

Preface

Grain cereals mainly comprised of rice, wheat, maize, barley, oat, sorghum, and millets (pearl, finger, foxtail, proso, barnyard, little, and kodo) are the members of grass family and are very important to human diet because of their role as staple food crops in many parts of the world. These cereals are also used to produce animal feed, oils, starch, flour, sugar, and processed foods including malts and alcoholic beverages. Further, about 50% of the world's calories are being provided by wheat and maize and in several parts of Africa and Asia, people rely on grains such as sorghum and millets. The increasing human population and enhanced standard of living are placing greater demands on food-related requirements in terms of quality, quantity as well as diversity. As a basic raw material for future crop breeding, genetic resources are the key to future food security. An excellent performance has been achieved by applying contemporary approaches for germplasm characterization and evaluation to manage the crop genetic resources effectively. In parallel, use of genomic resources and specialized germplasm sets such as minicore collections and reference sets will facilitate identification of trait-specific germplasm, trait mapping, and allele mining for resistance to various biotic and abiotic stresses and also for useful agromorphologic traits.

The book entitled "Genetic and Genomic Resources for Grain Cereals Improvement" comprises a total of eight chapters contributed by eminent researchers around the world. The first introductory chapter highlights the landmark research on genetic and genomic resources of grain cereals improvement. Subsequently, Chapters 1–8 deal with aspects related to genetic and genomic resources of grain cereals improvement. Each chapter provides a comprehensive account of information on the origin, distribution, diversity and taxonomy, erosion of genetic diversity from the traditional areas, status of germplasm resource conservation, germplasm characterization and evaluation, use of germplasm in crop improvement, and integration of genetic and genomic resources in crop improvement. The editors are grateful to all chapter contributors for their outstanding efforts in the preparation of this book and we had very cordial relations during the entire process of development of this manuscript. The editors are also thankful to the Academic Press staff for shepherding the book through the editorial process with a complete academic approach. The edited multi-authored book describing the problem of genetic and genomic resources of grain cereals improvement will facilitate students, faculty, researchers, and policy makers, effectively managing and utilizing the genetic resources for the benefit of humankind.

Editors