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Book review

Diversity and Geography of Cultivated Plants

Karl Hammer, Miguel Á. E. Pérez and Chunlin Long (Editors)

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Editor-in-Chief of this book Karl Hammer, emeritus professor at Kassel University (Germany), is a leading scientist in plant genetic resources (PGR) and agrobiodiversity. His research has focused on taxonomy, plant domestication, ecology, biogeography, conservation and exploitation of PGR in plant breeding. He also performed many studies and conducted missions around the globe. His life activities, knowledge and experience created an excellent background for this book. The book involves a close collaboration with two other editors, Dr. M.Á.E Pérez (Cuba) and Prof. C. Long (China), as well as eleven additional contributors from nine countries. The book is dedicated to H. Stubbe, founding director and long-time director of the Institut für Kulturpflanzenforschung in Gatersleben (Germany).

The recently published First Edition of the book represents a very impressive, comprehensive, and complex treatment of the most important topics related to the diversity and geography of cultivated plant germplasm, their importance in research, conservation strategies, plant breeding, agriculture, and horticulture.

Over the last two decades, various books have been published that focus on different aspects of PGR. The uniqueness and great value of the current volume lie in its treatment of PGR from a biogeographic perspective and its very good taxonomic background for all reported plant groups. All data are well documented and supported by extensive relevant literature (over 3 600 references). As mentioned in the introduction, the main aim of this book is to bring together an up-to-date list of cultivated plants, with a focus on cultural evolution and species richness, and on their domestication, providing a broader and deeper insight into their diversity. The summarised data originate not only from the published literature but also from authors' collection missions and botanical, ethnobotanical, archaeological, and genomic studies. From this viewpoint, the book is a fantastic compendium of well-documented, well-organised information.

The book is divided into sixteen well-organised chapters that logically cover, step by step, the entire focus and subject described in the book title. The first four chapters provide a short and comprehensive introduction to the topic (Chapter 1), summarises basic information about material and methods used in elabora-

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tion (i.e. paradigm shift in the discipline of PGR, commodity the wealth of plant uses, common names, Mansfeld´s principles) (Chapter 2), covers results and discussion (development of checklists and inventories, classification and specification of regions of diversity (in total twelve), number of species, botanical and morphological evaluations) (Chapter 3). The fourth chapter, "Prospects of Genomics", provides a brief summary of recent developments in modern genomics and new insights into the evolutionary history of crop plants in the main domestication centres (Southwest Asia/Fertile Crescent, Central Asia, North and South America, Africa/the Niger River, Europe). This chapter concludes with a statement that a combination of genomic analyses and genome editing is becoming a powerful tool for understanding plant domestication and evolution and for translating this knowledge into practical breeding.

The next twelve chapters are divided and composed according the regions of plant diversity developed by Zeven and de Wet (1982) in the following order: East Asiatic region, Indochinese-Indonesian region, Australian Oceania region, Hindustani region, Central Asiatic region, Near Eastern region, Mediterranean region, African region, European Siberian region, South American region, Central American and Caribbean region, North American region. These chapters represent a substantial part of the book (altogether ca 780 pages). Each of these twelve chapters has a similar structure, i.e., introduction, geography of specific region(s), agrobiodiversity of the region, and inventory of regional diversity. The inventory is a crucial part of each chapter and is primarily structured by plant families (in alphabetical order), then by genera, and finally by species. For each species, the taxonomic status is specified, as well as the geographic distribution, area of domestication, usage, and, in some cases, varietal variation and classification. The large number of commodity groups characterises the interactions between man and plants. Proper references support all basic information. Each chapter provides a map showing the geographic location of each region; there are many colour figures characterising specific features of each region and some plant species. At the end of each chapter are tables that summarise the numbers and percentages of cultivated plants in each region, as well as tables listing surveys of species with high domestication value.

The final part of the book is a comprehensive Reference list (pp. 801–886) that represents a survey of more than 3 600 papers, books and book chapters, and other information sources. This is an unbelievable source of information supporting the text; however, it is also material for further reading. At the end of the book is a very detailed Index (pp. 887–939) that covers, in alphabetical order, all the most important terms, geographical names, and scientific names of organisms. This is very useful for quick orientation in the book and for finding specific topics and plant species.

In conclusion, this book is an exciting compendium of plant genetic resources of cultivated plants and their wild progenitors, primarily organised by geographic origin and distribution. It also summarises important recent general information, concepts and methodology related to PGR and crop domestication. Without any doubt, this book could be considered as a "Bible" of PGR from a botanical and geographic viewpoint. This book is a valuable and essential read. It can serve as an important source of information for researchers, university lecturers and students of botany, plant sciences and biology, conservation biologists and genebank managers, plant breeders, and many others interested in plants, their diversity, and domestication. The Editors and authors are congratulated on an impressive job and on a valuable book with broad international impact and long-lasting relevance.

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