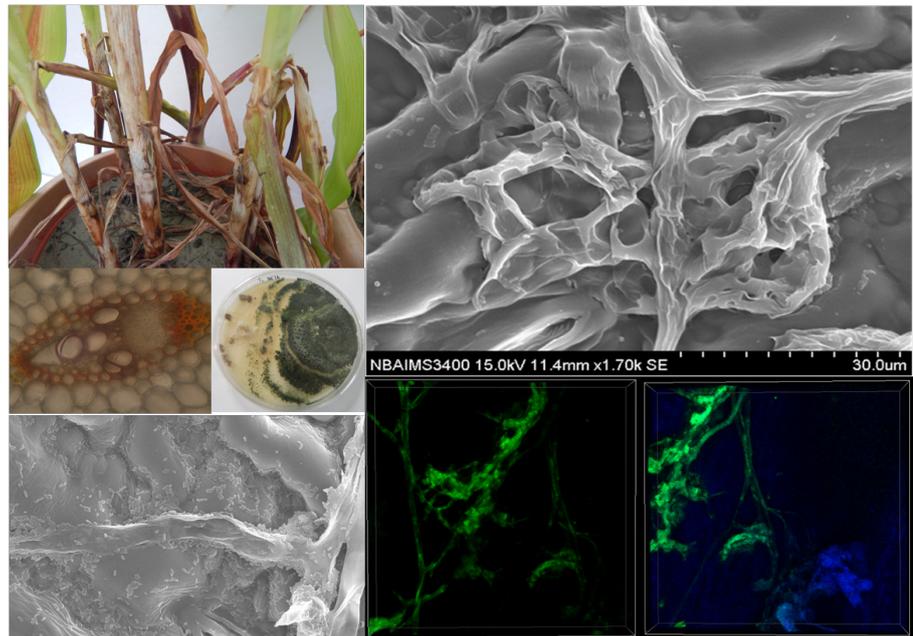


ICAR-NBAIM

Understanding and conserving our national heritage of agriculturally important microorganisms



**National Training
on
Emerging Trends in Biological Control of
Plant Pathogens
January 23 - 31, 2018**



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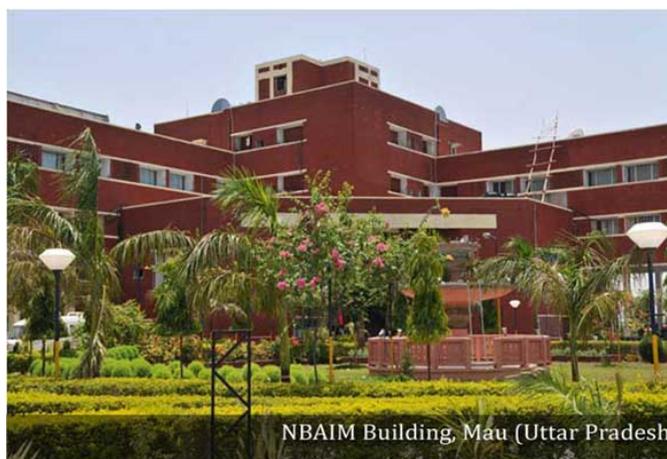
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About NBAIM

National Bureau of Agriculturally Important Microorganisms (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. As part of our Human Resource Development (HRD) Programs, 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.

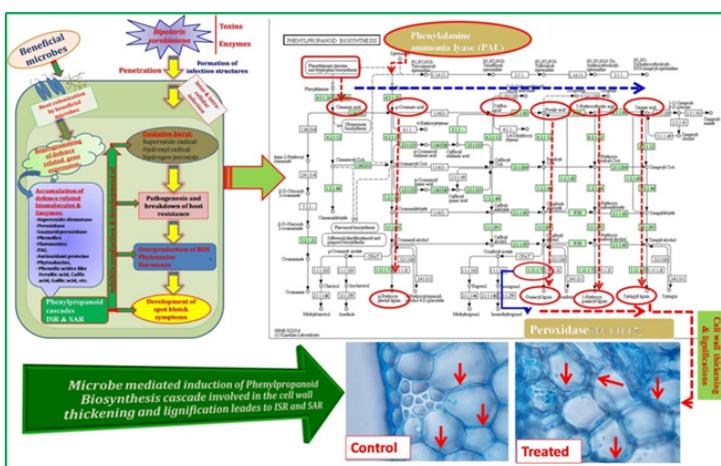


NBAIM Building, Mau (Uttar Pradesh)

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.

