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

5th Training Course on "Modern Techniques in Research on Abiotic Stress Tolerance in Plants", 10-13 March 2015

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 Spectro-photometers, Atomic absorption spectro-photometers, 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.

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 for improvement in crop productivity, stress tolerant crop varieties have to be developed. NIAB scientists have developed technologies which can successfully be utilized to identify stress tolerant germplasm at seedling or 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.

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 2nd March, 2015

Course Fee

Professionals: Rs. 3000/-

Students: Rs. 2000/-

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

Dr. Muhammad Hamed, Director NIAB, Faisalabad
Prof. Dr. Muhammad Ashraf, *SI*,*PoP*, Chairman, PSF
Dr. Khalid Mahmood, DCS/HoD, NIAB, Faisalabad
Dr. Javed Akhter, CS, NIAB, Faisalbad
Dr. M. Yasin Ashraf *T.I.*, DCS, NIAB, Faisalabad
Prof. Dr. Rashid Ahmad, U. A., Faisalabad
Mr. Zafar Iqbal, DCS, NIAB, Faisalabd
Dr. M. Rafiq Asi, PS, NIAB, Faisalabad
Dr. Zafar Iqbal, PS, NIAB, Faisalabad
Dr. Amjad Hameed, PS, NIAB, Faisalabad
Dr. Muhammad Saleem, SS, NIAB, Faisalabad

Organizing Committee

Dr. M. Yasin Ashraf, *T.I.*, (course, Coordinator)
Dr. Muhammad Hamed (Director NIAB)
Dr. Khalid Mahmood (Head, SS Division)
Mr. Zafar Iqbal, (DCS, NIAB)
Dr. Asma Hassan, (PS, NIAB)
Dr. Muhammad Ashraf (PS, NIAB)
Mr. Abdul Rasul Awan, (PS, NIAB)
Dr. M. Saleem (SS, NIAB)
Ms. Asia Gulnaz, (SS, NIAB)
Mr. Jafar Hussain (SS, DAIT Group, NIAB)
Mr. M. Rizwan (SS, NIAB)
Mr. Wajid Ishaq, (SS, NIAB)
Mr. Sajjad Mahmud (Pr. Administrator, NIAB)
Mr. Rashid Shahzad Awan (Head LAO, NIAB)
Mr. Tahir Mahmud, (Admin Officer, NIAB)
Mr. Mehmood-ul-Hassan, (PSA, NIAB)
Mr. Ghulam Farid, (DEO, NIAB)

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

Accommodation

Student : Rs. 1000/days (Optional)

Professional : Rs. 2000/days (Optional)

Application Form

Nuclear Institute for Agriculture and Biology (NIAB), Faisalabad

5th Training Course on "Modern Techniques in Research on Abiotic Stress Tolerance in Plants", 10-13 March 2015

Name			**Photo**
Father's Name			
CNIC# (Please attach a copy)			
Qualification		**Name of Institution**	
Designation		**Email Address** **Telephone No.**	
Mailing Address			
Course Fee for Professional (Rs. 3000/-)		**Course Fee for Student (Rs. 2000/-)**	
Demand draft No.	**Date**	**Bank Name**	**Branch**
Accommodation required **(Guest house charges as per rule)**		**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 March 2, 2015
Students need to attach certificate/Recommendation of Institution