

Profile of Scientist

1. **Name of Scientist:** Dr. ChandramaniRaj
2. **Personal biodata**
 - A. Designation** Scientist (Plant Pathology)
 - B. Contact details**
 - i) ICAR email ID Chandramani.Raj@icar.gov.in
 - ii) Personal email ID raj.chandramani@gmail.com
 - iii) Mobile number 9573811582
 - C. Date of Joining**
 - i) ICAR 05 July, 2016
 - ii) ICAR RC for NEH Region, Umiam 14 October, 2016
 - iii) ICAR-IISR, Lucknow 24 October, 2020
 - D. Discipline** Plant Pathology
 - Area of Specialization** Mycology, Host Plant Resistance, Molecular plant Pathology, Organic Plant Protection, Biocontrol, Epidemiology



E. Technologies developed

- Collaborated in capacity of Plant Pathologist for development of three varieties of maize Sikkim Sankul Makka-1 (MS8-1) and Sikkim Sankul Makka-2 (RCM1-76), two varieties of rice Sikkim Dhan 2 (IET 26579) and VL Sikkim Dhan 4 (IET-26596) and one for RajmashSikkim Rajmash-1 (SKR 57A) especially tailored for organic farming at ICAR RC for NEH Region, Sikkim Centre, Gangtok.
- Application of neem cake 100 gm/pit + Sapling treatment with *Trichoderma* 4 ml/l during sowing & application of neem cake (100gm/clump) and *Trichoderma*(4 ml/l) each month control the soil borne diseases of large cardamom
- Soil solarization and application of *Bacillus* sp. GAP107 MTCC 12725 @ 3% from sowing to 120 days of crop growth controlled the against bacterial wilt of ginger.
- Development of differential cultivar in pearl millet for identification of a/virulence gene in *Sclerosporagraminicola* isolates.
- Identification of resistance genes in pearl millet lines against *Sclerosporagraminicola* and its inheritance through generations.
- Mining of simple sequence repeat markers from genome sequence of *S. graminicola* and its validation on *S. graminicola* isolates.
- Phenotyping and Genotyping of F₁ progenies of *S. graminicola* and avirulence gene tagging with linked simple sequence markers.
- Molecular characterization of *Colletotrichum* species complex associated with chilli anthracnose
- Developed technology for organic management of insect pests and disease of large cardamom for Sikkim conditions ICAR RC for NEH Region, Sikkim Centre, Gangtok.

F. List of research Projects

- Studies on epidemiology of blight of large cardamom and its management under organic conditions funded by ICAR RC for NEH Region, Umiam
- Network project on integrated management of rhizome rot complex of Ginger (*Zingiber officinale*) funded by ICAR RC for NEH Region, Umiam
- Development of high yielding rice (*Oryza sativa* L.) varieties with biotic and abiotic stress resistance for organic conditions of Sikkim funded by ICAR RC for NEH Region, Umiam
- Screening and characterization of resistance source against blast of rice in NEH Region funded by ICAR RC for NEH Region, Umiam
- Resource conservation technique for improving productivity and resource-use efficiency of maize-pea cropping system funded by ICAR RC for NEH Region, Umiam
- Development of biointensive modules for management of major pests of ginger, colocasia and large cardamom funded by ICAR RC for NEH Region, Umiam
- National mission on sustaining Himalayan ecosystem- Task Force on Himalayan Agriculture (North Eastern Himalayas) funded by DST, India.
- Evaluation of locally available botanicals commercially available bio- agents and organically permitted fungicides against major diseases of large cardamom under NPOF funded by ICAR-IIFSR, Modipuram.
- Soil organic carbon stocks and fractions in different orchards of north eastern hill region of India funded by ICAR RC for NEH Region, Umiam
- Tribal Sub-Plan funded by ICAR.
- AICRP on Spices funded by ICAR-IISR, Kozhikode, Kerala
- Demonstration of the mechanism of resistance in cucurbits to powdery mildew through foldscope funded by DBT, GoI, India.
- Collection and characterization of indigenous Shiitake (*Lentinula edodes*) and DNA bar coding of oyster mushroom (*Pleurotus* spp.) funded by DBT, GoI, India

G. Trainings

- Attended 3 months foundation training 104 FOCARS at ICAR-NAARM, Hyderabad during July 05-October 04, 2016.
- Attended three months Professional Attachment Training (PAT) at ICAR-IARI, New Delhi on “Identification and characterization of viruses and phytoplasmas associated with horticultural crops” during November 29, 2016 to March 21, 2017.
- Six days training program on “Biological control and compatible pest management modules for management of major pests in NEH region with emphasis on FAW” on 14-19 Oct. 2019, at ICAR-National Bureau of Agricultural Insect Resources Hebbal, Bangalore.

