How to apply

The candidates must fill the google form available at **https://tinyurl.com/2ae8kzfr** **(compulsory)** and attach the scanned copy of application form (pdf file) in the prescribed format forwarded by Head of the institute or Department authority on or before **15th June, 2024** or candidate can sent application form through e-mail at **nahep.training.nipb@gmail.com**. Application form can be downloaded from **NIPB website: https://nipb.icar.gov.in/home or IARI website: https://iari.res.in/en/index.php**

Selected candidates will be intimated by email on or before 18th June 2024.

Who can participate

M.Sc. and Ph.D. students of ICAR-Deemed to be universities/SAUs/CAUs/CUs/ other UGC recognized Universities and Research Institutes are eligible to apply. A maximum of 30 participants will be selected for participation in the training programme.

Registration fees

There is no registration fee, the training programme is fully sponsored by NAHEP-CAAST

Important Dates

Last Date for applications: 15th June 2024
Intimation of Selection: 18th June 2024
Duration of Training: 1st – 12th July 2024

TRAVEL

Travelling allowances will be provided by the organizers as per the norms. **Participants should produce a certificate issued by the Head of the Department/Institute mentioning that they have not been given TA/DA by their host institute.** Selected trainees are entitled for III AC tickets.

FOOD and ACCOMMODATION

Food and accommodation will be arranged in IARI-guest house. Tea and snacks will be served during the programme and expenditure will be met from the training budget.

Course Directors

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Email: shivani.nagar@icar.gov.in

Venue

Lectures: Prof. V.L. Chopra Auditorium, ICAR-National Institute for Plant Biotechnology, New Delhi-110012.

Practicals: National Institute for Plant Biotechnology, Discovery center & Division of Plant Physiology, ICAR-Indian Agricultural Research Institute, Pusa Campus, New Delhi-110012.

National Agricultural Higher Education Project (NAHEP)

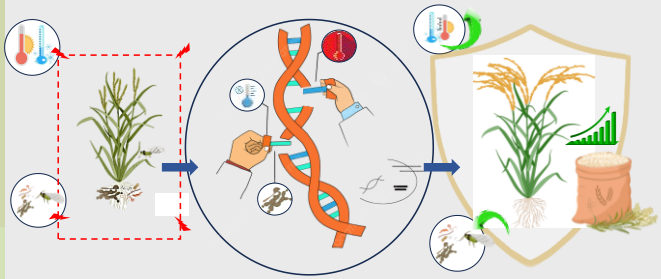
Sponsored

Training Programme

ON

Genome Editing for Crop Improvement: Strategies and Applications

July 1-12, 2024



Organized by

ICAR-National Institute for Plant Biotechnology, New Delhi

&

Division of Plant Physiology
ICAR-Indian Agricultural Research Institute, New Delhi

Sponsored by

NAHEP- Centre for Advanced Agricultural Science and Technology (CAAST)

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 skills among the students.

Background of the training

Genome editing, a revolutionary technology in the realm of biological science, empowers researchers to precisely modify natural gene alleles in any organism. In the context of plant science, this technology holds immense potential to breed novel designer crops with improved resource efficiency, stress tolerance, quality, and yield. To fully leverage the advantages of this groundbreaking breeding tool, it is crucial to have well-trained professionals in this specialized research field.

With this in mind, we have designed a comprehensive training course tailored for students, providing them with a fundamental understanding of genome editing in plants. The course covers essential principles of CRISPR biology and the utilization of CRISPR-Cas9 as a tool for plant genome editing. Hands-on experience will be a core component, encompassing guide RNA design, vector selection, vector construction, Agrobacterium-mediated plant transformation, identification of mutants, and molecular characterization of mutant lines, among other aspects.

Esteemed researchers in this field will share success stories and shed light on the future prospects of this burgeoning technology. Additionally, participants will gain insights into the ethical considerations related to genome editing and familiarize themselves with current legislative guidelines governing the practice of this technology. By the end of the training, attendees will be well-equipped to harness the potential of genome editing in advancing plant science and agriculture.

