



**Centre of Advanced Faculty Training  
on  
Genetics and Plant Breeding**



**Department of Plant Breeding and Genetics  
Punjab Agricultural, University, Ludhiana**

*ICAR sponsored CAFT Training on*

**Advanced Breeding Strategies for Developing  
Stress Tolerance in Plants Under Changing  
Climatic Conditions**

**From**

**February 04-24, 2025**

**Organized by**

**Department of Plant Breeding and Genetics  
College of Agriculture,  
Punjab Agricultural University, Ludhiana-141004  
(Punjab)**

**NIRF Rank 1<sup>st</sup>, 2024  
(Among State Agricultural Universities)**



### About the CAFT Training

While the demands for crop products continue to increase, agricultural productivity is threatened by various stress factors, often associated with changing climatic conditions. These conditions often favour pathogens and negatively affect plant productivity and fertility. In addition, plants must adapt in a physiologically costly way to these changing environmental conditions, resulting in reduced availability of resources to produce biomass, seeds, and thus yield. Moreover, the combination or alteration of diverse abiotic and biotic stress factors may further cause trade-off between plant responses that are appropriate for adaptation to one stress but can enhance susceptibility to other stresses. Climate-driven migration of pathogens and pests further confronts locally adapted crop genotypes with new biotic stress factors. The clash of globally increasing yield demands with increasing yield-threatening environmental conditions asks for massive investments into plant stress resistance/tolerance research and development. Taking into consideration the rapid climate change in recent decades and to sustain and improve crop yields, it becomes necessary to understand how plants respond to various stresses and to use the knowledge generated in modern plant breeding programmes.

### Punjab Agricultural University

Punjab Agricultural University (PAU) is a prestigious institution of agricultural education and research in India and is considered as one of the best agricultural universities in Asia. It is situated in Ludhiana, Punjab. Established in 1962, PAU has evolved into a hub for agricultural excellence, fostering a culture of innovation, research and extension. Being a pioneer of the green revolution in India, PAU has immensely contributed in meeting food requirements of the country. The dedication and

commitment of its scientific community in developing high yielding crop varieties with matching production, protection and processing technologies and their rapid dissemination to the farmers has helped the country to achieve self-sufficiency in food production.

## **College of Agriculture**

The College of Agriculture is the oldest and the largest of the six constituent colleges of Punjab Agricultural University. The college was originally established in 1906 as Punjab Agricultural College and Research Institute, Lyallpur (now Faisalabad, Pakistan). The College was established at its present site in July 1957. The college imparts quality education, generates unmatched research output and reaches out to the peasantry through a large network of 10 departments/schools (Departments of Agronomy, Climate Change & Agricultural Meteorology, Entomology, Extension Education, Food Science & Technology, Plant Breeding & Genetics, Plant Pathology, Soil Science, School of Agricultural Biotechnology and School of Organic Farming). The college strives to achieve its mission through its team of 259 highly competent and well-qualified faculty members and state-of-the-art infrastructure. Well-equipped experiential learning units of the college help produce job providing, rather than job seeking, graduates. The college has thus far contributed around 7204 well-trained graduates to the human resource pool of agriculture and allied sectors. Many alumni of the college have risen to exalted positions - Vice Chancellor (44), Chairman Agricultural Scientists Recruitment Board (4), Director General ICAR (1), Director General Civil Aviation (1), Agriculture Commissioner (5) and Horticulture Commissioner (2). Our alumni have been honoured with prestigious International and national awards viz. World Food Prize (2), Padma Bhushan (7) and Padma Shri (11). The college received the Federation of Indian Chambers of Commerce and Industry Award in 1977 in recognition of its outstanding contribution to the field of agriculture.

## **Department of Plant Breeding and Genetics**

The department has released more than 800 crop varieties since its inception many of which has shown higher level of resistance and tolerance to several biotic stresses affecting crop plants. The departments has its own experimental farms equipped with all the latest equipments, screen houses, net houses, high-tech molecular and tissue culture laboratories, High-throughput genotyping and marker-assisted selection labs, growth chambers, rainout shelter, pathotyping and insect rearing labs etc. The crop breeders of the departments are using the integrated breeding programmes where conventional breeding programmes are being supported by the advanced biotechnological, genetic and genomic tools. Many varieties of rice and wheat has been released by marker-assisted-selection for resistance to bacterial blight and rust respectively. Several genes including Xa38, xa45, BPH34, Lr56, Lr57 etc has been identified from the wild relatives and has been introgressed into the elite cultivars. The

department is also handling many projects sponsored by DBT, DST, ICAR and CSIR etc for understanding resistance to biotic and abiotic stresses and developing climate resilient crop varieties.

### **Travel**

Selected participants are eligible for TA (upto 2<sup>nd</sup> AC Fare by shortest route as per ICAR norms). Food & accommodation will be provided by the organizer. No DA is admissible to the participants. The local participants are not eligible for boarding and lodging, however, working lunch and refreshments will be provided.

### **Important dates**

Last date of application:	12 <sup>th</sup> January, 2025
Communication to the participants:	15 <sup>th</sup> January, 2025
Commencement of Training Programme:	4 <sup>th</sup> February, 2025

### **City & Weather**

The average temperature during February in Ludhiana will be 23<sup>o</sup>C and low temperature will be 9<sup>o</sup>C. Ludhiana is a hub for textile and hosiery industry.

### **How to apply**

Visit on the website <https://cbp.icar.gov.in/> or click on Capacity Building Programme link under <http://www.icar.org.in/>. After log in the portal click on “Participate in Training” link and fill the details in the proforma and upload the duly signed copy through proper channel on the portal.

**Maximum number of participants: 25**

### **Eligibility criteria**

Applications are invited from the teachers/researchers not below the rank of Scientists/Assistant Professor/Lecturer/Subject Matter Specialist having a minimum of two years experience in related teaching/research in Indian Council of Agricultural Research/State Agricultural Universities in the respective fields.

### **Course Director**

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### **Course Coordinators**

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