

In addition, send the hard copy to The Course Director of the Winter School.

3. Advance copy of application can be sent by E-mail to Course Director/Course Coordinators.

4. The selected candidates will be informed by post/e-mail/fax/CBP vortal well in advance. 5. Once the candidates are intimated about their selection for winter school, they need to confirm their acceptance by last date.

### HOW TO REACH

IARI (locally known as Pusa institute) is located in East Patel Nagar, New Delhi. It is easily accessible by bus (~10 K.M. from Inter-State Bus Terminus -ISBT), rail (~ 8 K.M. from New Delhi railway station, ~12 K.M. from Hazrat Nizamuddin Railway station) and air (~8 K.M. from the IGI Airport). The nearest Delhi Metro Stations are Patel Nagar and Rajendra Nagar which are at 10 min walking distance from IARI campus. Delhi is well connected by rail and road from all parts of the country. The participants are advised to reach a day earlier to the commencement of the programme. An auto/taxi could be hired from railway station/bus stand to reach Pusa Campus. In case of emergency, participants may contact Course Director/ Administrative staff on telephone for necessary guidance

### ACCOMODATION & TRAVELLING ALLOWANCE

Participants will be accommodated in guest houses/hostels located at IARI campus with provision for food. Participants are requested not to bring any family member as the accommodation is strictly limited for **trainees only**. No DA will be paid to the participants. The candidates selected for participation in the training will be provided travelling expenses only as per their entitlement restricted to 3rd AC rail fare by the shortest route after submission of original tickets.

### NOMINATION AND REGISTRATION

Interested candidates are required to send their applications, through proper channel to the Course Director, along with a non-refundable registration fee of Rs 50/- in the form of IPO/DD drawn in favour of Director IARI, payable at IARI Post office, New Delhi-110012.

### IMPORATANT DATES

Last date for receipt of application : 30.07.2015  
Intimation of selection : 10.08.2015  
Confirmation of participation by candidates : 20.08.2015

### CONTACT PERSONS

**Dr. Pritam Kalia;** **Head and Course Director**  
Mob: 09810185336  
**Dr. Manisha Mangal;** **Senior Scientist and Co-Course Director**  
Mob: 09717513263  
**Dr. Arpita Srivastava;** **Scientist and Organizing secretary**  
Mob: 09540831846

### CONTACT ADDRESS

**Head,**  
**Division of Vegetable Science,**  
**Indian Agricultural Research Institute,**  
New Delhi-110 012  
**Ph: 011-25846628 ; FAX: 011-25847148 ;**  
**E-mail: [head\\_veg@iari.res.in](mailto:head_veg@iari.res.in)**  
**[winterschoolveg@gmail.com](mailto:winterschoolveg@gmail.com)**  
**Website: [www.iari.res.in/divisions/](http://www.iari.res.in/divisions/)**



*ICAR - Winter School*  
on

**Advances in Improvement of  
Vegetable Crops using  
Biotechnological approaches**

*September 18- October 8, 2015*



**ICAR, New Delhi**

**Course Director**  
**Dr. Pritam Kalia**  
**Co-Course Director**  
**Dr. Manisha Mangal**  
**Organizing secretary**  
**Dr. Arpita Srivastava**

**Organized by**



**Division of Vegetable Science**  
**Indian Agricultural Research Institute**  
**New Delhi-110 012**

## Advances in Improvement of Vegetable Crops using Biotechnological approaches September 18- October 8, 2015

Vegetables play an important role in human health and nutrition. Improvement in vegetable productivity and quality forms a key strategy to maximize our economic benefits and nutritional security. In recent years, biotechnological approaches have brought about a significant change in the manner we exploit the genetic resources which carry important desirable traits. The field of biotechnology is a rapidly developing area of contemporary science. It can bring new ideas, improved tools and novel approaches to the solution of some persistent, seemingly intractable problems in crop production.

In India, biotechnology research efforts are being pursued in many of the vegetable crops. One area of biotechnology, DNA marker technology derived from research in molecular genetics and genomics offers great promise for breeding of improved vegetable crops. Owing to genetic linkage, DNA markers can be used to detect the presence of allelic variation in the genes underlying the traits of importance. Various traits of horticultural and economic importance are being improved using biotechnological interventions such as resistance to biotic and abiotic factors, nutritional quality improvement, increasing shelf life, post harvest process quality, etc.

### COURSE CONTENT

The course has been designed to give participants a complete exposure to the recent developments in the field of biotechnology for improvement of vegetable crops. It will comprise lectures and practical sessions by experienced scientists from IARI as well as other renowned institutions across the country. Visits to fields and laboratories have been arranged to expose the participants to the practical applications. Provision has also been made for interim review to assess the progress of the participants through group discussion, quiz, debate, etc

### Course content (Lectures, practical classes, panel discussions and visits will be covered under following broad themes)

Genome analysis and its implication in vegetable crop improvement  
Designing futuristic vegetable varieties for multiple purposes  
Transgenic development, biotic and abiotic stress resistance, Proteomics and Metabolomics in vegetable crops  
Marker assisted vegetable breeding  
Bioinformatic tools in vegetable crops  
Conservation strategies for elite genetic resources of vegetable crops  
TILLING and ECO TILLING  
Transcriptome analysis and its utility in vegetable crop breeding  
RNAi technology and its application in Vegetable crop improvement  
SNP Genotyping in vegetable crops  
Defence Signalling responses in plants

### ELIGIBILITY

Young active researchers/teachers not below the rank of Assistant Professor or equivalent working in SAUs/ CU/ DUs/ ICAR/ National institutes having a minimum of 2 years of research/teaching experiences in the field of vegetable breeding.

### HOST INSTITUTE

Indian Agricultural Research Institute (IARI) is a premier institute for agricultural research, education & extension in the country. It has been serving the cause of science & society with distinction through first-rated research, generation of appropriate technologies and development of human resource. The Division of Vegetable Science is dedicated to carry out applied and strategic research on vegetable crop improvement.

The research programmes of the division are oriented towards breeding improved varieties and F1 hybrids for higher productivity and quality. In addition, the division is also involved in nucelus and breeder seeds production of popular newly released varieties and parents of F1 hybrids of different vegetable crops. The Division is having state of art research laboratories such as tissue culture, trasngenics, molecular biology and quality analysis; and various other facilities such as research farms, polyhouses and net houses for carrying out research on various aspects of vegetable crop improvement.

### WEATHER

The climate during September and October would be moderately hot. The period between Sep-Oct marks the end of monsoon and the arrival of a transition season which is marked by very dry ambiance, warm days and pleasant nights.

### HOW TO APPLY

The interested candidates should apply online using CBP vortal through <http://iasri.res.in/cbp> or under the link Capacity Building Program at <http://icar.org.in>.

Steps for submission of online application form are as follows:

1. To create User Id use "Create New Account" link on home page. Login using your User Id & Password. If you have forgotten your password click on "Forgot password" link.
2. After login, choose this training under SWS category, and click on "Participate in Training" link and fill the proforma. After filling the online application, fill 'Draft/Postal' order details and take a printout of application and get it approved by the competent authority of the organization. Upload the scanned copy of the application through CBP vortal.