# 15th Training Course

on

# BIOCHEMICAL & MOLECULAR TECHNIQUES IN PLANT BREEDING

November 09-13, 2026

PAKISTAN ATOMIC ENERGY COMMISSION

At **MARKER ASSISTED BREEDING GROUP**

**NUCLEAR INSTITUTE FOR AGRICULTURE AND BIOLOGY (NIAB), FAISALABAD, PAKISTAN**

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**Prof. Dr. Amjad Hameed**
DCS/Organizer
**Dr. Aqsa Tabasum** (PS, NIAB)
**Ms. Ayesha Wadood** (SS, NIAB)

## FACULTY

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**Prof. Dr. Amjad Hameed**
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**Dr. Shakra Jamil**
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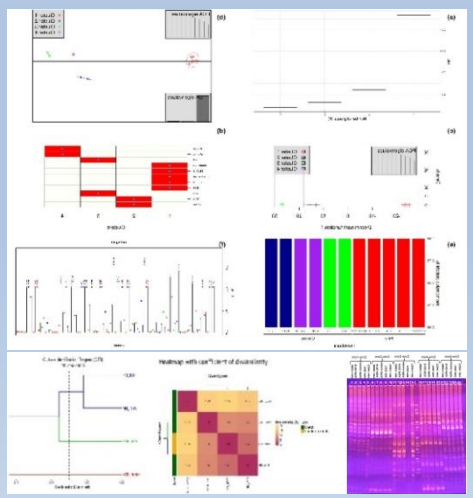

Marker Assisted Selection (MAS) employs molecular markers to accelerate crop improvement through precise identification of QTLs and desirable alleles. It enables gene pyramiding, maintenance of genetic diversity, and enhanced resistance to biotic and abiotic stresses.

This training course is designed to develop practical understanding in the field of Molecular Plant Breeding and help those working in crop genomics as well as conventional plant breeding.

## COURSE DESCRIPTION

**Lectures:**

- Biochemical and Molecular markers in Agriculture
- Anti-oxidants, stress biomolecules and protein markers
- PCR based marker systems
- Crop improvement through Molecular mutation breeding
- TILLING, Eco-TILLING and MutMap
- Genome informatics and mapping techniques
- Genotyping by sequencing and its application for crop improvement
- Omics in agriculture

**Hands on training:**

- Extraction/isolation of proteins and DNA with quality and quantity checks
- Non-denaturing and denaturing Gel Electrophoresis of proteins and DNA
- Amplification of RAPD, SSR, SCAR URPs etc. markers by PCR for plant.
- Electrophoretic and staining techniques for amplified DNA fragments
- Gel documentation and analysis for biochemical and molecular markers
- Extraction and quantification of anti-oxidants and stress biomarkers
- PCR primer designing & Bioinformatics tools
- Marker and descriptive data analysis and interpretation.

## SCHEDULE

**Training dates and venue:**
November 09-13, 2026
MAB, Group, P.B.G. Division, NIAB, Faisalabad
**Submission of Application:**
November 02, 2026.
Submit duly filled Application + CNIC copy + photo available on www.niab.org.pk.
Advance copy of application as scan can be sent by email (amjad46pk@yahoo.com).
**Registration Fee (PKR):**

| | Before Deadline | On-Spot |
|---|---|---|
| **Students:** | **3500/-** | **4000/-** |
| **Professionals:** | **6000/-** | **7000/-** |
| **PIEAS students:** | **2500/-** | |

Attach demand draft of fee in the name of "Head, LAO, NIAB",
**Award of certificates:**
Certificates will be awarded to all participants.
**Travel & accommodation:**
The nominating institutions/participants themselves shall arrange and bear the cost of travel and stay. Working lunch will be available at NIAB Officers cafeteria on cash payment.

**ENQUIRIES/INFORMATION:**
**Prof. Dr. Amjad Hameed**
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