



**National Training**

**on**

# **Biological Control: From Fundamentals to Bioformulations**

**January 06-13, 2026**

## **Programme Director**

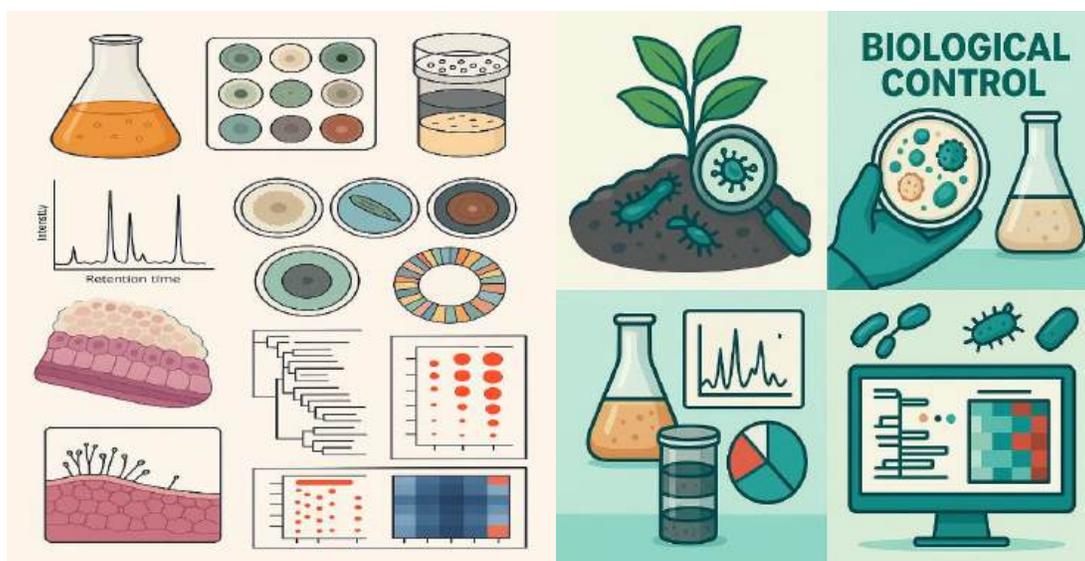
**Dr. Alok K. Srivastava, Director**

## **Course Coordinators**

**Dr. Abhijeet S. Kashyap, Scientist (SS) (Plant Pathology)**

**Dr. Nazia Manzar, Scientist (SS) (Plant Pathology)**

**Dr. Jyoti P. Singh, Scientist (Plant Biochemistry)**



**ICAR-National Bureau of Agriculturally Important Microorganisms**

(ISO 9001:2008 Certified Institute)

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Understanding and conserving our national heritage of agriculturally important microorganisms

## About NBAIM

National Bureau of Agriculturally Important Microorganisms (NBAIM) is one of the premier institutions of Indian Council of Agricultural Research (ICAR), leading research and development programs in the field of microbial research in India. The Bureau aims at the collection, maintenance, and conservation of agriculturally important microorganisms and their resources for future needs. The Bureau is engaged in cutting-edge research in Agricultural Microbiology, Microbial Biotechnology, Plant Pathology, and Bioinformatics for the benefit of researchers and farmers. Apart from core research, human resource development is also one of its mandates. The Bureau has organized several successful training programs on various aspects of basic and applied sciences to benefit different stakeholders of society. In this line, national and international training programs on different areas of molecular and microbial identification, characterization, molecular taxonomy, biological control, plant-microbe interactions, and the applications of bioinformatics in gene mining have been organized since the inception of the Bureau.



Key research areas at ICAR-NBAIM pertained to microbial diversity analysis from extreme and unique habitats, biological control of plant diseases, microbiome, microbe-mediated plant growth promotion, plant-microbe interaction, abiotic stress tolerance, quality microbial management system with special emphasis on biosystematics, DNA fingerprinting, microbial genomics and proteomics, metabolomics and bioinformatics.

