



ICAR-NBAIR sponsored HRD Training Programme
on
“Molecular Characterisation of Insect Pests and Natural
Enemies”

September 21-30, 2026, Bengaluru



Organized by
ICAR-NATIONAL BUREAU OF AGRICULTURAL INSECT RESOURCES
P.B. No 2491, H.A. Farm Post, Hebbal, Bengaluru - 560 024.

Background

Insects represent one of the most diverse groups of organisms and play important roles in agriculture, ecosystems, and food security. However, many insect species are major agricultural pests that cause significant losses in crop production through direct feeding damage and transmission of plant pathogens. Accurate and timely identification of insect species is therefore essential for effective pest surveillance, quarantine, biological control, and integrated pest management. Conventional identification based on morphological characters is often challenging, particularly for closely related or cryptic species, immature stages such as eggs and larvae, and damaged specimens. DNA barcoding has emerged as a reliable molecular approach to overcome these limitations by using a short, standardized DNA sequence, most commonly the mitochondrial cytochrome c oxidase subunit I (COI) gene, for rapid species identification and discrimination.

The integration of DNA barcoding with bioinformatics has greatly enhanced the ability to characterize and understand insect diversity. Bioinformatics tools allow researchers to process, align, compare, annotate, and analyse DNA sequences obtained from insect specimens and to perform sequence similarity searches, phylogenetic analysis, haplotype analysis, and genetic diversity studies. DNA barcoding and sequence-based approaches are particularly useful for identifying morphologically indistinguishable species, invasive and quarantine pests, parasitoids, predators, and other beneficial insects. These approaches can also support the study of insect–host relationships, population structure, biodiversity, evolutionary relationships, and the monitoring of biological control agents. Thus, molecular identification combined with bioinformatics provides valuable information for developing accurate and sustainable insect management strategies.

India possesses enormous insect diversity and has a large agricultural sector that is continuously challenged by insect pests. Strengthening molecular taxonomy, DNA barcoding, and bioinformatics capabilities is therefore important for accurate insect identification, biodiversity documentation, pest diagnostics, invasive species detection, quarantine, and biological control programmes. ICAR–National Bureau of Agricultural Insect Resources (ICAR-NBAIR), Bengaluru, has made significant contributions to agricultural entomology, insect biodiversity, pest characterization, and biological control in India. Hence, the training programme on “**Molecular Characterisation of Insect Pests and Natural Enemies**” will provide researchers and plant protection professionals with updated knowledge and practical exposure to molecular identification, DNA barcode analysis, sequence-based species identification, phylogenetic and haplotype analysis, and bioinformatics tools, thereby strengthening the application of modern molecular approaches in entomological research and sustainable pest management.

About NBAIR

ICAR-National Bureau of Agricultural Insect Resources (ICAR-NBAIR), Bangalore, act as a nodal agency for collection, characterization, documentation, conservation, exchange and utilization of agriculturally important insect resources (including mites and spiders) for sustainable agriculture. The Bureau’s Museum has been designated by the Ministry of Environment & Forests as the “National Repository” under the Biological Diversity Act, 2002 for agriculturally important insects, mites & spiders. The National Insect Museum now holds around 0.41 million insect specimens (dry and wet) including around 500 types. The molecular biology laboratories, recently upgraded at ICAR-NBAIR, have made significant progress in DNA barcoding and gene editing of agriculturally important insect

pests. Molecular characterization techniques, utilizing COI gene, elongation factor, 28S rRNA gene, LAMP, RPA, CRISPR and species-specific markers, were employed to study key invasive pests, natural enemies & biocontrol agents.

About Division of Genomic Resources

Division of Genomic Resources is one of the three Divisions of ICAR-NBAIR, with the following activities

- Molecular characterisation and DNA barcoding of insects and their resources.
- Decoding whole genomes of insects and entomopathogens to develop innovative gene-based strategies for enhancing beneficial traits.
- Genome editing of insects using CRISPR and related technologies for functional genomics, biosafety evaluation and pest management.
- Gene and allele mining for the selection of genes of specific interest and their utilization, RNAi technology for IPM.