Objective of the training

- To provide hands-on training on vector selection, guide RNA designing and cloning.
- To train the participants in computational tools used for CRISPR-based editing
- To perform molecular analysis of transgenic and genome edited lines.
- To develop the human resource and promote the use of genome editing for crop improvement.

About the organizing institutes

ICAR-National Institute for Plant Biotechnology (ICAR-NIPB) is a premier research institute of the Indian Council of Agricultural Research (ICAR). The institute was founded in 1985, initially named as the 'Biotechnology Centre' of Indian Agricultural Research Institute (IARI) with the aim of devising & utilizing molecular biology tools and techniques in agriculture research. The prescience of the role of biotechnology in agriculture led to prominence of the centre which was elevated to National Research Centre on Plant Biotechnology in the year 1993 and further to National Institute for Plant Biotechnology (NIPB) in 2019. National Institute for Plant Biotechnology has been entrusted with the responsibility of developing new tools and techniques and to deliver breakthrough in plant biotechnology for crop improvement. One of the mandates of NIPB is to train human resources in the area of plant biotechnology.

ICAR-Indian Agricultural Research Institute (ICAR-IARI) is the country's premier institution for agricultural research, education and extension. It has been serving the cause of science and society with distinction through basic research, generation of new technologies and development of human resources. The Division of Plant Physiology, established in 1966, undertakes basic and strategic research with a view to understand the processes leading to solution of problems in crop productivity. The division has pioneered in improving drought and salt tolerance in rice through genome editing of dst gene in mega rice variety MTU1010 using CRISPR-Cas9.

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 **"Genome Editing for Crop Improvement: Strategies and Applications"** for the benefit of the post graduate and doctoral students.

Course Outline

A. Lectures on Genome Editing Technology and its application in Plant Genetic Engineering

The lectures will be delivered in the forenoon sessions of the training period where application of genome editing in genetic engineering will be discussed.

B. Hands-on training session on development and handling of genome edited plants

Hands-on training sessions will be conducted on different aspects of genome editing *viz.*, guide RNA design, development of gene constructs, validation of the gene constructs, methods of delivering genome editing machinery into the cells, molecular analysis of genome edited lines, analysis of off targets, generation of transgene-free mutants, etc. Exposure visits will be arranged to the glass-house and net-house facilities where genome edited plants are analyzed and maintained before further trial.

C. Group activities for case studies

Trainee-groups will be assigned activities on developing research proposals that utilizes genome editing technology related to their ongoing research project/ area of interest.

D. Interactive discussions, presentations and short tests

Each student is expected to make a short presentation of their present work and future work-plan on application of genome editing in their ongoing research. Presentation will be facilitated by coordinators during evening hours on all days during the programme. Students are also encouraged to bring their own biological material to work with.

Prevailing weather condition during the training period: Mostly hot and humid with temperature ranging between 30-38°C with intermittent rain.

National Agricultural Higher Education Project (NAHEP)

Sponsored

Training Programme on

Genome Editing for Crop Improvement: Strategies and Applications

Jul. 1-12, 2024

(Application Form)

Name	:	
Gender (Male or Female or Prefer not to say)	:	
Division and Degree Programme	:	
Date of Birth (dd/mm/yyy)	:	
Category	:	
Mailing address	:	
Phone No. & e-mail	:	
Permanent address	:	

Educational qualification (Graduation onwards)

Degree	Subject	Year	Percentage of marks/Division	Name of the University

Research Activities (Not more than 100 words):-

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Expected benefits from this training (Not more than 100 words):-

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(Signature of the Applicant)

(Forwarding note by the Chairman/Guide)

(Endorsement and Seal of the Professor/HoD/Dean)

Organized by

ICAR-National Institute for Plant Biotechnology, New Delhi

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Division of Plant Physiology, ICAR-Indian Agricultural Research Institute, New Delhi