

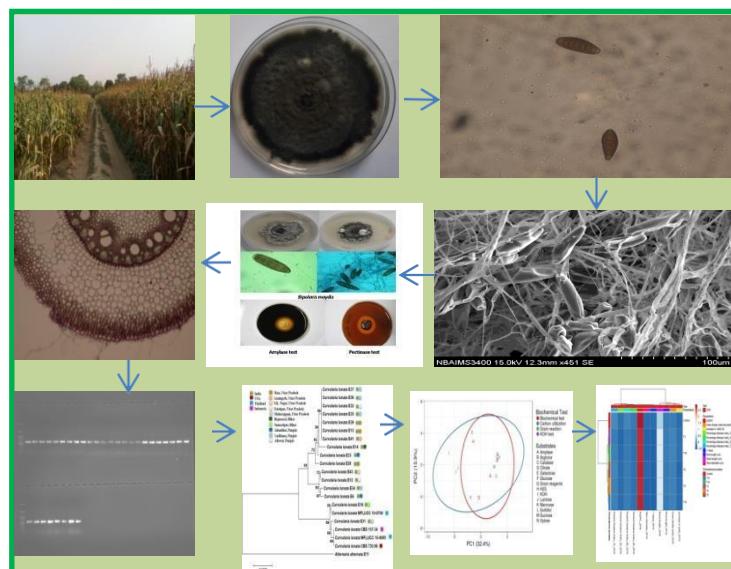


## National Training Programme

on

## Multidimensional Quantitative Approaches to Unravel Host Pathogen Interaction in Crop Plants

3<sup>rd</sup> November -10<sup>th</sup> November, 2022



### Organizing team

Course Director	: Dr. Alok K. Srivastava, Director
Course Coordinator	: Dr. Nazia Manzar, Scientist(Sr. Scale)
Course Co-Coordinator	: Dr. Abhijeet S. Kashyap, Scientist(Sr. Scale)
Course Co-Coordinator	: Dr. Pawan K. Sharma, Principal Scientist
Course Co-Coordinator	: Mr. Jyoti Prakash Singh, Scientist

### ICAR-National Bureau of Agriculturally Important Microorganisms

(ISO 9001:2008 Certified Institute)

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### Introduction

Plant diseases are a significant threat to global food security. Given that climate variability is leading to newly emerging diseases, crop loss due to plant disease is poised to become one of the biggest crop production problems of this century. One central question in plant pathology is how pathogens cause infection and manage to evade or suppress plant immunity to promote disease. This interplay between pathogen invasion and host immune responses is a multilayered process. In order to effectively control plant diseases, researchers need to have a thorough understanding of the ecological and environmental interactions between plant pathogens and other biotic variables, as well as a strong grasp of the concepts of pathogenesis and epidemics. Both molecular and field-scale approaches for disease management are critical to making gains in plant production. New genomic and phenomics tools demand that plant pathologists have a strong foundation in quantitative skills, including big data and image analysis. The goal of this training program that will train research fellows to solve plant disease problems by offering unique experimental learning and leadership opportunities from molecular to field plant pathology integrated with cross-disciplinary training in quantitative sciences. Sustainable plant disease management techniques that assure food security and socioeconomic advancement but also have less negative effects on the environment and natural resources need to be emphasized significantly in the future. Agricultural methods and plant disease management strategies of the present day will need to evolve if we wish to meet the challenges ahead. When it comes to managing plant diseases economically and sustainably, an integrated systems understanding approach is essential for comprehending the whole scope of the relationship between host and pathogen, as well as their mutual impact on the surrounding environment. In this way, it is crucial to learn not only about the pathogen itself, its ecological niche, and the principles of pathogenesis and epidemics, but also about the interactions it has with other microbial populations and the processes of the host plant's defenses. Plant disease management in an ecological context should think about the potential effects of different techniques on both agricultural and ecological sustainability, as well as how to employ ecological principles to limit disease epidemics by modifying farming practices. Host-pathogen interaction studies are the priority and need of this omics era.

