

Preface

Sugarcane is an important cash crop grown throughout the tropical and subtropical regions of the world. It serves as the major source for sugar and also used for ethanol and biomass production. The demand for sugarcane and its by-products is set to increase in recent years due to increasing population, higher demand for sugar and climate change. Moreover, sucrose yield has been unchanged for the past decades. Owing to these factors, there exists the need for sugarcane improvement through biotechnology which would inevitably improve the yield as well as the sustainability of sugar industries. With the advent of next generation sequencing technologies and genome editing tools, the realization of sugarcane improvement through biotechnology is not very far. Several transcriptomic studies have been carried out in sugarcane and whole genome sequencing is in progress. Transgenic sugarcane for several traits has been reported, the highlight being the commercialization of drought-tolerant transgenic sugarcane in Indonesia and others in pipeline. Sugarcane is being used as a platform to produce several recombinant proteins and products. Very recently, transcription activator-like effector nucleases (TALENs) have been used in sugarcane initiating genome editing approach in this complex polyploid genome.

In this volume, a collection of 11 chapters is presented by experienced researchers working on sugarcane biotechnology. This book provides exhaustive information on several recent technologies that are employed for sugarcane improvement through biotechnology. An array of topics such as genomics and transcriptomics, transgenic sugarcane for trait improvement, potential candidate promoters, new strategies for transformation, molecular farming, sugarcane as biofuel, chloroplast transformation and genome editing which are currently employed in sugarcane for trait improvement has been discussed comprehensively in this book which will serve as an encyclopaedia for graduates, postgraduates and researchers who work on sugarcane. This book will also be of great interest to plant scientists, biotechnologists, molecular biologists and breeders who work on sugarcane crop. As editor of this book, I am grateful to the contributors of various chapters for writing their chapters meticulously and enabling to produce this book on time and in a great manner. I also thank the editorial staff of Springer, New York, who were very generous

and helpful to initiate this book project. I am also grateful to the São Paulo Research Foundation (FAPESP, Proc. 2015/10855-9) for the postdoctoral research grant. Finally, special thanks to Springer, Switzerland, for publishing this book. I firmly believe that the information covered in this volume will make a sound contribution to sugarcane research.

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