



ICAR Sponsored Winter School
on

Novel Techniques in Mass Culturing of smart Microbial biocontrol agents for the development of biopesticides

3-12-2019 to 23-12-2019 (21 days)



Organized by

ICAR-National Bureau of Agricultural Insect Resources

P.B. No. 2491, H.A. Farm Post, Hebbal, Bellary Road,
Bengaluru-560024



Background

In India, around 30% of the crop yield potential is lost as a result of damage caused by insect pests, nematodes, plant diseases and weeds corresponding to 30 million tons of food grain loss. In an attempt to avoid such losses, the primary strategy employed has been to manage the pests by using chemical pesticide. Despite their success, potential hazards or risks have emerged that have had a substantial impact on the environment and other non-target organisms. Indiscriminate and excessive use of the chemical pesticides have also led to destruction of natural enemies and plant disease antagonists of crop pests, pesticide residues on produce, contamination of ground water and development of pesticide resistance in pests.

To overcome the hazards associated with chemical pesticides, the use of biopesticides (pesticides derived from such natural materials as animals, plants, microorganisms and certain minerals) is increasingly being adopted. A great deal of knowledge has been gathered on the use of microorganisms including bacteria, fungi, virus, yeast, mycorrhiza, actinomycetes, protozoan and nematodes for the management of pest and diseases. Microbial biocontrol agents have offered some realistic alternatives to chemical pesticides when used as part of an ecologically based integrated pest management or area-wide pest management strategy. There are many reasons for the recent increased interest in microbial biopesticides, including the development of resistance to conventional synthetic pesticides, a decline in the rate of discovery of novel insecticides, increased public perception of the dangers associated with synthetic pesticides, host-specificity of microbial pesticides, and improvement in the production and formulation technology of microbial biopesticides. The rapid biopesticide success is due to its effectiveness and safety as compared to chemical insecticides. Great successes have been made by the farmers in India by adopting the microbial bio-pesticides based technologies.

A great deal of developments had happened in the characterization and culturing of microbial biopesticides at ICAR-NBAIR as well as in the country. ICAR-NBAIR, erstwhile, Project Directorate of Biological Control (PDBC) hand-in-hand with AICRP Biological control of Insects, Diseases, Weeds and Nematodes have immensely contributed to the science of biological control of insect pests, diseases, weeds and nematodes, and is considered as the centre of excellence for microbial biocontrol in the country. Hence, a winter school on *“Novel techniques in mass culturing of smart microbial biocontrol agents for the development of biopesticides”* of 21 days will sensitize and update the knowledge of plant protection Scientists about the advanced techniques on mass culturing of microbials for the production of biopesticides for the management of pests and diseases of crop plants.

Objectives

- ✓ To provide advanced hands on training on mass culturing techniques of microbials for the production of Biopesticides
- ✓ To provide an opportunity to discuss and exchange ideas with experts / resource persons in the field of biopesticide

Course Outline

- Mass culturing of host insects for the production of microbial biopesticides
- Mass culturing techniques of entomopathogenic fungi
- Culturing techniques of insect viruses for management of insect pests of crops
- Mass culturing techniques of entomopathogenic bacteria for the management of insect pests of crops
- Mass culturing techniques of entomopathogenic nematodes for the management of insect pests of crops
- Mass culturing techniques of antagonistic microorganisms for the management of plant diseases
- Mass culturing techniques of antagonistic microorganisms for the management of plant parasitic nematodes
- Culturing and utilization of mycorrhiza and actinomycetes for plant disease management
- Compatibility studies of microbial biopesticides with chemicals
- Registration of microbial biopesticides and regulation requirements
- Commercialization of microbial biopesticides
- NBA guidelines for exchange of biological resources
- Visits to commercial units, fields

Faculties/Resource Persons

ICAR-NBAIR has great strength of renowned Scientists working on biological control insect pest and plant diseases. In addition, resource persons/experts from UAS, Bengaluru, IHR and other Institutions will be invited for delivering specific lectures and practicals.

Venue, Date and Duration

The 21 days winter School will be conducted at ICAR-NBAIR, Bengaluru from 03-23rd December, 2019.

Target Group

Participation in summer School is open for the researchers/ teachers not below the rank of Scientist/ Assistant Professor/ Lecturer/ Subject Matter Specialist having a minimum of two years' experience in related research/ teaching / extension experience in ICAR/ State & Central Agricultural Universities/ AMU/ BHU/ Viswa Bharti/ Nagaland University/ KVK's in Entomology, Plant Protection, Plant Pathology, Nematology, Agricultural Microbiology or any other related disciplines. The number of participants for the programme will be limited to 25. The selection of the candidates will be made by screening committee as per the guidelines of ICAR in force.

