Genetic Resources, Chromosome Engineering, and Crop Improvement: Volume 4: Oilseed Crops.


The book starts with a quote by Ralph Waldo Emerson (1803–1882) “What is a weed? A plant whose virtues have not been discovered.” Weedy plants often are potential resources for new traits or new components that can be used to improve current crops or to introduce new crops. From that point of view the editors started a series of volumes titled Genetic Resources, Chromosome Engineering, and Crop Improvement. In the first three books of this series, the editors were able to establish good library resources that are not only a useful introduction to an important subject but also useful references that deserve a place on the shelf of many plant breeders. These three books cover a wide array of economic plants including grain legumes crops (Vol. 1), cereal crops (Vol. 2), and vegetable crops (Vol. 3). The fourth book continues this tradition and covers the important oilseed crops including soybean, groundnut (peanut), cotton, sunflower, safflower, brassica oilseeds, and sesame. Other oilseed crops such as linseed and perennial tree crops were omitted from the current volume. The book has 15 contributors who are authorities in breeding, cytogenetics, genetics, and genomics of oilseed crops.

The book contains authoritative information on the importance of these crops, their current status, and future potential. Chapters two through eight are devoted to one of the major oilseed crops. Each chapter starts with an introduction that paves the way for general information about that crop, including the botanical description of the plant, crop utilization, world production, and genetic resources. The authors and editor have made special efforts to make the outline of each crop-specific chapter similar. This effort provides the reader with a good appreciation of the genetic diversity and variation available for each crop, even though these crops have different origins, belong to different families, and grow under different conditions. Each chapter presents the current status of taxonomy, genomic and chromosomal constitution, germplasm resources, crop enhancement, genetics, and cytogenetics research that has been done on that crop. References cited in each chapter are extensive and provide additional information on topics mentioned.

The book focuses on a broad array of subjects that are important to the plant breeding field, including new approaches such as DNA-marker assisted selection, tissue culture, and gene transfer. The authors did a great job in covering these chapters with varying levels of detail. For example, some chapters discussed quantitative trait loci (QTL) analyses to understand the genetics of these traits in excellent detail, such as those on brassica, sunflower, and groundnut. Other chapters simply summarized these studies, such as soybean and sesame, while yet other chapters mentioned QTL analyses or other trends at a high level but did not discuss in detail potential uses of DNA marker technologies. The book concludes with a summary of the current status of the oilseed crops and highlights potential future improvements in breeding and the development of new crops.