



# National Agricultural Higher Education Project (NAHEP)

Sponsored

Training cum Workshop

ON

**AIRBORNE HYPERSPECTRAL  
REMOTE SENSING**



February 10 -20, 2020

Organized by  
Centre for Advanced Agricultural Science and  
Technology (CAAST)

Division of Agricultural Physics  
ICAR-Indian Agricultural Research Institute,  
New Delhi-110012

## Course Director

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## Course Coordinators

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## Venue

NRL Auditorium, ICAR-Indian Agricultural Research  
Institute, New Delhi-110012.

Practical: Division of Agricultural Physics, Nanaji  
Deshmukh Plant Phenomics Centre and Experimental  
Fields, ICAR-Indian Agricultural Research Institute,  
Pusa Campus, New Delhi-110012.



## HOW TO APPLY

The complete application form in the prescribed format forwarded by Head of the institute or Department authority should reach the Course Director, NAHEP-Centre for Advanced Agricultural Science and Technology (CAAST), Division of Agricultural Physics, ICAR-IARI, New Delhi on or before 29 January 2020 over email [pusadronhyper@gmail.com](mailto:pusadronhyper@gmail.com). Application form can be downloaded from [www.nahep-caast.iari.res.in](http://www.nahep-caast.iari.res.in). Selected candidates will be intimated by email on or before 31 January 2020.

## WHO CAN PARTICIPATE

M.Sc. and Ph.D. students of ICAR-Deemed to be Universities/SAUs/CAUs/CUs/ other UGC recognized Universities and Research Institutes are eligible to apply. A maximum of 20 students/research fellows and 20 faculties/scientists will be selected for participation in the training programme. Working knowledge of computers is mandatory. Workshop on 20 February, 2020 is open for all expecting maximum participant is 100. All selected participants for training program are part of workshop.

## IMPORTANT DATES

Last Date for applications: 29 January 2020  
Duration of Training & Workshop : February 10-20, 2020  
Intimation of Selection: 31 January 2020

## Financial Support

Outstation selected students shall be provided AC III tier train or bus fare by shortest route and free moderate lodging and boarding as per ICAR norms at IARI Guest House / Trainee's Hostel. **Faculties / scientists would require to bear their expenses for travel and self arranged accommodation from their host Institutes.** No registration fee will be charged for the course. Food will be taken care by organizer.

The programme is coordinated by  
PG School, IARI, New Delhi

## About NAHEP-CAAST

Centre for Advanced Agricultural Science and Technology (CAAST) is a new initiative and student centric sub-component of World Bank sponsored National Agricultural Higher Education Project (NAHEP) granted to IARI to provide a platform for strengthening educational and research activities of post graduate and doctoral students. CAAST theme for IARI is Genomic assisted crop improvement and resource management.

## About the Organizing Institutes

The ICAR-Indian Agricultural Research Institute (IARI), New Delhi is the seat of green revolution in India, and continues to contribute to the food and livelihood security of the Nation. Besides, it enormous research contributions, IARI is the premier Institute for higher education in Agriculture in the Country. IARI was ranked as A+ Institute by NAAC, and was given Special Institution Status by IoE Committee of UGC, Ministry of HRD, Govt of India.

Division of Agricultural Physics, one of the oldest Divisions of IARI established during 1962 has been well known for its significant contribution over five decades in the field of Remote Sensing and its applications in Agriculture endowed with a mission. The division has very sophisticated laboratories for all remote sensing research from ground, air borne and satellite platforms using multispectral, thermal and hyperspectral sensors. The division has been actively involved in establishing Nanaji Deshmukh Plant Phenomics Centre, but also in research since then in developing protocols for sensor based high throughput phenotyping both in controlled and field conditions

With this background, the Centre for Advanced Agricultural Science and Technology (CAAST) proposes a training programme cum workshop sponsored by National Agricultural Higher Education Project (NAHEP) on "Airborne Hyperspectral Remote Sensing" for the benefit of the post graduate and doctoral students, faculties, researchers and potential stakeholders.

## Details about Training cum Workshop

The advances in the genomics during the past one and half decade offer great potential for genetic enhancement in yield and adaptability of crops. Conventional phenotyping is the major bottleneck limiting utilization of the power of genomics. To relieve this bottleneck and to fully benefit from the available genomic information, reliable, automatic, multifunctional, and sensor based high-throughput phenotyping platforms is the recently emerged technology to offer new insight into all the aspects of living plants for enhancing the pace of analytical breeding. Field-based phenotyping is a critical component of crop improvement through genetics, as it is the ultimate expression of the relative effects of genetic, environmental factors, and their interaction on critical production traits, such as yield potential and tolerance to stresses.

Among the sensors used in phenomics, hyperspectral remote sensing is the most potential tool capturing largest number of phenotyping parameters and the aerial platform namely unmanned aerial vehicle recently become an important approach for fast and non-destructive cost effective high throughput phenotyping and have the advantage of flexible and convenient operation, on-demand access to data with high spatial, spectral and temporal resolutions.

The purpose of the training cum workshop is to develop skills and capacity in use of hyperspectral remote sensing from controlled conditions (laboratory and climate controlled green house to field condition using ground and airborne remote sensing platforms. The technology also has larger capability in precision crop and soil health monitoring for precision farming.

Broadly topics covered are principles of Spectroscopy in VNIR and Thermal range, Imaging spectroscopy, Sensors, Unmanned aerial vehicle (UAV), pre-processing and processing of imaging and non imaging hyperspectral data, collected using platforms at ground, UAV and Manned Aerial Vehicle will be demonstrated for processing. Many potential applications on high throughput phenotyping and precision farming will also be covered.

The program consists of series of lectures by the eminent experts from India and abroad along with extensive hands on training. Last day of the training (20 February 2020) is planned to have a day workshop on the proposed program inviting many researchers, stakeholders and policy makers to discuss issues and challenges on Imaging Spectroscopy and UAV remote sensing for making the technology a viable operable option for Plant Phenomics and Precision Agriculture.

## Application Form

(May strike out which is not applicable)

1. Full Name (block letters) :
2. Designation (Student/Faculty) :
3. Basic Pay and Scale :
4. Date of Birth :
5. Sex (Male/Female) :
6. Category (UR/OBC/SC/ST) :
7. Discipline
8. Domicile State
9. Affiliation :
10. Address for Correspondence :  
(including Phone, Fax & E-mail\*) Email must for intimation of selection
11. Educational Qualifications :

Photo

Degree	Board/Univer sity	Subj ect	Year	Marks %/*OGPA
Ph.D.				
M.Sc.				
B.Sc.				
Other				

\*Up to the completed trimester for current students

12. Professional Experience :
13. M.Sc. & Ph.D. Thesis  
(title & Objectives & Output) :
14. Current area of Research / Project
15. Fellowship :
16. Awards :
17. Does your current Research /  
Project needs UAV Remote Sensing :
18. Publications :

Signature of Applicant

Date:

Place:

19. Certificate and Recommendation :  
by the forwarding authority

It is certified that the information provided above is verified from the records and found correct. The applicant is recommended & nominated for attending the NAHEP sponsored Training cum workshop on 'Air-borne on Hyperspectral Remote Sensing' at IARI, New Delhi.

Signature with seal of the Authority

Date:

Place: