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Review of Plant Breeding: The Arnel R. Hallauer International Symposium.

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Plant Breeding: The Arnel R. Hallauer International Symposium. Edited by Kendall R. Lamkey and Michael Lee. Ames, IA: Blackwell Publishing, 2006. vii + 379 pp. Figures, tables, references. $149.99 cloth.

This book is a compilation of papers presented at *The Arnel R. Hallauer International Symposium on Plant Breeding* in Mexico City on August 17-22, 2003. As the

title indicates, the symposium was held to honor Dr. Arnel Hallauer, a great plant breeder, scientist, and teacher. The book discusses the past and present status of plant breeding worldwide and presents various perspectives about the future of this life-altering discipline. In 27 chapters, it documents the history, accomplishments, and challenges of plant breeding as a discipline as well as its methods in many different crop species.

The first eight chapters are devoted to the definition, accomplishments, and social and environmental impacts of plant breeding. Broadly defined, plant breeding is the science, art, and business of the development and improvement of plants for human benefit. Plant breeding has improved the livelihood of millions and deserves much more credit than it has been given. While many new technologies useful for crop improvement have become available, the central role of plant breeding activities and of breeders themselves remains the same: the development of better cultivars suited for various production purposes with higher yield, pest and disease resistance, abiotic stress tolerance, and higher quality.

Chapters 9 to 15 deal with crop improvement theories and methods in quantitative trait loci and comparative genomics. The integration of traditional quantitative theories with new genomic technologies is essential to developing genomic-assisted breeding methods, better understanding and handling of genotype by environment interaction, and further genetic improvement in crops.

The remaining chapters are dedicated to more specific aspects of plant breeding: biotic and abiotic stresses, heterosis and hybrid breeding, nutritional value, use of exotic germplasm, and forage. With regard to different crop species, breeding efforts in barley, corn, rice, sugarcane, forage, vegetables, and fruits are reviewed in detail. Notably, a significant part of the book focuses on corn research, primarily due to the leading role of corn in the U.S. economy relative to other crops and its extensive use as a model species in studying plant breeding methods for decades.

There is no doubt that farmers in the Great Plains have all experienced the benefits of plant breeding: more choices of superior cultivars with local adaptation, higher yield, and better hardiness. Together with improved agronomic practices, the genetic gain in many crops allows farmers to produce more grain and forage with less acreage of land. It has been estimated that roughly 25% of the total world production of wheat, oats, barley, rye, sorghum, and corn are from the Great Plains. With the major part of the Great Plains receiving less than 20 inches of rain, developing new cultivars with improved water use efficiency requires a long-term commitment in plant breeding research, education, and extension.

The book is an excellent resource for plant breeders, agronomists, horticulturists, and plant biologists. General readers would also enjoy the reminiscence of early plant breeding as well as the description of large-scale, genomic-empowered, and worldwide plant breeding industry in private seed companies today. **Jianming Yu**, *Department of Agronomy, Kansas State University.*