H. Awards/Fellowships

- Awarded ICAR-JRF, 2010 for pursuing M.Sc. Agriculture at Tamil Nadu Agricultural University, Coimbatore.

- Awarded Fellowship from International Crops Research Institute for Semi-Arid Tropics, Hyderabad for Ph.D. research work.
- Awarded best poster presentation award in National symposium on “Heading towards molecular horizons in Plant Pathology: Host resistance, Pathogen dynamics, Diagnostics and Management”, Indian Phytopathological Society (South zone), SBI, Coimbatore, 2012.
- Awarded best poster presentation award at International Conference on Plant Health Management for Food Security: November 28-30, 2012, Hyderabad, India
- Awarded best poster presentation award in 6th International Conference on Plant, Pathogen and People: Challenges in Plant Pathology to Benefit Humankind: February 23-27, 2016, New Delhi, India.
- Awarded best poster presentation for the paper entitled “Foldscope: an origami based research tool for the exploration of microbial world” during technical session 8 at National Symposium on Emerging diseases of agricultural crops and their noble management practices organized by Indian Phytopathological Society, North Eastern Zone at College of Agriculture, Lembucherra, Tripura during January 19-20, 2019.
- Awarded best oral presentation under M J Narasimhan award for the paper entitled “Pearl millet [*Pennisetum glaucum* (L.) R. Br.] –blast [*Magnaporthe grisea* (Hebert) Barr.] interaction and the resistance mechanisms” at National Symposium on New paradigms of plant health management: Sustaining food security under climate change scenario organized by Indian Phytopathological Society, Eastern Zone at Bihar Agricultural University, Bhagalpur during November 17-19, 2018.
- Awarded second best oral presentation under M J Narasimhan award for the paper entitled “Study on inheritance and allelism of resistance in pearl millet to the pathogen and avirulence in *Sclerosporagraminicola* on host” at National Symposium on New paradigms of plant health management: Sustaining food security under climate change scenario organized by Indian Phytopathological Society, Eastern Zone at Bihar Agricultural University, Bhagalpur during November 17-19, 2018.
- Awarded second runner up award for exhibition of institute technologies in Regional Agricultural Fair at ICAR-Barapani.
- Awarded Dr. B. T. Raut Award for Best Oral Presentation for paper entitled “Turcicum leaf blight disease resistance in local maize germplasms under changing climatic conditions” during National Symposium on enhancing farm Income Through Sustainable Plant Health Management at ICAR Research Complex for NEH Region, Umiam organized by Association of Plant Pathologists and ICAR Research Complex for NEH Region, Umiam during November 6-8, 2019.

I. Research papers (Best five)

1. Sharma, R., Upadhyaya, H.D., Sharma, S., Gate, V.L and **Chandramani, R.** 2015. New Sources of Resistance to Multiple Pathotypes of *Sclerosporagraminicola* in the Pearl Millet Mini Core Germplasm Collection. *Crop Science*. 55: 1-10.

2. **Raj Chandramani**, Sharma R, Pushpavathi B, Gupta S K and Radhika K. 2018. Inheritance and allelic relationship among downy mildew resistance genes in pearl millet. *Plant Disease* 102, no. 6:1136-1140.
3. Singh S, Sharma R, Pushpavathi B, Gupta S K, DurgaRani Ch V and **Raj Chandramani**. 2018. Inheritance and allelic relationship among gene(s) for blast resistance in pearl millet [*Pennisetum glaucum* (L.) R. Br.]. *Plant Breeding* 137: 573-584
4. Sharma S K, Chanu N T, Anand Y R, Singh Y H, Singh S, **Raj Chandramani**, Baranwal V K, Rai R, Sanabam R, Roy S S, Ansari M A and Prakash N. 2018. First report of large cardamom chirke virus, a macluravirus naturally infecting chilli crop in India. *Plant Disease*. <http://dx.doi.org/10.1094/PDIS-09-18-1584-PD>
5. **Chandramani Raj.**, Manjunath Hubballi., Prabhuling R. B., Daliyamol., Nakkeeran S. and G. Chandrasekar. 2013. Inhibition of hydrolytic enzymes of *Colletotrichum capsici* by propiconazole and PGPR strains. *Bioinfolet*. 10 (1 A): 82 – 84.
6. **Chandramani Raj.**, Manjunath Hubballi., Prabhuling R. B., Daliyamol., Nakkeeran S. and G. Chandrasekar. 2013. Ergosterol biosynthesis inhibitor - propiconazole offers possibility of integration of bioagents and insecticides in pest management practices. *MadrasAgricultural Journal*. 100 (1-3): 183-186.
7. **Chandramani Raj**, Shweta Singh, Daliyamol, Manjunath Hubballi, Nakkeeran S. and Chandrasekar G. 2015. Diversity assessment of *Colletotrichum* species associated with chilli anthracnose and its characterization via species specific primers. *Indian Journal of Plant Protection*. 43(3): 341-349.
8. **Raj Chandramani**, Singh S, Avasthe R K, Pradhan Y, Firake D M, Behere G T and Kandpal B K. 2020. Prevalence of invasive fall armyworm, *Spodoptera frugiperda* (J.E. Smith) in organic maize agroecosystems of Sikkim. *Indian Journal of Entomology*. (Accepted)
9. Gopi R, Singh S, **Raj Chandramani**. 2019. Status of Fusarium diseases of crop plants in North East India. *Indian Phytopathology*. 72(4):637-646.

