegde. V., Makeshkumar T., Nair R. R. and Edison S. 2005 **.** *Dioscorea alata*, a new host of *Sclerotium rolfsii*in India. *Plant Pathology.* **54: 574.**

Jeeva, M. L. , Balakrishnan, S., Edison, S. and Uma maheswaran, K. 2005. Biochemical changes in sweet potato (*Ipomoea batatas* (L.) Lam) due to sweet potato feathery mottle virus(SPFMV) infection. *J. Root Crops* 31(1): 63-67

Jeeva M.L., Balakrishnan S., Edison S.and Rajmohan K.. 2004. Meristem culture and Thermotherapy in the management of Sweet Potato Feathery Mottle Virus (SPFMV). *J. Root Crops*. **30(2):** 135-142

Jeeva M.L., Balakrishnan, S..Edison S, Umamakeswaran K. and Makeshkumar T.. 2004. Characterisation,purification and serology of Sweet Potato Feathery Mottle Virus in India. *J. Root Crops*. **30(1)** : 24-30

Jeeva, M.L., R.R. Nair, S. Edison, N. Mathur, V. Hegde, T. Makeshkumar, and S. Sriram. 2004. Rust of Queensland arrowroot (*Canna edulis*) caused by *Puccinia thaliae*: a new record for India. *Plant pathology*. 53:261

Jeeva, M.L., V. Hegde, Vimala, B., Makeshkumar, T., Nair , R.R. and Edison, S. 2006. First report of *Rhizoctonia solani* causing blight on Yam bean (*Pachyrrhizus erosus*) in India. *Plant Pathology* **55**: 302

Misra, R. S. and **Jeeva M. L..** 2006. Khandha Fasalong Maem Rog Niyandran. *Phal Phool.* 28(6): 23-25

Mithun Raj, **Jeeva M. L.,** Hegde V., Pravi Vidyadharan, Archana P. V., Senthil alias Sankar M., Vishnu Nath S. 2012. Polymerase Chain Reaction Assay for Rapid, Sensitive Detection, and Identification of *Colletotrichum gloeosporioides* causing Greater Yam Anthracnose. *Mol Biotechnol*, DOI: 10.1007/s12033-012-9496-9.

Jeeva M.L., Balakrishnan., S., Edison S.. 2004. Symptomatology and host range of Sweet Potato Feathery Mottle Virus Disease. *J. Mycol. Pl. Pathol*. **34(2**) :180-184

Jeeva, M.L. 1997. Effect of secondary infection of Cassava Mosaic Disease on Growth and tuber yield of cassava. *J. of Myc. & Plant Pathology.* **27**(1):78

Jeeva, M.L. and Ramabadran R.. 1993. Effect of different extracts of non host plants. *Madras Agric.J* .80(10) :598-600.

Jeeva, M.L. and Ramabadran R.. 1990. Effect of plant products in the management of *Sarocladium oryzae* and *Fusarium oxysporum f.sp. lycopersici. Indian phytopath*.43:299.

Jeeva, M.L. and Ramabadran. R. 1992. Effect of plant products on the management of *Saocladium oryzae* (Sawada) W.Gams and D.. Hawksw and *Fusarium oxysporum f.sp. lycopersici (Sacc.)Snyder & Hansen. Madras Agric.J.* 79(9):485-488

Jeeva, M.L., Balakrishnan S., Edison S, J. J. Solomon.2004. A simple electron microscopic technique for rapid assay of *Sweet Potato Feathery Mottle Virus.J. Mycol. Pl. Pathol*. **34(2)** :300-301

Misra, R. S., Nair ,R. R and **Jeeva M. L.** 2006. Diseases of Tuber Crops. *Kisan world.* 33(11): 23-24

Misra, R. S. and **Jeeva M. L.** 2006. Managing diseases on tuber crops. *Indian Horticulture.* 51(6): 22 &30

Velazhahan, R., **Jeeva, M.L.,**Narayanasamy,P. & Vidhyasekaran P.. 1993. Electrolyte leakage from rice calluses and leaves infiltrated with toxin produced by P. oryzae. *Indian phytopath.*46(2) : 178-180.

