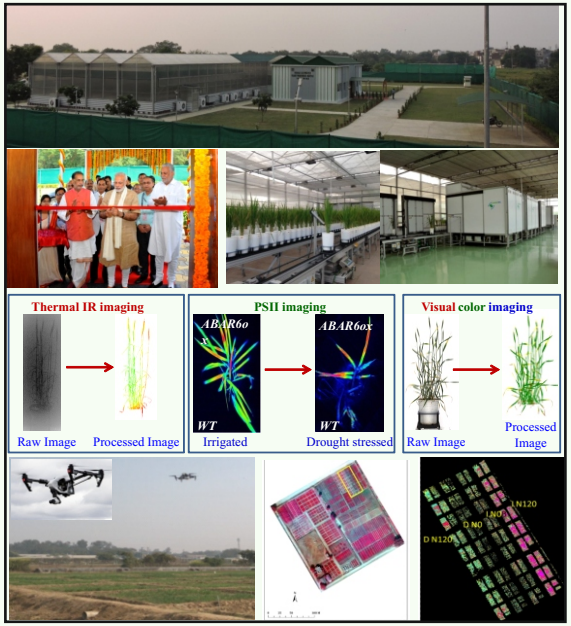
# ICAR Sponsored Short Course

on

## Phenomics, the Next Generation Phenotyping (NGP), for Trait Dissection and Crop Improvement

**(22-31 October, 2018)**




## Organized by

**Department of Plant Physiology**
**ICAR-Indian Agricultural Research Institute**
**New Delhi-110012**

## ICAR Sponsored Short Course on Phenomics, the Next Generation Phenotyping (NGP), for Trait Dissection and Crop Improvement

### About The Institute

The Indian Agricultural Research Institute (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 appropriate technologies and development of human resources. The Division of Plant Physiology, a constituent of School of Basic Sciences of IARI, was established in 1966. The mandates of the Division are to conduct basic and strategic research with a view to understand the processes leading to solution of problems in crop productivity, to train Post-Graduate students leading to M.Sc. and Ph.D. degree and to impart training in physiological tools to agricultural scientists of SAUs/ICAR Institutes. The Division has contributed significantly in identification of factors limiting crop yield, proposed crop ideotypes and impact of climate change on crops. This Division has developed high throughput screening methods such as membrane stability index and chlorophyll stability index, and demonstrated the utility of canopy temperature and chlorophyll fluorescence as selection criteria for abiotic stress tolerance. It has established one of the earliest FACE facilities in the South East Asia to study impact of elevated $CO_2$ on crop performance. Recently, the Division has established a stat-of-the art automated plant phenomics facility. It was inaugurated and dedicated to the nation by Hon'ble Prime Minister of India, Shri Narendra Modi in the name of Nanaji Deshmukh Plant Phenomics Centre.

### Introduction

Crop yield under abiotic stress environments needs to be increased significantly for food, feed, fodder, fibre and fuel security in near future. This problem is expected to increase further due to global climate change. Utilization of germplasm resources in analytical/physiological breeding is advocated for significant gain in yield under abiotic stress environments. Today, phenotyping is the major rate limiting factor that limits the power of genomics for high-resolution linkage mapping, genome-wide association mapping and training genomic selection models. Thus, phenomics is necessary to bridge phenotype-genotype gap. Phenome is defined as expression of the genome as traits in a given environment, while phenomics is defined as acquisition and analysis of high-dimensional phenotypic data on an organism-wide scale. This training aims to introduce the participants to the emerging field of non-destructive high throughput phenotyping, which will be useful to study the genotype–phenotype map and identify the physiological genetic basis of complex traits. The participants will also be provided with hands on training in both conventional phenotyping and simple low-cast non-destructive image based phenotyping for obtaining biologically meaningful information with minimal environmental and experimental noise.

### Theme

With the availability of next generation sequencing and modern automated genotyping technologies, generating accurate genotypic data for large set of germplasm and breeding population has become easier. However, the rate limiting step in utilization of these genomic data to identify genes and QTLs associated with economically important traits are limited by the lack of accurate high throughput phenotyping methods. This training aims to impart training on recent development in high throughput phenotyping of crops.

### Objectives

The objective of the short course is to give an opportunity to the teachers and young scientists working in the ICAR institutes, SAUs, CUs/DUs and State Universities to gain updated information and hands on training on the non-destructive phenotyping and phenomics for dissection of abiotic stress tolerance.

