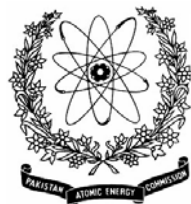


NUCLEAR INSTITUTE FOR AGRICULTURE AND BIOLOGY (NIAB) Faisalabad, Pakistan

Hands-on Training on “Modern Techniques in Research on Abiotic Stress Tolerance in Plants”, 21-24 February 2012



About NIAB

Nuclear Institute for Agriculture and Biology (NIAB), Faisalabad is a research and development centre having well-equipped laboratories and facilities such as Cobalt-60 irradiation sources, radiation measuring instruments, N-15 Analyzer, UV and IR Spectrophotometers, Atomic absorption spectrophotometers, ICP, Porometer, Pressure chamber, Osmometer, Gas chromatographs, HPLC, Amino acid analyzer, PCR, High speed electrophoresis, Photosynthesis measuring system (IRGA), Capillary electrophoresis, DNA sequencer, Controlled temperature ultra centrifuges, Freeze dryer, Cryobank, Stereo and light microscopes, Biological oxidizer, Elisa readers, etc. A well-stocked Library is linked with the National Library of Biological Sciences through wide area network.

The research programs include: Development of new gene pool and varieties of crops; Crop protection through pest management and disease control, Fertilizer and water management for major crops; Abiotic stress management, Sustainable use of salt-affected wasteland and saline water for plant production, and Improving health, nutrition and reproduction of livestock. The objective of crop improvement program is evolution of commercial varieties of crops having high yield potential, disease resistance, stress tolerance, short duration, good plant architecture, and improved quality.

Background

Abiotic stresses such as drought, salinity, extremes in temperatures, heavy metals and radiation, etc. are the most important limiting factors for plant productivity. Due to which food, feed and raw material requirements of ever growing world population cannot be met. To overcome these limitations and improvement in crop productivity, stress tolerant crop varieties have to be developed. NIAB scientists have

developed technology by using which stress tolerance crop germplasm can be identified at early seeding and at mature stages. Using physiological, biochemical, carbon isotope discrimination (CID) and biotechnological techniques high yielding stress tolerant crop cultivars can be developed. In addition, certain shotgun approaches can be developed through which stress tolerance potential of crops can be increased.

Objectives

The objective of the course is to disseminate the knowledge and to provide training to utilize different techniques and equipments to estimate the stress tolerance in crop plants. The purpose of proposed training is to improve the scientific vision of young scientists and enhancing interaction and sharing of experiences between relevant research institutes in the country and overseas.

Eligibility

Young teachers/researchers having a university degree, who are actively involved or opt for a career in plant breeding for stress tolerance and in plant stress management.

How to apply?

Please send the Application Form along with demand draft of course fee in the name of Head, LAO, NIAB, Faisalabad, Pakistan through your Institution/Government to reach the Organizing Committee by due dates as below:

Local participants: 10 February, 2012
Foreign participants: 31 January, 2012

Course Fee

Professionals: Rs. 3000/-
Students: Rs 2000/-
Foreign participants: US\$ 100/-

Outline of Training Programme

A. Screening

- Drought tolerance: Cell membrane stability, and other physiological indices
- Salt tolerance: Germination, plant height, root and biomass stress tolerance indices and K/Na ratio criteria
- High temperature or heat stress tolerance: Cell membrane thermo-stability and physiological attributes
- Screening for high water use efficiency (WUE) using ^{13}C isotope discrimination technique

B. Stress Physiology and Biology

- Determination of water relations through relative water contents (RWC), excised water loss, water potential by Pressure Chamber, Osmotic potential using osmometer and turgor potential etc.
- Photosynthetic efficiency, by IRGA and Porometer
- Temperature changes through infra red thermometer and its relation with plant canopy processes

C. Molecular Techniques

- PAGE
- RAPD
- Molecular basis of stress tolerance
- Marker assisted breeding for stress tolerance

D. Field Training

- Demonstration/Practical for screening in pots, lysimeter tanks, field conditions
- Seed testing (viability and germinability, dormancy, and seed treatments for breaking dormancy and improved germination percentage and rate)
- Nursery raising: Methodology from seed to seedlings ready for field planting
- Planting Techniques: Land preparation and sowing methods (for crops), and Ditches/Furrows or Ridges/mounds (for trees and shrubs)

E. Water-Use Efficiency

- Techniques for soil moisture determination (Neutron moisture probe)
- Irrigation Methods (flood, drip, sprinkler, etc.)
- Transpiration measurements: single leaf (porometry) and whole plant (Heat Pulse Technique)

F. Field Visit

- Visits to Biosaline Research Station, Pakka Anna

Resource Persons

Prof. Dr. Kauser Abdulla Malik, FCCU, Lahore
Prof. Dr. M. Ashraf, Univ. of Agric., Faisalabad
Dr. Yusuf Zafar, DG (A&B), PAEC, Islamabad
Dr. Javed Akhter, Director NIAB, Faisalabad
Dr. Khalid Mahmood, NIAB, Faisalabad
Dr. M. Yasin Ashraf, NIAB, Faisalabad
Dr. Nayyar Iqbal, NIAB, Faisalabad
Dr. Amjid Hameed, NIAB, Faisalabad
Dr. M. Rafiq Asi, NIAB, Faisalabad
Dr. Muhammad Saleem, NIAB, Faisalabad
Mr. Wajid Ishaq, NIAB, Faisalabad

Organizing Committee

Dr. Javed Akhter (Director NIAB)
Dr. Yusuf Zafar (DG A&B, PAEC, Islamabad)
Dr. Khalid Mahmood (Head, S S Division)
Dr. M. Yasin Ashraf (Course Coordinator)
Mr. Jafar Hussain (SS, DAIT Group, NIAB)
Dr. M. Saleem (SS, SS Division)
Mr. M. Rizwan (SS, SS Division)
Mr. Sajjad Mahmud (Pr. Administrator)
Mr. Bakhshish Jilani (Head Local Accounts)

For Further Information

Dr. M. Yasin Ashraf

Course coordinator
Nuclear Institute for Agriculture and Biology (NIAB), P.O. Box 128, Jhang Road
Faisalabad, Pakistan
Ph: +92-41-9201789
PABX : +92-41-9201751 to 69 (ext 3056)
Cell : +92 3007623885
Fax: +92-41-9201776
Email: niabmyashraf@gmail.com

Application Form
Local Participant



**Nuclear Institute for Agriculture and Biology
(NIAB), Faisalabad**

**Hands-on Training on “Modern Techniques in Research on Abiotic Stress
Tolerance in Plants”, 21-24 February 2012**

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Course Fee Professional (Rs. 3000/-)							Course Fee for Student (Rs. 2000/-)																						
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Accommodation required (Guest house charges Rs.500/night)							Accommodation not required																						
Signature of the Applicant							Recommendation of Head of Institute/Department																						
							Signature																						
Recommendation of Course Coordinator							Approved by Director NIAB																						

**Note:- Last date for submission of application is February 10, 2012
Students need to attach certificate/Recommendation of Institution**

