

Ecometabolomics

Metabolic Fluxes versus Environmental Stoichiometry

Offers thorough coverage of metabolomic approaches to deciphering plant-environment interactions.

Sumira Jan

Senior Research Associate, ICAR: Central Institute of Temperate Horticulture, India

Parvaiz Ahmad

Senior Assistant Professor of Botany, A.S. College, Srinagar, University of Kashmir, India

Ecometabolomics focuses on the metabolomic interaction between the environment and plants, particularly plants that have vigorous secondary metabolites. Metabolomics is the systematic study of the unique chemical fingerprints that specific cellular processes leave behind. Metabolic profiling can give an instantaneous snapshot of the physiology of that cell. This book aims to analyze the metabolome (the total number of metabolites) and its shifts in response to biotic and abiotic environmental changes. By coupling analytical techniques with large datasets from varied metabolic fluxes, researchers can capture snapshots of metabolomes to get a holistic view of an organism's metabolism at the species, population and ecosystem levels, thereby paving the way to fascinating insights on how changes in the environment affect plants and the larger ecosystem.

Ecometabolomics includes an introduction to metabolomics, summaries of metabolomic techniques and applications, studies of stress in plants and insights into challenges in the field:

- Provides in-depth overview of the basics of the discipline, including non-targeted analysis and quantification of plant metabolites
- Outlines the applications of various analytical techniques in comprehending the total metabolome of an organism
- Covers both NMR and MS-based approaches

Sumira Jan has received numerous international and national awards, including the Korean Government Doctoral Scholarship in the field of environmental science, the BioCaRe Early Career Scientist Award, and the Fast Track Young Scientist Award. Presently Dr. Jan is working as a senior research associate, and her work is funded by the CSIR at the Central Institute of Temperate Horticulture. Her current research involves metabolomic analyses of high-altitude herbs and their ecophysiology.

Parvaiz Ahmad is a senior assistant professor in the Department of Botany at Sri Pratap College in Srinagar, Jammu and Kashmir, India, and is presently a Visiting Scientist at King Saud University in Riyadh, Saudi Arabia. He is a recipient of the Junior Research Fellowship and Senior Research Fellowship award, granted by CSIR, New Delhi, India. Currently, Dr. Ahmad is actively engaged in studying the molecular and physio-biochemical responses of different agricultural and horticultural plants under environmental stress.

Related Elsevier Titles

- Ahmad, *Plant Metabolites and Regulation Under Environmental Stress*, 9780128126899
- Pontis, *Methods for Analysis of Carbohydrate Metabolism in Photosynthetic Organisms*, 9780128033968
- Gonzalez, *Plant Transcription Factors*, 9780128008546



ELSEVIER



ACADEMIC PRESS

An imprint of Elsevier
elsevier.com/books-and-journals

ISBN 978-0-12-814872-3



9 780128 148723