

HOW TO APPLY

The complete application form in the prescribed format forwarded by the chairperson & competent authority should reach the **Course Coordinator, Division of Entomology, ICAR-IARI, New Delhi** on or before **5th July, 2023** by email to the Email ID: labnumber54@gmail.com. Application form can be downloaded from IARI website <https://www.iari.res.in> or NAHEP-CAAST website (<https://nahep-caast.iari.res.in>). Selected candidates will be informed by mail by **25th July, 2023**.

WHO CAN PARTICIPATE

MSc and PhD students of ICAR-Deemed to be Universities/SAUs/CAUs/CUs/other UGC recognized Universities and Research Institutes are eligible to apply. A maximum of 25 participants will be selected for the training programme.

REGISTRATION FEES: No registration fee is to be paid; the programme is fully sponsored by NAHEP-CAAST

TRAVEL

Travelling allowance will be provided by the organizers as per the norms. Selected trainees are entitled only for Sleeper/AC III tier tickets. Students are expected to make their own arrangement to reach the training venue at 9:00am on all working days.

FOOD and ACCOMMODATION

Food and accommodation will be provided for outside students. Tea and snacks will be served during the programme and expenditure will be met from the training budget.

IMPORTANT DATES:

Training dates: **12-22 September 2023**
Last Date for application: **5th July, 2023**
Intimation of selection: **25th July, 2023**.

Course Director

Dr. S. Subramanian
Principal Scientist, Division of Entomology,
ICAR-IARI, New Delhi -12

Course Coordinators

Dr. Suresh M Nebapure
Scientist (SS), Division of Entomology,
ICAR-IARI, New Delhi -12
Tel: 8860825394 (M)

Dr. Sagar, D
Scientist (SS), Division of Entomology,
ICAR-IARI, New Delhi -12
Tel: 9818371904 (M)

Dr. Rajna S
Scientist (SS), Division of Entomology,
ICAR-IARI, New Delhi -12.

Dr. A. Kumar
Principal Scientist,
Division of Plant Pathology
ICAR-IARI, New Delhi -12

Venue:

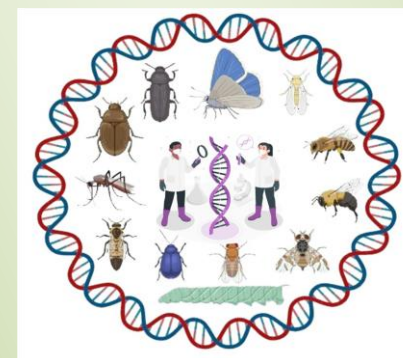
Lectures & Practical's: Discovery Centre and Division of Entomology, ICAR-Indian Agricultural Research Institute, Pusa Campus, New Delhi-110012.



**National Agricultural Higher
Education Project (NAHEP)**

**Sponsored
Training Programme**

Genomic Approaches for Insect Pest Management



12-22 September 2023

Organized by

**Center for Advanced Agricultural Science and
Technology (CAAST)**

**ICAR-Indian Agricultural Research Institute
New Delhi- 110012**

About NAHEP-CAAST

Centre for Advanced Agricultural Science and Technology (CAAST) is a new initiative and student centric sub-component of **World Bank** sponsored **National Agricultural Higher Education Project** (NAHEP) granted to IARI to provide a platform for strengthening educational and research activities of post graduate and doctoral students. CAAST theme for IARI is **Genomic assisted crop improvement and resource management** that specifically aims at inculcating genomics literacy and skills among the student.

Background of the training

Molecular biological tools have redefined the contours of entomological research worldwide in the recent years. The emerging problems of invasive pests, resurgence of sucking pest complex in various field crops, xenobiotic resistance in crop pests to insecticides and bio-toxins, vector transmission of plant pathogens could be better tackled by insect molecular biology. Insect molecular biological studies would offer strategic research support to resolve conflicts in taxonomic identity of crop pests, to tackle xenobiotic resistance in transgenic crop systems, to design molecular marker probes for detecting insecticide resistance in field storage pests, to assess sensitivity of natural enemies to insecticides and to develop novel pest management strategies by deploying RNA interference technology.