Facilities:

Well-equipped molecular entomology Lab with facilities *viz.*, Real Time PCR, Thermal Cycler, Microinjector/ manipulator, with IBSL-2 facility. High Performance Computer Application Facilities with various genome analysis software and tools.

Objectives

- ✓ To provide insights about the techniques in molecular characterization of Insects.
- ✓ To generate knowledge on DNA-Barcoding and Molecular phylogeny of Insects.
- ✓ To provide hands on training on bioinformatics and software analytical tools.

Course Outline

- Introduction of schools of taxonomy and implications of conventional taxonomy.
- Introduction to Molecular taxonomy and DNA-Barcoding.
- DNA-Barcoding of insects, sequence submission protocols
- The study of some sequence editing tools and other bioinformatics tools.
- Brief review of insect genome database and their utility, and gene annotation using different bioinformatics tools.
- Finding phylogenetic relationship for insect related genes and proteins.

Faculties / Resource Person

ICAR-NBAIR has great strength of renowned Scientists working on molecular entomology biological control of insect pests and plant diseases will deliver specific lectures and practical.

Venue, Date and Duration

The 10 days training programme will be conducted at ICAR-NBAIR, Bengaluru, Karnataka from **21st to 30th September, 2026**.

Who can apply ?

Participation in this training program 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 Universities/ 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 20. 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 training 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 to molecular characterization, DNA-Barcoding. **The duly completed application form, approved by the competent authority of the respective organization, may be submitted through the proper channel. Candidates may send the application either as a hard copy by post or as a scanned copy by email.** Selected candidates are required to bring the necessary permission and relieving letter from their respective Institute/University at the time of attending the Summer School.

Important Dates

Last date for receiving the nomination form	: 05 th September, 2026
Intimation of selection	: 10 th September, 2026
Confirmation by participants	: 14 th September, 2026
Intimation to waitlisted participants if selected	: 15 th September, 2026

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 The Director, ICAR-NBAIR payable at Bengaluru along with the application form.

Travel and Accommodation

Travel expenses (TA/DA) and accommodation charges for participation in the training programme shall be borne by the respective participants' institutes. Accommodation in the Guest House of the Organizing Institute, ICAR-NBAIR, may be provided to trainees on a payment basis, subject to availability.

Working lunch and session tea/refreshments will be provided by ICAR–NBAIR. Local participants will not be eligible for boarding and lodging facilities; however, working lunch and refreshments will be provided.

Institute Location

ICAR-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 Yaswantpur 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 ICAR-NBAIR. Participants are requested to get down at CBI bus stop to reach ICAR-NBAIR.

Course Directors

Dr T. Venkatesan

Director(A), ICAR-NBAIR

Dr R. Gandhi Gracy

Principal Scientist

Course Coordinators

Dr M. Mohan, Principal Scientist

Dr Sagar, D., Senior Scientist

Dr Manjunatha, C., Senior Scientist

Dr Shivakumara, K.T., Scientist

Course Co-Coordinators

Dr M. Pratheepa, Principal Scientist

Dr Mahesh Yandigeri, Principal Scientist

Dr Ramya, R.S., Senior Scientist

Dr Manjunatha, B.S., Scientist

Dr Madhu, T.N., Scientist

Kindly forward your completed application to:

Dr R. Gandhi Gracy

Principal Scientist & Course Director

ICAR-National Bureau of Agricultural
Insect Resources (NBAIR)

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

gandhi_gracy@yahoo.co.in

Mobile No. 8310280276

**For Further Details, Please Contact
The Director**

ICAR-National Bureau of Agricultural Insect Resources (NBAIR)

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

E-mail: nbairdirector@gmail.com

www.nbair.res.in

Application Form for Participation in training Programme

(To be sent directly to Course Director of training programme concerned)

ICAR-NBAIR HRD sponsored 10 days training programme on

“Molecular Characterisation of Insect Pests and Natural Enemies”

from 21st -30th September, 2026

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:
- 13.

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 10 days training program at ICAR-NBAIR, Bengaluru during March 02-11, 2026.

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**