## Background

Biological control stands at the forefront of sustainable plant disease management, offering an environmentally responsible alternative to chemical-intensive agriculture. As agriculture moves toward resilience, eco-safety, and precision-based solutions, understanding the fundamental principles of biological control and translating them into field-ready bioformulations has become a scientific priority. The foundations of biological control were rooted in classical plant pathology and the integration of molecular biology, multi-omics, and computational tools has transformed the way researchers discover, characterize, and optimize biocontrol agents. Techniques such as PCR, DNA/RNA sequencing, metagenomics, transcriptomics, and volatilomics now provide deeper insights into microbial identity, functional traits, and the molecular mechanisms underlying disease suppression. At the same time, bioformulation science has emerged as a crucial bridge between laboratory discoveries and practical field applications. The development of stable, effective, and user-friendly bioformulations based on microbial cultures, biochemical metabolites, VOCs, and compatible carriers ensures that biological control agents can perform reliably under diverse agroecological conditions. Advances in encapsulation, consortia development, stabilization technologies, and quality standards now make it possible to convert potent lab isolates into scalable bioproducts. This training programme, "Biological Control: From Fundamentals to Bioformulations," integrates classical principles with modern advances. Participants will learn the foundations and emerging directions of biological control, understand the host-pathogen-biocontrol triad, and explore defense mechanisms such as ISR, ROS. Hands-on modules cover microbial isolation, antagonism assays, VOC analysis, SynCom design, and omics-based characterization. Trainees will also learn how genomics, metabolomics, AI, and machine learning strengthen biocontrol research and prediction. The programme concludes with bioformulation science transforming lab cultures, metabolites into stable, field-ready products. Overall, this integrated approach equips participants to design and deploy next-generation, sustainable biocontrol solutions for resilient agroecosystems.

## Theme

In this perspective, the following thematic areas will be addressed in this hands-on training programme –

- Biological Control: Foundations, Evolution and Emerging Directions
- Host–Pathogen–Biocontrol Triad: Ecology, Mechanisms & Interactions
- Synthetic Microbial Communities (SynComs)- Concept and Design
- Omics and AI-Powered Bioinformatics in Biocontrol Research
- Bioformulation Science: From Lab Cultures to Products.
- Integrating genomics, metabolomics, and machine learning tools for enhanced biocontrol studies.

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

## Expected benefits to the participants

- Participants will get hands on experience in characterization of Biocontrol agents, following conventional techniques and advanced molecular tools.
- Early career researchers and anyone involved or embarking into this biocontrol field will be benefited by getting exposure and know how to do cutting edge research in Microbial Ecology and Host-Pathogen-Biocontrol Dynamics

## Eligible participants

M.Sc./Ph.D. students, Research Scholars, Post-Doctoral Fellows, Technical Officers, Scientists/Assistant Professors/Lecturers or above, from any University/ institute/ organization/FPOs- working in the area of biological sciences.

## Fees for the training

Rs. 5000/- per trainee for students/research scholars, Rs. 8000/- for Scientist/Lecturers/Technical officers from public/private Universities or Govt. Institutions, and Rs. 12,000 per trainee for researchers from private or non-government organizations/Companies/ Firms. **The fees include accommodation, food, and training materials.**

## How to apply?

Eligible participants may write to the Director, ICAR-NBAIM along with their RESUME (not more than one page) and Application form on/or before 25th December, 2025. The selected candidates will be notified by email.

E-mail, Director ICAR-NBAIM- nbaimicar@gmail.com

Please send a copy also to [abhijeet4497@gmail.com](mailto:abhijeet4497@gmail.com) or [naziamanzar786@gmail.com](mailto:naziamanzar786@gmail.com)

For any queries please contact: 8810512074 (Dr. Abhijeet), 06395985927 (Dr. Nazia), 8527184215 (Dr. Jyoti)

## \* **Bank Details: (Pls. Pay only after receiving the acceptance letter)**

Registration fee may be paid through Cash/DD/BankTransfer:

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

Account Name: ICAR-NBAIM

Account Number-11143371878

IFSC code-SBIN0001671

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

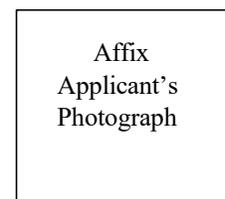


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(Indian Council of Agricultural Research)



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**Biological Control: From Fundamentals to Bioformulations**  
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**APPLICATION FORM**



**Personal Details Name** :  
**Gender** :  
**Designation/Occupation** :  
**E-mail** :  
**Mobile/Contact Number(s)** :  
**Contact Details Full Address** :  
**City & State** :  
**Academic Details**  
**Degree (M.Sc./M.Phil. /Ph.D.)** :  
**Subject Specialization** :  
**College/Department** :  
**University/Institute** :  
**Accommodation Required** : Yes/ No (Please select with a tick (√) mark)

**Registration fees (Tick whichever is applicable)**

Post-docs, Research scholars and Students from any university/institute/ organization	Rs. 5000/-
Scientist/Lecturers/Technical officers from public/private Universities or Govt. Institutions	Rs. 8000/-
Researchers from private or non-government organizations/Companies/ Firms	Rs. 12,000/-

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Signature of the Applicant