As insects are the largest group of animals replete with genomics databases, molecular approaches coupled with bioinformatics analyses offer scope for gene mining the databases for identifying novel target sites for next-generation insecticides and biorational pesticides. A number of online portals and Genomic databases on insects like Fly Base, Insect Base etc., provide a comprehensive platform for researchers who have interests in analyzing insect genomes. Unraveling such a big data of genomic information of inputs require sophisticated bioinformatic analytics. Hence, capacity building of entomological students is required essentially to make them updated on insect genomics.

Objectives of the Training

- To provide hands-on training on insect molecular biological techniques
- To train the participants in handling bioinformatic databases
- To capacitate participants on molecular analysis related to insect taxonomy, physiology and toxicological investigations
- To develop human resource development and promote the use of genomic tools in crop protection

Insect Genomic initiatives at IARI

ICAR-Indian Agricultural Research Institute (ICAR-IARI) is the country's premier institution in agricultural research, education and extension (A* NAAC Ranking). It has been serving the cause of science and society with distinction through basic research, generation of cutting-edge technologies and development of human resources. The Division of Entomology established in 1905 undertakes basic and strategic research in crop protection.

This Division has made significant contributions in the field of insect genomics and molecular biology. Pioneering efforts by Dr. N. Ramakrishnan on genomic mapping of baculoviruses of insect pests during 1980s laid strong foundation for insect molecular biological research in the country. Characterization of gut microbiome of insects, RNA interference strategies for pest management and molecular basis of xenobiotics/host-plant resistance are some the areas wherein this Division has stamped its contributions. The National Pusa Collections, one of the largest insect collection repositories in the country, maintained by this Division leads research in insect molecular taxonomy.

With this background, the *Centre for Advanced Agricultural Science and Technology* (CAAST) proposes a training programme sponsored by National Agricultural Higher Education Project (NAHEP) on "**Genomic Approaches for Insect Pest Management**" for the benefit of the Post Graduate and Doctoral students.

COURSE OUTLINE

The training will focus on the following aspects:

Molecular barcoding of insects- Genomic sequencing: strategies and approaches- Introduction to Insect Genomic resources-Metagenomic approaches- Genome editing strategies for entomological research-Handling of basic bioinformatic tools for insect genomics-Principles & practices of molecular phylogeny of insects-Introduction to transcriptome sequencing strategies and their utility- Designing and validation of housekeeping genes - Designing of RNAi constructs - utility of RNAi approaches for pest management- Gene finding strategies - *in-silico* validation - overview of Insect metabolomics; An update on nematode genomics -deployment of genomic approaches for pest and nematode management

Hands on training will be imparted on basic molecular biological techniques such as DNA isolation from insects, PCR primer designing and validation; PCR techniques; RNA and cDNA synthesis for expression analysis. Generating barcodes for insects and Genotyping of insecticide resistance

Demonstrations and interactive discussion will be held on handling of raw sequencing, curation, and assembly; Gene annotation and preparation of data for accessioning; Molecular phylogeny.

Visits will be undertaken to Sequencing and Computing facilities, Phenomics facility at IARI/IASRI/NIPGR/NIPB, New Delhi.





**Application form for NAHEP-CAAST Sponsored
Training programme on
Genomic Approaches for Insect Pest Management
(12-22 September, 2023)
Division of Entomology, IARI, New Delhi**

1. Name of the Student						
2. Gender (Male/Female)						
3. Social Category (Gen/OBC/SC/ST)						
4. Division/Department						
5. Course and Year						
6. Age and Date of Birth						
7. Institute/University						
8. Communication address						
9. Phone & Email						
10. Permanent address with parents/Guardian contact no. (For use in case of emergency)						
11. Educational qualifications (From Graduation onwards)						
Sl. No.	Degree	Year	Subject	Name of University	Percentage	
12. Research activities						
a. Area of PhD or MSc research and title of thesis						
b. Major Advisor						
c. Indicate whether you have attended any similar training programme earlier						
13. Write in brief (not exceeding 100 words) about the expected benefits of this training						

Signature of Applicant with date

Forwarding note by Major Advisor

**Signature of the forwarding Authority
with Seal and Date**