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Veena,S.S., Makeshkumar, T., Jeeva, M. L. 2019. Rogangalum roganiyanthranavum kizhanguvargavilakalil (Malayalam). *Krishiyankanam*. Feb- March.p 23-27

M.L. Jeeva and S. S. Veena ," Integrated disease management in tuber crops", In: ICAR-CTCRI Training for Technical staff, 28 and 29 January, 2019

11. Number of Books/Book chapters(Add list):

Jeeva, M.L., Veena, S.S., Makeshkumar, T.(2021). Integrated Disease Management inTropical Tuber Crops. In: Recent Advances in Root and Tuber Crops. Sanket J. More, Namrata Ankush Giri, Suresh Kumar J, Visalakshi Chandra C, Sirisha Tadigiri (Eds). 406 pp. ISBN: 978-93-90757-44-2, e-ISBN: 978-93-90757-47-3

Jeeva, M. L. and Veena , S. S.2019. Screening and management of important fungal diseases of tropical tuber crops. In: *Manual of Feed The Future India Triangular Training (FTF ITT) programme on "Integrated Technology for Production, Processing and Value Addition in Tuber Crops*" held at ICAR-CTCRI during 16-30 September, 2019

Veena, S. S. C. Visalakshi Chandra**, M. L. Jeeva** and T. Makeshkumar. 2021. Postharvest Diseases of Tropical Tuber Crops and Their Management. In: Postharvest handling and diseases of horticultural produce. Dinesh Singh, Ram Roshan Sharma, V. Devappa, and Deeba Kamil (Eds).CRC Press, 6000 Broken Sound Parkway NW, Suite 300, Boca Raton, FL 33487-2742. 397-414 (437pp)

Vijayanandraj, S., BikashMandal, Jebasingh, T., **Jeeva, M. L**, Makeshkumar, T. and YogitaMaheshwari. (2017).Characterisation of the Macluraviruses occurring in India. In BikasMandal et al (Eds.) *A Century of Plant Virology in India,* Springer Nature Singapore Pte Ltd. Pages 179-192

Jeeva, M.L. and R.Radhakrishnan Nair. 1996. Serological relationship of ICMV to whitefly transmitted geminivirus. In Tropical tuber crops in Food Security and Nutrition. Ed. Balagopalan et al. Oxford & IBH Pp. 401-403.

Jeeva, M. L. Misra, R. S. and Vinayaka Hegde. 2008. Integrated disease management in tuber crops. In: Nedunchezhiyan, M.(Ed.) Advance techniques in quality planting material production and commercial cultivation of tropical tuber crops,Regional Centre, Central Tuber Crops research Institute, ICAR, Bhubaneswar, Orissa, India179-194

Jeeva, M. L and Vinayaka Hegde. 2008. Molecular Diagnosis of tuber crops diseases. In: Nedunchezhiyan, M.(Ed.) Advance techniques in quality planting material production and commercial cultivation of tropical tuber crops,Regional Centre, Central Tuber Crops research Institute, ICAR, Bhubaneswar, Orissa, India 179-194

12. Number of Technical Bulletins(Add list): 3

ICAR-CTCRI. 2010. Diagnostic techniques for diseases of tropical tuber crops *Technical Bulletin serie 50,* ICAR-CTCRI, Thiruvananthapuram p.56

ICAR-CTCRI. 2018. E-Crop and IoT solution in Agriculture *Technical Bulletin serie 73,* ICAR-CTCRI, Thiruvananthapuram, p. 44

ICAR-CTCRI. 2018. Post Flood loss assessment and rehabilitation of tuber crops in Kerala. (Eds. Santhosh Mithra, V. S., Jeeva, M. L., Sunitha, S. Saravan RAju, Hareendrakumar, Shana *Technical Bulletin series; 74,* ICAR-CTCRI, Thiruvananthapuram, p. 96

