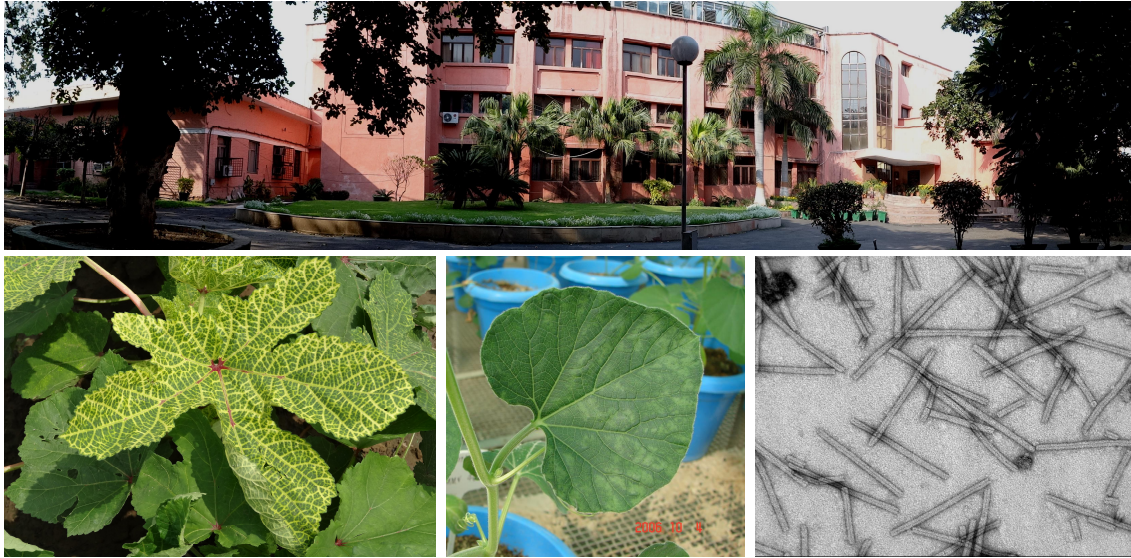


**ICAR Sponsored Centre of Advanced Faculty Training in  
Genomics of plant virus for diagnosis and utilisation as gene  
expression tool**

**(15<sup>th</sup> October to 6<sup>th</sup> November, 2014)**



**Advance Centre for Plant Virology  
Division of Plant Pathology  
Indian Agricultural Research Institute  
New Delhi-110012**

## SPONSORED CENTRE OF ADVANCED FACULTY TRAINING IN

### **Genomics of plant virus for diagnosis and utilisation as gene expression tool**

#### **Introduction**

Plant viruses are significant constraints in Agriculture in India. Compared to the other plant pathogens like fungus and bacteria, which are studied since long, the study on viruses are relatively new and they are much more difficult to manage. For designing suitable breeding programmes against these viruses, proper identification of the virus is essential which involve rapid detection and thorough characterization of the virus at biological and molecular level. Previously, detection and research on this group of pathogens were relatively slow due to the paucity of the diagnostics and trend manpower. However, with the discovery of molecular tools it is now possible to characterize viruses and thus identification of the viruses is more robust now.

Before 1990s, plant viruses were studied in India based on transmission, host reactions, particle morphology and serology. Studies on plant viral genome sequence redefined plant virus identification at a finest level. Today a reach source of genome sequence of plant viruses occurring in India is available, which provided foundation for designing molecular tools for diagnosis and control of plant viruses in India. The complete genome sequence and infectious clones of plant viruses are available in India mostly for begomoviruses. Off late, studies have been initiated to develop infectious clones of RNA viruses. These genomic resources are potential for exploitation of plant viruses as vector for gene expression and silencing in plant system.

Due to their easy transmissibility and ability to replicate autonomously in the plant cell, plant viruses offer numerous advantages for use as vehicles for transient expression of foreign genes/portion of genes within a short time-period in the plant. Once a suitable transient gene vector is identified, the expression of foreign genes can be tested rapidly in a variety of different plants that are hosts for the virus. Expression of foreign genes from plant viruses may also have commercial value, especially for production of pharmaceutical compounds like vaccines. The training programme will focus on detection of plant viruses and their use as gene expression tool.

#### **Trainees**

Teachers and researchers working in this area in SAUs, ICAR and other institutes not below the rank of Assistant Professor and equivalent in the concerned subject are eligible. The number of participants will be limited to twenty five.

#### **Course Outline**

The training schedule is divided into following parts:

##### **(i) Lectures on principle of basic techniques used for plant virus studies (all participants)**

Plant viruses : Foe or Friend; An overview of plant virus diagnosis; High-throughput diagnostics: DNA-Micro Array and Next Generation Sequencing; Principle of ELISA and Lateral flow assay for rapid detection of plant virus; Principle of real time PCR and its application in plant virus detection and gene expression profiling; Plant virus genome organization; Principles of nucleic acid isolation and quantification; Principles of electrophoresis; Principles of polymerase chain reaction and its use in detection of phytoplasma; Methods in cloning of viral genome; Viral genome sequence analysis; Plant virus based vector for generation of heterologous protein in plant system; Plant virus based gene silencing vector (VIGS) for understanding plant gene functions; Reporter gene, Confocal microscopy; Plant virus as a tool to understand host-virus interaction; Synergistic interaction between plant viruses; Management of plant viruses through transgenic approach; Molecular markers for plant virus resistance

**(ii) Demonstration (all participants)**

EM demonstration; Development of infectious RNA through invitro transcription and plant inoculation; DNA Microarray; Real-time PCR; Confocal Microscopy

**(iii) Case studies (participants will be divided into four groups)**

Detection and characterization of large cardamom viruses; Detection and characterization of grapevine viruses; Detection and characterization of phytoplasma infecting sesame and brinjal  
Characterization and Utilization of begomoviruses

**(iv) Interactive discussion and Quiz (Group wise)**

**Duration**

Twenty one days (15<sup>th</sup> October to 6<sup>th</sup> November, 2014)

**Venue**

Advanced Centre for Plant Virology, Division of Plant Pathology, Indian Agricultural Research Institute, Pusa Campus New Delhi.

**Travel**

Travelling allowance will be met by the organizers. Depending on the availability of funds, reimbursement will be restricted to II or III tier AC class fare.

**Food & Accommodation**

Food and accommodation will be arranged at the IARI campus only for the participants and expenditure will be met from the training budget.

**Last Date**

Completed application form in the prescribed format through proper channel should reach the **Director, CAFT in Plant Pathology** on or before **10-08-2014**.

**Training organisers**

**Course Director:**

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(15<sup>th</sup> October to 6<sup>th</sup> November, 2014)

Affix  
Recent  
Passport  
size Photo

**APPLICATION FORMAT**

1. Name :
2. Designation :
3. Age and Sex :
4. Institute employed :
5. Total Service :
6. Experience :
  - a) Teaching :
    - i) Undergraduate :
    - ii) Postgraduate :
  - b) Research :
7. Academic record :
8. Field of specialization :
9. Address for communication :  
(Include mobile no., e-mail id & Fax nos.)
10. Accommodation : Required / Not required
11. Address of the sponsoring institute :

Signature of the candidate

Recommendation of the sponsoring authority

Signature and designation of the  
sponsoring authority