Preface

To respond to an ever-increasing need of food and fibre by the growing world's population, standing today at 7 billion and expected to reach 9 billion by 2050, there is a pressing need to increase crop productivity. This can be achieved by developing cultivars with better grain yield and high nutritive value through plant breeding in traditional crop plants and in supplementary crops identified by International Plant Genetic Resources Institute (IPGRI) and Consultative Group on International Agriculture (CGIAR). The genetic improvement can also be achieved by using biotechnological tools for alien gene transfer and engineering the traits in plants that are otherwise difficult using conventional plant breeding approaches, by newer methods to precisely and rapidly screen for traits of interest in the progeny, and by cytogenetic manipulations. Knowledge of genetic diversity, locked in the germplasm resources of the crop plants and wild relatives constituting primary, secondary, and tertiary gene pools, and the genome(s) characterization is essential for crop improvement and developing gene transfer strategies by multitude of tools that are now available.

This book addresses aforementioned issues in several crop species. Each chapter elucidates an authoritative account on the topic. We are sincerely grateful to all the authors for their valuable contributions. We would like to acknowledge cooperation, patience, and support of our contributors, who have put in their serious efforts to ensure a high scientific quality of this book with up-to-date information. We thank Dr. K.G. Ramawat for motivating us to take up this assignment. Sincere thanks are due to Khushboo Arora for her help during the editing process. This work could not be completed without the active support of Springer team who took pains in streamlining the production process. We particularly appreciate Dr. Valeria for her continued support. Vijay Rani Rajpal is sincerely grateful to her husband Susheel Rajpal and daughter Navya Rajpal for their patience and support during the entire period of this book project.

Plant breeders, taxonomists, geneticists, cytogeneticists, molecular biologists, and biotechnologists will greatly benefit from this book. We sincerely hope that this book will serve as a milestone towards achieving meaningful plant genetic improvement to meet the ever-increasing requirements of food and fibre of this world.

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