

The book provides a detailed description of how OMICS can help crop science and horticulture to enhance crop yields, resistance and nutritional values.

Burgeoning world population, decreased water supply and land resources, coupled with climate change, result in severe stress conditions which is a great threat to the global food supply. To meet these challenges, exploring OMICS technologies could lead to improved yields of cereals, tubers and grasses that may ensure food security. Improvement of yields through crop improvement and biotechnological means are the need-of-the-hour, and the current book "OMICS-Based Approaches in Plant Biotechnology", reviews the advanced concepts on breeding strategies, OMICS technologies (genomics, transcriptomics and metabolomics) and bioinformatics that help to glean the potential candidate genes/molecules to address unsolved problems related to plant and agricultural crops. The first six chapters of the book are focused on genomics and cover sequencing, functional genomics with examples on insecticide resistant genes, mutation breeding and miRNA technologies. Recent advances in metabolomics studies are elucidated in the next 3 chapters followed by 5 chapters on bioinformatics and advanced techniques in plant biotechnology and crop breeding.

Audience

The information contained in the volume will help plant breeders, plant biotechnologists, plant biochemists, agriculture scientists and researchers as well as policy makers in using this applied research to focus on better crop breeding and stress adaptation strategies.

Rintu Banerjee, Ex-MNRE- Chair-Professor, Indian Institute of Technology, Kharagpur has created a niche of her own in the area of Biomass Deconstruction/Biofuel Production/Enzyme Technology. In the process of her innovative development, she was granted 8 Indian, 3 international (US, Japanese and Chinese) patents. She has published more than 180 papers in peer-reviewed national/international journals.

Garlapati Vijay Kumar is an Assistant Professor at the Department of Biotechnology and Bioinformatics, Jaypee University of Information Technology, Waknaghat, India. He has 3 patents, 33 research articles in peer-reviewed journals and 10 book chapters to his credit. His research interest areas are: Bioprocess engineering / industrial biotechnology, deployment of OMICS technologies for crop improvement, fermentation technology, biofuels, and biocatalysis.

S.P. Jeevan Kumar is a scientist in ICAR-Indian Institute of Seed Science, Mau, U.P, India. His interests include OMICS technologies for plant biotechnology, crop improvement, seed deterioration mechanisms, genetic purity and bioenergy. He has published 25 papers in peer-reviewed journals and multiple book chapters.

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