

#### Date & Venue:

The training will be held from November 6<sup>th</sup> to 15<sup>th</sup> November, 2017 at Indira Gandhi Krishi Vishwavidyalaya, Raipur (Chhattisgarh).

- Applicants will be selected on first-come-first-served basis. However, the candidates need to fulfill certain basic criteria.
- Last date for receiving duly forwarded application forms at IGKV Raipur is 15<sup>th</sup> October 2017.
- Participants, other than local candidate, will be provided with accommodation at IGKV campus.
- Duly filled-in applications may be sent to Dr. Deepak Sharma, Co-convenor-cum-Course Coordinator, IGKV, Raipur (address below).

#### IMPORTANT DATES:

Last date for receipt of application : 15/10/2017  
Intimation to selected candidates : 15/10/2017

Participants will be reimbursed maximum of III tier A.C train fare for the shortest possible route from their HQs to IGKV Raipur (Chhattisgarh) and back on production of documentary evidence. Local hospitality will be provided by the organizers.

#### For more information contact to:

##### Dr. Deepak Sharma

(Co-convenor-cum-Course Coordinator)  
Principal Scientist & Co-coordinator (IGKV-BARC MoU)  
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#### Short Term Training Programme on

## Mutation Breeding for Crop Improvement

6<sup>th</sup> November to 15<sup>th</sup> November, 2017

Indira Gandhi Krishi Vishwavidyalaya,  
Raipur (Chhattisgarh)



Organized by



**Bhabha Atomic Research Centre (BARC),  
Mumbai**  
in collaboration with  
**Indira Gandhi Krishi Vishwavidyalaya,  
Raipur, Chhattisgarh**

[Sponsored by Board of Research on Nuclear Sciences (BRNS),  
Department of Atomic Energy (DAE), Government of India]

#### Convener

##### Dr. V. P. Venugopalani

Associate Director  
Bio-Science Group & Head,  
Nuclear Agriculture & Biotechnology Division,  
BARC, Mumbai-400085

#### Co-Convenor-cum- Course Coordinator

##### Dr. Deepak Sharma

Department of Genetics & Plant Breeding  
College of Agriculture IGKV, Raipur

#### Local Organizing Secretary

##### Dr. A. K. Sarawagi

Head of Department  
Department of Genetics &  
Plant Breeding  
College of Agriculture IGKV,  
Raipur



#### Application Form

#### Short Term Training Programme on "Mutation Breeding for Crop Improvement"

6<sup>th</sup> November to 15<sup>th</sup> November, 2017  
IGKV, Raipur, Chhattisgarh, 492012

#### Format for the application

(Type or write in capital letters)

Name (Dr./Mr./Mrs./Ms) : .....

Name of Organization : .....

Date of Birth : .....

Designation/Occupation : .....

Areas of specialization : .....

Research Topic : .....

Years of experience : .....

Accommodation required: Yes/ No

Address for correspondence : .....

.....

Mobile : .....

E-mail : .....

Recommendations of Head of Dept. : .....

HoD's Signature & Seal : .....

Signature of the applicant

The participants can submit soft copy to the email id sharmadigkv@gmail.com at the earliest and also send the signed copy of the application form addressed to Dr. Deepak Sharma (Co-convenor-cum-Course Coordinator) through proper channel. Participants will be intimated about their selection latest by 15<sup>th</sup> Oct, 2017.

### Introduction:

**About BARC:** Bhabha Atomic Research Center (BARC) is a premier research organization engaged in research work in the areas of nuclear and basic sciences. In the field of agriculture, BARC has been working for the past few decades on improvement of crop plants using mutation breeding. Through this programme, BARC has released more than 42 varieties of different crops in oil seeds, pulses and cereals. BARC works in collaboration with different State Agricultural Universities and ICAR institutes to train students/scientists on different aspects of mutation breeding and crop improvement.

**About IGKV:** Indira Gandhi Krishi Vishwavidyalaya (IGKV), Raipur, is carrying out research work for improvement of different crop varieties through mutation breeding. In this important research area, IGKV and BARC are collaborating under a MoU. Several excellent mutants in different crops have been developed and are being evaluated under this programme. Mutants in the back ground of ~ 25 rice varieties in different generations are being evaluated at IGKV this year. In order to create better awareness among scientists and students about the immense potential of mutation breeding techniques for improvement of crop plants, BARC in collaboration with IGKV is organizing a Training Programme on Mutation Breeding for Crop Improvement. This programme will provide hands-on training to young scientists and students on recent advances in the field of mutation breeding and also provide an overview on the peaceful uses of nuclear energy.

### Aims/Objectives of the workshop

The main objective is to train research community (scientists and students from SAUs, ICAR and other research institutes) to take up scientifically rigorous mutation breeding experiments and develop varieties suitable for poor and marginal farmers.

#### Syllabus :

##### (A) Theory

- 1) **Principles & Practices of Mutation Breeding-I :** Principles of mutation breeding for sexually & asexually propagated crops Mutagens: Different types of mutagen (Physical & Chemical Mutagens) Mode of action of mutagens, radiolysis of H<sub>2</sub>O
- 2) **Principles & Practices of Mutation Breeding-II** Methodology & Screening Techniques Genetic, Examples (mutation Breeding for qualitative and quantitative traits)
- 3) **In vitro mutagenesis :** Principles, Methodology for in vitro induced mutagenesis, screening in vitro mutants
- 4) **Advanced techniques in inducing mutations in plants :** Ion beam, Electron beam, proton beam etc, Space / Cosmic radiation Advantages/ Disadvantages
- 5) **Molecular Mutation Breeding :** TILLING, Transposon induced mutagenesis, Insertional mutagenesis, Sequence based mutagenesis Site directed mutagenesis in plants, Molecular characterization of mutants, Molecular approaches to identify novel mutants in crop plants, MutMap
- 6) **Miscellaneous :**

Role of epigenetics in mutation breeding, EpiRIL, Epimutants Statistical analysis (Principles/ Theory) on mutant population, Mutation breeding at BARC Mutation breeding at IAEA, Vienna, Targeted mutation by recent genome editing techniques (CRISPR-Cas9), Irradiation as a tool for bio-pesticide/ bio-stimulant improvement

- B) Practical** Determination of LD50 dose/GR50 /GR30 calculation Exposure of seeds to radiation, Preparation of seeds, Seedling height studies, Dose response curve, Computation of radiobiology experiment, Field /Lab. screening of mutants In vitro mutagenesis, Nonde-structive screening of mutants Analysis of mutants using molecular markers

- C) Field visits** (demonstration of mutation breeding experiment in field)

On 3<sup>rd</sup> Nov 2017,

Trip to Jungle Safari, Naya Raipur

**About Raipur :** Raipur is the capital city of Chhattisgarh, the 26<sup>th</sup> state of India, formed on 01<sup>st</sup> November 2000. It is well connected with other parts of the country through road, rail and air. IGKV is located at a distance of 10 km. from Raipur railway station and about 11 km. from the Raipur airport. Taxi and auto services are easily available from city centre to reach the university.

#### Who can participate in this workshop? :

This workshop/Training Programme is meant for young researchers/scientists working in SAUs and research institutes, who are involved in crop improvement programme using in vivo and in vitro mutation techniques. About 20 participants will be selected for the training programme on first-come-first-served basis.