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BOOK REVIEWS

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Genetic Engineering, Biofertilisation, Soil Quality and Organic Farming. Edited by E. Lichtfouse. Heidelberg, Germany: Springer (2010), pp. 396, US$209.00. ISBN-10 9048187400, ISBN-3 978-9048187409.

Genetic engineering, biofertilisation and organic agriculture offer innovative friendly methods for sustainable food production. In the present era of globalization, these approaches have attracted the farming community to address the challenges of food quality, greenhouse gas emissions, soil degradation and climate change, which ultimately leads to a healthier/safer ecosystem. The authors of this book emphasise the importance of plant biotechnology and cover crops to improve the overall performance of agricultural systems and to cut down expensive costs of chemical fertilisers. The role of phosphate rock (PR) and mixed cropping systems for organic agriculture are discussed in detail, and nitrate leaching and its management with reference to vegetable crops are highlighted. The authors provide causes, impact and remediation methods to address the issue of manure spills. The effects of cropping practices (tillage, crop rotation, inputs) on relative efficiency and population dynamics of soil microbes in relation to soil fertility have also been described. Soil structure and fertility of salt-affected soils can be efficiently improved by cyanobacteria because of their ability to tolerate various stresses and to produce extracellular polysaccharides. The authors measure the impact of intensive poultry rearing on environmental sustainability using various approaches, each of which has been elaborated with its application to agriculture and especially to the poultry industry. The book also provides lucid information on the use of compost in the organic production system. The implicit message to use simultaneously genetic engineering, biofertilisation and organic farming for a better ecosystem is commended, and this book is highly recommended to researchers, policy makers, farmers and students engaged in the field of agriculture and related disciplines.

Muhammad Asif

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Organic Crop Breeding. Edited by E. T. Lammerts van Bueren and J. R. Myers. Chichester, UK: Wiley-Blackwell (2012), pp. 282, £95.00. ISBN 978-0-470-95858-2.

Organic Crop Breeding is divided into two sections: the first section comprises eight chapters on general topics, while the second one is devoted to specific crops: wheat, maize, rice, soybean, faba bean, potato, tomato, brassicas and onions. The editors have done an excellent job in putting together a well-organized and informative book, which covers theory, practice, issues and the latest research. The individual chapters by leading experts are all well written with extensive references to the scientific literature. The book should be of value to anyone interested in plant breeding and crop production systems. The main themes to emerge from the book are as follows: traits of importance for organic crops are ones that contribute to weed suppression; efficient nutrient uptake through root structure, function and beneficial interactions with soil microbes; and resistance to and tolerance of pests and diseases, particularly seed-borne diseases in organic seed production. Selection for higher and stable yields needs to take place on organic farms. Farmer participation produces many locally adapted cultivars and hence maintains cultivar diversity. Genetically heterogeneous cultivars help organic farmers cope with variable abiotic and biotic stresses on their farms. European regulations for cultivar registration and seed certification are not designed to cope with organic cultivars. Organic breeders reject plant-breeding techniques and their products such as genetic transformation, protoplast fusion, microspore culture and embryo rescue,

which they consider incompatible with the philosophy and values of the organic movement. Hence, organic breeding is different from but relevant to breeding for sustainable low input agriculture.

John E. Bradshaw

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Blueberries. By J. B. Retamales and J. F. Hancock. Wallingford, UK: CABI (2012), pp. 336, £45.00. ISBN 978-1-84593-826-0.

This volume, the latest in CABI's 'Crop Production Science in Horticulture Series', addresses the blueberry as a crop in all – or at least, most of its diversity, including southern and northern highbush, half-high types from Minnesota, and rabbiteyes initially from Georgia and North Carolina. The book is timely, with global interest in blueberry currently at an all-time high and new plantings across much of Europe as consumer demand grows.

The nine chapters give a comprehensive overview of blueberries from breeding through to growing and post-harvest storage. They cover respectively the global blueberry industry, taxonomy and breeding, growth and development, light and yield, nutrition, field management and harvesting (including water management), growth regulators, pests and diseases, and fruit quality.

The breeding chapter includes descriptions of virtually every commercially grown blueberry cultivar, and the other chapters cover between them the most important aspects of crop management and production. There is a list of references at the end of each chapter for readers wanting to know more. As one might expect, the book is strongly focused on American (north and south) production, but the rapidly escalating interest in blueberry in Europe, the Pacific Rim and China is also considered.

This book is intended to occupy a similar place to Paul Eck's *Blueberry Science*, published in 1988, as the authors themselves state in the Introduction. In that aim they have been largely successful: The book is an excellent and highly readable addition to the blueberry literature, and while the price is slightly high for a soft-cover edition with no photographic plates, a wide readership, including researchers, advisors and growers, will derive considerable value from this book.

Rex Brennan

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Peppers. Botany, Production and Uses. Edited by V. M. Russo. Wallingford, UK: CABI (2012), pp. 280, £85.00. ISBN 978-1845937676.

The purpose of this book is clearly stated in the Preface: The aim was not to produce a 'how to' book, but 'a book where the field of knowledge is displayed with the hope that new avenues of exploration would be opened'. It succeeds in this task admirably. Peppers – the genus Capsicum here – offer a diverse field, as vegetables and spice, ornamental plants and even a feedstock for the chemical industry, though the concentration here is on the vegetable. The first two excellent chapters on ethnobotany and genetics lay a firm basis for the succeeding chapters that cover every aspect of cultivation – from production, planting systems, nutrition fertilization and irrigation management, mechanization, pest and disease and weed control and post harvest technology to the physiology of metabolites and salt tolerance. A chapter on organic production brings this area of increasing commercial importance firmly into the frame of important targets for research. The chapter on the physiology of metabolites recognizes the growing importance of this area to definitions of product quality. An excellent final chapter on the economics of greenhouse production brings it all together into a practical commercial framework. All chapters attempt to lay out the state of the art, as currently known, and the result is a practical and comprehensive reference that helps to display the needs and opportunities in all fields from breeding to mechanical engineering. There is a fertile field here to stimulate new research and new careers.

Steve Caiger