

Preface

Plant breeding is a relatively new science, little more than a century old. Using plant breeding, scientists have developed improved cultivars, especially using methods developed in the 1900s. However, the challenges have become daunting for agriculture to supply food, feed, fiber, and biofuel for an increasingly resource-hungry world. Therefore, plant breeding must evolve and make use of new technologies to become more efficient and accurate at developing new and improved cultivars. It is not surprising that biotechnology has been gradually incorporated into plant breeding over the last few decades. Evidence for this is provided by the large numbers of genetically modified cultivars being cultivated around the world. The main biotechnology tool used by breeders today is recombinant DNA technology; however, many other biotechnology tools are now available and are being successfully used in cultivar development such as double-haploids, molecular markers, genome-wide selection, among others.

The book *Biotechnology and Plant Breeding: Applications and Approaches for Developing Improved Cultivars* offers outstanding opportunities to contribute to the well-being of mankind. This contribution to mankind comes about when improved varieties of food, feed, fiber, and fuel crops are developed that increase productivity and security. Such varieties have become available through traditional breeding and biotechnology and are being grown by large as well as small farmers. Ultimately the improved performance benefits society as a whole. Furthermore, opportunities exist to increase these contributions in the future through the application of biotechnology in plant-breeding programs.

This book was written by a select group of knowledgeable scientists, and was designed to be used as a textbook and a reference book for scientists and students around the world interested in the new biotechnologies applied to plant breeding.

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