13. Consultancies offered(Add list and give a brief description): For farmers and department officials whenever needed

14. Technologies developed(Add list and give a brief description):38 (Including protocols)

1. IDM of cassava tuber rot , collar rot of elephant foot yam and yam anthracnose
2. Strategy for the production of virus free sweet potato and greater yam planting material
3. PCR and ELISA based detection of yam viruses
4. Molecular Diagnosis of important tuber crops pathogens
5. Biointensive management of taro leaf blight and greater yam anthracnose
6. Specific primers for the diagnosis of *Yam Maclura virus* and *Yam mild mosaic virus* from greater yam leaves
7. Diagnosis of *Yam mild mosaic virus* from lesser yam tubers.
8. Specific primers to detect *Yam Maclura mosaic virus* from greater yam.
9. LAMP based detection of *P.colocasiae*
10. LAMP based detection of *C. gloeosporioides*
11. LAMP based detection of *S. rolfsii*
12. Rapid and sensitive detection of *Phytophthora colocasiae* responsible for the taro leaf blight using conventional and real-time PCR assay
13. A rapid and efficient method for *in vitro* screening of taro for leaf blight disease.
14. Rapid and sensitive detection of *Sclerotium rolfsii* associated with collar rot disease of *Amorphophallus paeoniifolius* by species-specific polymerase chain reaction assay
15. Nucleic acid spot hybridization based species-specific detection of *Sclerotium rolfsii* associated with collar rot disease of *Amorphophallus paeoniifolius*
16. Nucleic acid spot hybridization based species-specific detection of *Phytophthora colocasiae* associated with taro leaf blight
17. Nucleic acid spot hybridization based species-specific detection of *Colletotrichum gloieosporioides* associated with greater yam anthracnose
18. D1/D2 domain of large-subunit ribosomal DNA for specific detection of *Sclerotium rolfsii* by polymerase chain reaction assay
19. Identification of potential endophytes associated with medicinally important *Saraca asoca* (Roxb.) Willd and their antagonistic activity against *Phytophthora colocasiae*
20. Dolomite as a good carrier material for *Trichoderma* spp.
21. A reliable method to screen taro for leaf blight resistance.
22. A method to identify differentially expressed genes of *Phytophthora colocasiae* in taro during infection.
23. Full genome sequence of two *Phytophthora colocasiae* isolates causing taro leaf blight
24. Pathogenecity test for *Colletotrichum gloeosporioides in vitro* in greater yam detached leaf and tissue cultured whole plant.
25. Micropropagation techniques for the large scale production of virus free elephant foot yam
26. Micropropagation techniques for the large scale production of greater yam
27. Techniques to scale up the production of potential endophytes against *Phytophthora colocasiae* causing taro leaf blight.
28. A Simple, economical and rapid method to Isolate high quality DNA from Oomycetes

29. Expression of resistance genes associated with anthracnose infection in greater yam resistant lines
30. Cassava by-products as carrier material of *Trichoderma harzianum*
31. Genetic Diversity of *Phytophthora colocasiae* causing Taro Leaf Blight: Analysis using Start Codon Targeted (SCoT) Polymorphism
32. Mass multiplication of *Trichoderma asperellum* on tuber crops waste
33. A rapid and efficient method for *in vitro* production of *Phytophthora colocasiae* zoospores
34. AFLP finger printing of *P.colocasiae*
35. SSR markers for genetic diversity of *P. colocasiae*
36. Total RNA isolation from taro and *P. colocasiae*
37. Total RNA isolation from greater yam, lesser yam and white yam leaves and tubers
38. Total RNA isolation from elephant foot yam leaves and tubers

15. Patents/Copyrights obtained (Add list and give a brief description): Nil

16. Any other information: More than 150 partial gene sequences of pathogens infecting tuber crops and bio agents submitted in NCBI

Presentations : 45