### Venue

The venue of the training is Division of Plant Physiology, ICAR-Indian Agricultural Research Institute, New Delhi-110012

## Duration of The Course

The course has been planned for 10 days duration from 22-31 October, 2018. The training will comprise of lecture and practical sessions by experts from the IARI and also by invited experts from premier University/Institutions.

## Local & Weather Condition

Delhi is well connected through railways and roads with different parts of the country. IARI, commonly known as Pusa Institute, is centrally located in New Delhi. The weather during course duration is predicted to be warm with temperatures between 25$^0$C and 33$^0$C. The environment is expected to be pleasant and comfortable.

## Participants' Eligibility

Young active researchers/teachers not below the rank of Assistant Professor or equivalent from SAUs / CUs / DUs / ICAR / National Institutes, having minimum two years of experience in the disciplines of Plant Physiology/ Biochemistry/ Genetics/ Horticulture/ Agronomy/ Molecular Biology/ Plant Biotechnology and allied Sciences in Agriculture, are eligible to apply. A total of 25 candidates will be selected for this course. The selection of the candidates will be made by a Screening Committee as per the available guidelines of the ICAR.

## Mode of Application

Scientists desirous of participating in the course should apply through proper channel in the given proforma. The participants should submit their application online using CBP portal (**https://cbp.icar.gov.in)** or under the link Capacity Building Program at **http://icar.org.in**). For this, after filling the online application, take a printout of the application and get it approved by the competent authority of the organization. Upload the scanned copy of application through CBP portal. The application for participation in the Short Course in the given format should be duly forwarded by the employer and submitted to the Course Director on below mentioned address along with a sum of Rs. 50/- (fifty only) as registration fee (non-refundable) in the form of postal order drawn in favor of **Director** payable at **IARI, Post Office, New Delhi-110012.** However, an advance hard copy of the application may be sent to the Course Director. The last for receipt of the application is **15th September, 2018**. Selected candidates will be informed by **20th September, 2018** through e-mail.

## Accommodation & Travelling Allowance

Boarding and lodging will be provided to the participants during the training period at the NBPGR trainees' hostel/IARI Farmer Hostel. Travel Allowance to the participants will be paid as per their entitlement for the class of travel, restricted to the maximum of AC II tier fare (except Rajdhani & Shatabdi trains) by the shortest route. Participants are required to produce money receipt/ tickets in support of their claim. The reimbursement will be made as per ICAR guidelines. However, the candidates are encouraged to arrange their travel & accommodation expenses from their parent Institutes.

## All Correspondences May Kindly Be Addressed To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**Last date for submission of application for the short course is 15.09.2018**

**The circular is also available on IARI website (http://www.iari.res.in)**

## APPLICATION FORM FOR PARTICIPATION IN SHORT COURSE ON

**Phenomics, the Next Generation Phenotyping (NGP), for Trait Dissection and Crop Improvement (22-23 October, 2018)**

1. Full name (in block letters) : .....
2. Designation : .....
3. Present employer & address : .....
   .....
4. Address for communication : .....
   Telephone (O): ..... (R) ..... (Mobile) .....
   Fax No..... E-mail: .....
5. Permanent address : .....
   .....
6. Date of Birth : .....
7. Sex: Male/Female 7a. Marital status: Married/Unmarried
8. Teaching/ research/ professional experience (post held during last 5 years)

| Sr. No. | Post held | Period with date |
|---|---|---|
| | | |
| | | |

9. No. of publications : .....
10. Courses/Trainings/Seminar etc. attended during the last three years

| Sr. No. | Name of the training | Venue | Period |
|---|---|---|---|
| | | | |
| | | | |

11. Details of the Postal Order No..... Date.....
12. Academic record (From graduation)

| Degree | Main/Subsidiary Subjects | Year of passing | University | OGPA/% age |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |

Signature

### CERTIFICATE

It is certified that information furnished has been verified and found correct.

Recommendation of the forwarding Authority/Institution

Signature of the competent authority
With official seal

Date:
Place:

To
**Dr. Viswanathan Chinnusamy**
**Head cum Course Director**
**Division of Plant Physiology**
**ICAR-Indian Agricultural Research Institute**
**New Delhi-110012**