J. Books

- Avasthe R K, Singh R, Singh S, **Raj C**, Babu S. 2021. Organic Spices in North East India. Today & Tomorrow's Printers and Publishers, New Delhi. 328p
- Sharma R. K., **Raj C**, Singh S, Yele Y M and Golive P. 2019. Integrated pest management in major crops of Sikkim-A guide book (Second edition). Compiled, written and Published by State Biocontrol Lab, IPM Section, Agriculture Department, Government of Sikkim.Pp 292.

K. Technical bulletins/Manuals

- **Raj C**, Singh S and Avasthe R K. 2018. Training Manual on Biological Control and the Agents: Isolation, Efficacy, Mass Multiplication and Delivery Systems. ICAR-National Organic Farming Research Institute, Tadong-737102, Gangtok, Sikkim. SKM/EF/2018/02.

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- Avasthe R.K. and Yadav Ashish (Eds.). 2019. Training manual on Organic Farming in Sikkim. Published by ICAR- National Organic Farming Research Institute (Formerly ICAR Research Complex for NEH Region, Sikkim Centre, Tadong-737102, Gangtok, Sikkim, India. 496p. (SKM/TM/2019/01) (Associate editor).
- C.K Thankamani, V. Srinivasan, S. Hamza, Anjani Kumar Jha, Chandan Maiti, **Chandramani Raj**, Mariam Annal, VishambharDayal, Kusum K Dekka, Ashuthosh Goutam (Eds. 2019) Organic production technologies of major spices for North Eastern States, ICAR-Indian Institute of Spice Research, Kozhikode-673012, Kerala, India.

L. Extension folders

- Gopi R., Singh S, **Raj C**, Yadav A, Avasthe R K, Singh N J, Kalita H and MSingh. Organic Oyster Mushroom Cultivation Technology. SKM/EF/2017/17
- **Raj C**, MSingh, Avasthe R K, Kalita H, Gopi R, Singh N. J. and Singh S. 2019. Integrated management of pests and diseases in large cardamom. ICAR-National Organic Farming Research Institute, Tadong-737102, Gangtok, Sikkim. SKM/EF/2019/11.
- **चंद्रमणि राज**, मातबरसिंह, श्वेतासिंह, एच. कलिता, आर. गोपी, एन जॉनसन सिंह और एस. एम. कण्डवाल. 2019. सिक्किम में बड़ी इलायची में कीटों और बीमारियों का एकीकृत प्रबंधन. SKM/EF/2019/12.
- श्वेता सिंह, आर गोपी, **चंद्रमणि राज**, आर के अवस्थी, एन जॉनसन सिंह और एस एम कंडवाल. 2018. जैविक मशरूम बीज उत्पादन प्रौद्योगिकी. SKM/EF/2018/02.

M. Other Scientific works

- Conducted more than 80 training and demonstration programs on organic insect, pest and disease management for various stakeholders including farmers, students, state officials, extension workers etc.
- Published more than 50 book chapters, technical chapters, conference/seminar abstracts, technical bulletins, manuals.
- Reviewer of Journal of Plant Diseases and Protection
- Reviewer of Indian Journal of Plant Protection
- Reviewer of International journal of Agriculture Sciences
- Life Member of Indian Journal of Plant Protection
- Life member of Indian Phytopathology
- Life member of Indian Journal of Hill Farming.

- Life member of Indian Society for Spices