

PREFACE

Modern research includes genetic engineering as well as cell- and tissue culture technologies. The concept encompasses a wide range of procedures (and history) for modifying living organisms according to human purposes - going back to domestication of animals, cultivation of plants, and "improvements" to these through breeding programs that employ artificial selection and hybridization. Technical Advances in Plant Science aims to accelerate the pace of discovery through publication of new methods that will have a significant impact on our ability to study and understand the biology of plants. The section publishes technical advances related to any type of plant (unicellular or multicellular), at levels ranging from molecules to whole organisms. Areas of interest include, but are not limited to, advances in tools for making system-level measurements (genomics, proteomics, metabolomics, etc.); computational approaches for analyzing and/or integrating large-scale datasets; methods for integrating mathematical, statistical, and/or computational models to decipher plant function and growth at any level; microscopy and imaging techniques; methods for physiological and morphological analyses; high-throughput screening; genetic tools for non-model or developing model plants; biofuel-related methods; instrumentation development; improvements to existing methods that significantly increase their utility and/or robustness; and adaptation of existing methods to plant systems. The main criteria for publication are proof-of-concept and demonstration of the application of a new research tool, along with enough information to allow readers to employ it.

This is a succinct, up-to-date, and relevant book based on the techniques used in plant science; this book embodies the recent knowledge of advanced techniques frequently being used from last few decades. There are twelve

chapters have been summarized systematically demonstrating the suitability of Laser Produced Plasma Spectroscopy, potential of NMR spectroscopy in Plant metabolomics, recent developments and applications of novel analytical techniques for the analysis of plant materials, Chlorophyll a fluorescence analysis: A technique to explore the photochemistry of photosystem II, drought stress and metabolomics in plants, Heat Shock on *Bipolaris sorokiniana* in Cereal Crops, salt stress on crops plants and their mitigation strategies, Plant Cell death: Rumen-induced stress on plant in ruminant herbivores, Role of diazotrophs in maintaining plant health in agricultural fields, Population biology of *Rhizoctonia solani* AG-1 IA from India, Biofilms: a house for microorganisms and Genetically modified organism. The Challenges on this aspects and methodologies inspired us to edit the BOOK entitled "Technological Advancement in Plant Sciences".