Nomination

Nomination for participation in the Summer School may be made in prescribed proforma given herewith. Directors of ICAR Institutes, Vice Chancellors of Agricultural Universities, Heads/ Directors of University Departments and Principals of affiliated colleges can nominate one or two suitable candidates from respective Institute/ University. Preference will be given for candidates who are already working/ likely to take up research work related biological control of insect pests and diseases of crops. **Candidates should compulsorily upload their advance copy of the application in the ICAR CBP portal (cbp.icar.gov.in).** Candidates may send the hard copy of the application through mail/ Fax/ speed post through proper channel. However, final selection will be subject to receipt of the application duly recommended by the competent authority. Candidates should bring permission and relieving letter from the respective Institute.

Important Dates

| | |
|---------------------------------------------------|-----------------------------------|
| Last date for receiving the nomination form | : 22 nd October, 2019 |
| Intimation of selection | : 31 st October, 2019 |
| Confirmation by participants | : 5 th November, 2019 |
| Intimation to waitlisted participants if selected | : 10 th November, 2019 |

Registration Fee

A registration fee of Rs. 50/- (Rupees fifty only) per participant is fixed as per ICAR guidelines, which can be sent through postal order/DD in favour of Director, ICAR- NBAIR payable at Bengaluru along with the application form.

Travel, Boarding & Lodging

Selected participants are eligible for TA (upto 2 AC Train fare by shortest route as per ICAR norms). Food & accommodation will be provided by the organizers. No DA is admissible to the participants. The local participants are not eligible for boarding and lodging, however, working lunch and refreshments will be provided.

Institute Information

National Bureau of Agricultural Insect Resources is a nodal ICAR Institute at National level for research and development on all aspects of work on harnessing resources of insects including biological control of crop pests and weeds, training, information, repository, technology dissemination and National / International cooperation. NBAIR is located in the Bengaluru to Bellary Highway NH 7, opposite to CBI (Central Bureau of Investigation), next to Veterinary College, Hebbal Bengaluru. The Institute is located 5 km from Cantonment railway station, 4 km from Yaswanthpur railway station and 8 km from Bengaluru city junction and 35 km from KIA airport. Buses which are plying to Yelahanka, Devanahalli, Doddaballapur, international airport will pass through NBAIR. Participants are requested to get down at CBI bus stop to reach NBAIR.

Application Form for Participation in Winter School

(To be sent directly to Course Director of Winter School concerned)

ICAR sponsored 21 days winter school on “**Novel techniques in mass culturing of smart microbials biocontrol agents for the development of biopesticides** from 3rd-23rd December, 2019

1. Name in full (Block Letters) :
2. Designation:
3. Present Employer and Address:
4. Address for Correspondence:
5. Tel No:(O).....(Mob.)
6. Email:
7. Date of Birth and age:
8. Sex:
9. Marital Status: Married/ Unmarried
10. Teaching/Research/Professional Experience
(Mention post held during last 5 years)
11. Number and list of Publications in the relevant area:
12. Academic record:

| Examination | Subject | Year of Passing | Institution/ University | OGPA / % |
|--------------------------------------|---------|-----------------|-------------------------|----------|
| Bachelor's Degree | | | | |
| Master's Degree | | | | |
| Ph.D | | | | |
| Other certificates/ Diplomas etc. | | | | |

13. Mention details if you have participated in Summer or Winter Schools/ Short Courses, etc. during the previous five years under ICAR/other organizations:
14. Postal order /DD No..... Date..... for Rs.50/- (Rupees fifty only) (non-refundable) for registration of application

Signature of the applicant

Recommendations of the forwarding Institute

Dr./Shri./Ms. is hereby nominated for participation in the 21 days summer school training at ICAR-NBAIR, Bangalore during December 03-23, 2019.

Signature, Designation & Address

Certificate

It is certified that the information was furnished by the office record and was found correct.

**Signature,
Designation, Address and Office Seal of the Sponsoring Authority**

All correspondence to be addressed to

Course Director

Dr. G. Sivakumar,

Principal Scientist (Microbiology)

ICAR-National Bureau of Agricultural Insect Resources (NBAIR)

P.B.No 2491, H A Farm Post, Hebbal, Bengaluru - 560 024.

Phone & email: 9481190013, sivakumarg.nbaii@gmail.com

Course Coordinators

Dr. M. Mohan, Principal Scientist (Entomology)

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Dr. G. Mahendiran, Scientist (Entomology)

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Dr. Jagadeesh Patil, Scientist (Nematology)

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ICAR-NBAIR, Bengaluru - 560 024

For Further Details

Dr. Chandish R. Ballal,

Director

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