The following thematic areas will be addressed in this training-

1. **Concept development in host pathogen interaction studies**
2. **Plant-Microbiome studies**
3. **Molecular tools for characterization of plant pathogens- A genotypic approach**
4. **Host -pathogen Interactome: Insights into Défense mechanism at biochemical and cellular level**
5. **Application of Statistical Tools for Data Analysis and Interpretation in host pathogen interaction studies**

The training programme will include both **lectures and practical sessions** on the above theme areas. Resource experts from the Bureau and other reputed institutes will address the participants.

#### **Expected benefits to the participants**

- Participants will get comprehension overview and hands on research experience and training to understand the pathogenesis and intracellular mechanisms of plant pathogens, and of the genetic, biochemical and physiological mechanisms employed by crop plants to defend themselves from pathogen.
- **About NBAIM**  
ICAR-National Bureau of Agriculturally Important Microorganisms (ICAR-NBAIM) is among the premier institutions of Indian Council of Agricultural Research (ICAR) for microbiological research in India. The Bureau aims at collection, maintenance and conservation of agriculturally important microorganisms and their genomic resources for future needs. The Bureau is engaged in the cutting-edge research themes in microbial biotechnology and bioinformatics for the development of technologies, processes, protocols and products which will ultimately benefit Indian academics, research institutions and farmers. The National agriculturally important microbial culture collection has been recognised as International depository authority in 2020. As part of our Human Resource Development (HRD) Programs, ICAR-NBAIM has successfully organized several National and International training programs on different areas of molecular microbial identification, characterization, molecular taxonomy, biocontrol, plant-microbe interactions and the applications of bioinformatics in gene mining since the inception of the Bureau.
- Microbial research at NBAIM basically focuses in the areas of microbial diversity analysis from extreme habitats, biological control of plant diseases, microbe mediated plant growth promotion, plant-microbe interaction, quality microbial management system with special emphasis on biosystematics, DNA fingerprinting, microbial genomics and proteomics, metabolomics, stress tolerance in microbes and bioinformatics

#### **Eligible participants**

Research scholars, Post-docs, Students, Technical officers, Scientists/Assistant Professors/Lecturers or above, from any university/institute/organization/private or non-government organizations/Companies/firms working in the area of biological sciences.

#### **Fees for the training**

Rs. 4000 per trainee for students/ research scholars/post doctoral fellows and Rs. 6000/- for Scientist/Lecturers/Assistant Professors or above/Technical officers from Universities or Govt. Institutions. Rs. 10,000 per trainee for researchers from private or non-government organizations/Companies/firms. **The course fee covers lodging, food and training materials.**

#### **How to apply?**

Eligible participants may write to the Course Director and Course Coordinators along with their RESUME (not more than one page) on/or before 25<sup>th</sup> October 2022. The selected candidates will be notified on their email..

please send the application to [naziamanar786@gmail.com](mailto:naziamanar786@gmail.com) or [abhijeet4497@gmail.com](mailto:abhijeet4497@gmail.com)

#### **\* Bank Details:**

Registration fee may be paid through Cash/DD/Bank Transfer:

In favour of ICAR-Unit NBAIM, payable at Maunath Bhanjan, U.P.

Account Name: ICAR-NBAIM

Account Number-11143371878

IFSC code-SBIN0001671

Branch Name-SBI, Sahadatpura, Maunath Bhanjan, U.P.

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**Proforma**

1. Title of the Training Programme:
2. Name and address of the sponsoring Institute:
3. Name and address of the nominee:
  - a. Name:
  - b. Designation:
  - c. Postal address:
  - d. Phone:
  - e. Email:
  - f. Fax:
  - g. Mobile:
4. Date of birth:
5. Educational qualifications:
6. Experience:
7. Particulars of Programme fee remitted:
  - a. No. and date of draft:
  - b. Name of the Bank on which draft is drawn:
  - c. Amount:
8. Nominating authority:

Affix  
Applicant's  
Photograph

Name and Signature of Applicant