Background

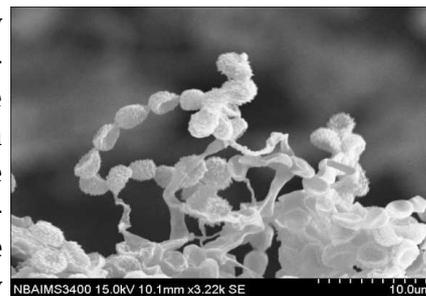
It may not be an easy task at the present time to convince farmers worldwide to adopt a systems approach to disease management and make greater use of biological control. Yet in an agricultural industry that is still dominated by pesticides, biological control has found its place in the form of augmentative releases, particularly for the management of diseases. Plants suffer from a number of pest and diseases and are attacked by a number of fungi, bacteria, viruses and nematodes leading to severe economic losses of billions of dollars by reducing crop yield, quality and contaminating



grains with toxic chemicals. Chemical control is considered one of the most effective control measures regardless of being highly expensive and toxic to agro-ecosystems. Further, use of resistant cultivars is another important approach conferring sustainability to the ecosystem but breakdown of resistance has remained a great concern. The huge diversity of microorganisms that reside in the rhizosphere and the phyllosphere are responsible for diseases in plants as well as their suppression. Current research is addressing ways of harnessing such biodiversity to control plant diseases. In the past, researchers were not much aware about the use of bioagents of microbial origin. Earlier, it was thought that plants try to defend themselves against fungal and other microbial pathogens by the induction of both localized and systemic responses. Interaction of a pathogen with host plant triggers a localized hypersensitive response. Complex molecular mechanisms that regulate the spread of pathogens are still less explored. Simultaneously, initiation of long distance signals at the infection site takes place leading to the induction of specific pathogenesis related (PR) genes in uninfected parts of the plant was also a question of research.

“National Training on Emerging Trends in Biological Control of Plant Pathogens”

Recently, with the advancement of science and technology, new concepts relating to bioagents and harnessing their potential as microbial bioagents have emerged. Biological control agents mediate arsenal of cellular mechanisms in plants leading to protection from invading pathogens. One of the earliest microbe mediated defence responses is the generation of reactive oxygen species (ROS) and antioxidant enzymes, such as hydrogen peroxide (H_2O_2), superoxide anion (O_2^-) and hydroxyl radical ($\bullet OH$). This may trigger many downstream processes which cause a dynamic defence response leading to phytoalexin production, callose deposition, strengthening of cell walls, synthesis of secondary metabolites and pathogenesis related (PR) proteins resulting in inhibition of the growth of invaders. However, recently attention has been given to identifying and utilizing the consortia of rhizospheric beneficial microbes that can mediate induced systemic resistance (ISR), a condition in which the innate defense responses of plants are raised against biotic challenges and also rhizosphere microbiome plays a key role in reprogramming the defense responses of plants.



Theme

In this perspective, the following thematic areas will be addressed in this training-

- Characterization and identification of biological control agents
- Recent advances in the delivery mechanisms/strategies for enhancing biocontrol efficacy
- Microbe-mediated Molecular and biochemical basis of disease resistance in plants.
- Recent advances in microbe based product development.
- Issues related to biological control of plant pathogens.

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 biological control agents of microbial origin following conventional techniques and advanced molecular tools.
- Early- stage experimental researchers and anyone involved or embarking into this field will be benefited by getting exposure and know how to cutting edge research in biological control of plant pathogens.

Eligible participants

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

Fees for the training

Rs. 2500 per trainee for students/ research scholars and Rs. 5000/- for Scientist/Lecturers/Assistant Professors or above/Technical officers from Universities or Govt. Institutions. Rs. 10000 per trainee for researchers from private or non-government organizations.

How to apply?

Eligible participants may write to the Director, ICAR-NBAIM along with their RESUME (not more than one page) on/or before 31st December, 2017. The selected candidates will be notified on 5th January, 2018 by email.

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

Please send a copy also to nbaimudai@gmail.com , pawan112000@gmail.com