

Introduction

Plants produce large number of small molecules called metabolites which have greater influence on growth, development, reproduction and response to environmental stimuli. With the establishment of genomics, transcriptomics and proteomics in many species, more information on their end product and their effect on phenotype through various metabolites is very much needed. Gene and the environment interaction leads to the alteration of vast number of metabolites through changes in gene expression and post-translational protein modifications.

Morphological modifications in plants are the effect of changes in various groups of metabolites called mainly as primary and secondary metabolites. Group of primary metabolites which are essential for the normal growth and development are carbohydrates (sugars), lipids (fatty acids) and proteins (amino acids). Secondary metabolites like phenolics, glucosinolates, alkaloids, terpenoids, carotenoids which are produced in greater quantity during stress. It has been shown in many crops that the tolerance to biotic and abiotic stresses is related to the levels of many of these metabolites. Significant differences between the susceptible and tolerant genotypes for these metabolites have been reported like the variations in phenolic acids, flavonoids, certain amino acids, sugars and polyamines. Simultaneous identification of large number of metabolites in a given time and a given tissue is dependent on the advancement of instrumentation and sample preparation techniques. Sophisticated high throughput instrumentations like GC-MS, LC-MS, CE-MS, FTIR, NMR etc. are needed for the metabolomics studies. Identification of the metabolite also helps in establishment of the right pathway and the gene responsible for that metabolite which gives tolerance to the genotype against biotic and abiotic stresses.

Indian Institute of Horticultural Research (IIHR), Bangalore, a constituent institute of Indian Council of Agricultural Research (ICAR) was established in 1967. The institute has a vast pool of talented, experienced scientific and technical human resource and is recognized as a premier organization for research, teaching and extension in all branches of horticultural sciences.

The Short Course on “Metabolite profiling as a selection tool for abiotic and biotic stress tolerance in horticultural crops” is being organized by the Division of Plant Physiology and Biochemistry which has established sophisticated instrumentation and worked on metabolite profiling in many species.

Objectives

- To orient the participants in the area of primary and secondary metabolites.
- To enable the participants to learn the importance of metabolites for abiotic and biotic stress tolerance.
- To enhance expertise of the participants in extraction and estimation of various metabolites using GCMS and LCMS.

Course content

1. Techniques for the identification and characterization of various metabolites
2. Abiotic stress and its impact on metabolite profiles in horticultural crops
3. Biotic stress and its impact on the production of various metabolites and the chemical ecology of plant –insect relationship
4. Relationship between the genomics and metabolomics
5. Statistical methods for the interpretation of metabolite data

Eligibility

Scientists working in the rank of Assistant Professors / Associate Professors and equivalent cadre in the disciplines of horticulture / plant physiology / biochemistry /plant breeding and related fields under SAU/Horticulture universities/ ICAR institutes are eligible to apply. Eligible participants may send their application in prescribed format.

How to apply

Interested candidates may apply online by registering at CBP Portal (<http://cbp.icar.gov.in>) following the guidelines given there. After filling the online application, applicants are requested to take a printout of the same and get it approved by the competent authority of the organization. Upload the scanned copy of the signed application to the CBP portal. Send the hard copy duly forwarded by the employer by post to the Course Director on the address given below. Selected candidates will be informed through online CPB portal and e-mail.

Travel

Participants will be paid to and fro fare for journey performed by the shortest route by rail or bus (only by public transport) as per their entitlement but restricted to the maximum of AC- II tier train fare as per ICAR norms. If any participant chooses to travel by air, their claim shall be restricted to AC-II tier train fare only. Participants are required to produce originals of the rail/bus/air tickets for claiming TA/DA.

Bengaluru is well connected by Rail and Road from all parts of the country. Participants are advised to reach a day earlier to the commencement of the Short Course. An Auto / Taxi could be hired from Railway Station / Bus Stand to reach ICAR-IIHR via Yeshwanthapur, Jalahalli Cross, Dasarahalli, 8th Mile, Bagalagunte, Chikkabanavara, Soladevanahalli, TB Cross and ICAR-IIHR, TTC Hostel. Candidates could also avail the BMTC Bus services from City bus stand (Majestic), Platform No.21 by Route Nos. 251, 251A, 251B, 251G, 251M, 253J, 266. Candidates traveling by buses bound to Hesaraghatta may alight at TB Cross and take an auto to the Institute campus which is about 1 Km away. In case of emergency, participants may contact the Course Coordinator on telephone for necessary guidance (098456 64519 / 094496 31796).

Boarding and lodging

Out station participants will be provided free boarding and lodging in the Institute’s Training Hostel. The organizers will not be able to accommodate any family members or accompanying person in the Training Hostel due to limited accommodation. The weather in Bengaluru during November - December will be pleasant with temperature ranging from 18-28°C.

Course Director

Dr. K.S. SHIVASHANKARA,

Course Director & Head,

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Course Coordinator

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Important dates

Last date for receipt of nominations:

September 05, 2017

Selection and intimation to participants:

September 20, 2017

Confirmation of participation:

September 30, 2017

Address for correspondence

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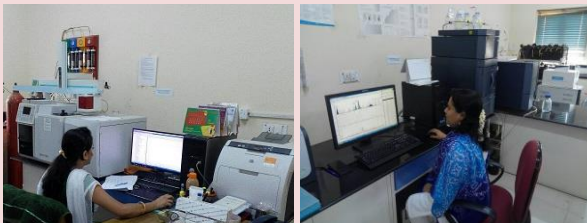
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ICAR Sponsored Short Course

on

METABOLITE PROFILING AS A SELECTION TOOL FOR ABIOTIC AND BIOTIC STRESS TOLERANCE IN HORTICULTURAL CROPS

(27th November to 6th December, 2017)



Dr. K.S. Shivashankara
Course Director

Organized by

Division of Plant Physiology and Biochemistry ICAR-
Indian Institute of Horticultural Research
Hesaraghatta Lake P.O. Bengaluru – 560 089