

# ICAR-Winter School on Breeding and Genomic Tools for Stress Resistance in Vegetable Crops

October 23, 2019 to November 12, 2019

Sponsored by:  
Indian Council of Agricultural Research, New Delhi



Course Director:

**Dr. B S Tomar**

Course Coordinators:

**Dr. Manisha Mangal**

**Dr. Arpita Srivastava**

**BACKGROUND:** 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. The major problem in the vegetable production is the heavy incidences of diseases and pests. Due to greater susceptibility of vegetable crops to diseases and insect-pests, it becomes hard to achieve the maximum yield potential. Therefore at this junction, breeding for the development of biotic stress resistant cultivars is the major objective of vegetable breeders. For the development of resistant varieties and pre-breeding lines, sources of resistance having genetic information is pre-requisite and backbone of breeding program. Apart from diseases and pests, abiotic stress is the primary cause of crop loss worldwide, reducing average yields for most major crop plants by more than 50 per cent. The major abiotic stresses (drought, high salinity, cold and heat) negatively influence the survival, biomass production and yields of staple food crops up to 70 per cent hence, threaten the food security worldwide. To cope with these new challenges, many plant breeding programs have reoriented their breeding scope to stress tolerance in the last few years.

**PEDAGOGY:** The course has been designed to give participants a complete exposure to the novel breeding and genomic tools for stress resistance in vegetable crops. It will comprise lectures and practical sessions by experienced scientists from IARI as well as other institutions across the country. Visits to fields and laboratories shall be arranged to expose the participants to the practical applications. Provision shall also be made for interim review to assess the progress of the participants through group discussion, quiz, debate, etc.

#### **COURSE CONTENT:**

- Novel breeding and biotechnological strategies for biotic and abiotic stress resistance in Vegetable crops
- Proteomics and metabolomics for stress resistance breeding in vegetable crops
- Physiological basis of abiotic stress resistance.
- Diagnostic tools of vegetable crop diseases.

- RNAi technology and its application in resistance breeding.
- Screening techniques for bacterial, viral, fungal and nematode diseases in vegetable crops
- Allele mining for stress resistance in vegetable crop genetic resources.
- TILLING and ECO TILLING for stress resistance
- Overview of Next generation sequencing techniques
- Genome analysis and its implication in breeding for stress resistance
- Functional genomics tools for stress resistance

**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 two years of research/teaching experiences in the field of vegetable Science/ Horticulture/Basic Sciences/ Biotechnology/ Genetics/ Plant Breeding/ Plant Pathology.

**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 carrying out applied and strategic research on improvement of vegetable crops. The research programmes of the division are oriented towards breeding improved varieties and F1 hybrids for stress resistance, higher productivity, quality, nutrients, nutraceuticals, edible colour, value addition and export. In addition the division is also involved in nucelus and breeder seed production of popular, newly released varieties and of parental lines of F1 hybrids of vegetable crops. The division is having state of art research laboratories such as tissue culture laboratory, molecular biology laboratories and biochemistry laboratory and facilities such as research farms, polyhouses and net houses for carrying out research on various aspects of vegetable improvement.

**WEATHER:** The climate during October and November would be moderate and is the best time to visit Delhi. During this period, the weather remains pleasant.

**NOMINATIONS:** Nominations through proper channel may be sent so as to reach on or before August 31, 2019.

**HOW TO APPLY:** It is mandatory to apply online using CBP vortal through <http://iasri.res.in/cbp> or under the link Capacity Building Program at <http://icar.org.in>. **A Postal Order/ DD of Rs. 50/** (non-refundable) drawn in favor **Director, IARI, payable at IARI Post office, New Delhi-110012** must be sent along with the original application. Only **25 participants** shall be selected for the course on first come first served basis.

**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. 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/ email /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 15.09.19.

**HOW TO REACH:** IARI (locally known as Pusa institute) is located near East Patel Nagar, New Delhi. It is easily accessible by bus (~10 KM from Inter-State Bus Terminus -ISBT), rail

(~ 8 KM from New Delhi railway station, ~12 KM from Hazrat Nizamuddin Railway station) and air (~20 KM from the IGI Airport). The nearest Delhi Metro Stations are Patel Nagar and Rajendra Place which are only at 10 min walking distance from IARI campus. An auto/taxi could be hired from railway station/bus stand to reach Pusa Campus.

The participants are advised to reach a day earlier to the commencement of the programme. In case of emergency, participants may contact Course Director/ Administrative staff on telephone for necessary guidance.

### **ACCOMMODATION AND TRAVEL:**

Participants will be accommodated in Sindhu guest house at IARI campus. 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 restricted to **2nd AC rail fare** by the shortest route after submission of original tickets. Participants who have travelled by air (Air India only) will also be restricted to 2nd AC rail fare by the shortest route. No TA will be paid to participants travelling by private air lines. Even in case of Air India travel, tickets should be booked from Air India official site or from the Govt authorized agencies such as Ashoka Travels or Balmer and Lawrie.

### **CONTACT PERSONS:**

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Head and Course Director

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Principal Scientist and Course Coordinator

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### **IMPORTANT DATES**

**Last date for receipt of application 31.08.19**

**Intimation of selection: 7.09.19**

**Confirmation of participation by candidates:**

*For Further Information Please Contact*

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