

Contents

Part I Food and Energy Security and Sustainable Agriculture Policy	
1 Creative and Innovative Research: Our Only Hope for Achieving Sustainable Food and Energy Security	3
Gale A. Buchanan and Raymond L. Orbach	
2 Moving Toward Energy Security and Sustainability in 2050 by Reconfiguring Biofuel Production	15
Stephen R. Hughes, Bryan R. Moser, and William R. Gibbons	
3 Sustainability Standards	31
Thomas P. Redick	
Part II Soil and Water	
4 Soil Degradation, Land Use, and Sustainability	61
Jerry L. Hatfield	
5 Impact of Technology and Policy on Sustainable Agricultural Water Use and Food Security	75
Mahbub Alam, Greg Kruger, Sharon B. Megdal, and David Songstad	
Part III Sustainable and Secure Food Production	
6 Turning the GM Battleship: The Tide of Popular Opinion and the Future of Genetically Modified Foods	115
James E. McWilliams	
7 Sustainable Production of Omega-3 Fatty Acids	129
Jay Whelan, Ronald Hardy, Richard S. Wilkes, and Henry E. Valentin	

Part IV Agronomic Implications

8 Achieving Sustainable Agriculture: Overview of Current and Future Agronomic Best Practices 173
 Ravi P. Sripada, Pradip K. Das, Emilio S. Oyarzabal, Laura Grapes, Doug Griffith, Jennifer Luchte, and David D. Songstad

9 Sustainable Agriculture and Soybean Breeding: Contribution of Soybean Yield Increase to Sustainable Agriculture 197
 Duška Stojšin, Kevin W. Matson, and Richard A. Leitz

10 Impact of Herbicide Tolerant Crops on Soil Health and Sustainable Agriculture Crop Production 211
 Sanghun Lee, D.E. Clay, and S.A. Clay

Part V International Sustainable Agriculture and Food Security

11 The Role of Biotechnology in Sustainable Agriculture of the Twenty-First Century: The Commercial Introduction of Bollgard II in Burkina Faso 239
 Jeff Vitale and John Greenplate

12 The Borlaug Institute and Its Contributions to Worldwide Food and Economic Security 295
 Julie Borlaug, Joseph N. King, Linda Cleboski, Johanna Roman, Ma’ad Mohammed, Michael McWorter, and Virginia M. Peschke

13 The Water Efficient Maize for Africa Project as an Example of a Public–Private Partnership 317
 Sylvester Oikeh, Dianah Ngonyamo-Majee, Stephen I.N. Mugo, Kingstone Mashingaidze, Vanessa Cook, and Michael Stephens

Part VI Chemicals

14 The Importance of Herbicides for Natural Resource Conservation in the USA 333
 Leonard Gianessi and Ashley Williams

15 The 4R-BMP Concept: Enhanced Nutrient Management for Agricultural Sustainability and Food and Energy Security 351
 Harold F. Reetz Jr.

Index 375



<http://www.springer.com/978-3-642-55261-8>

Convergence of Food Security, Energy Security and
Sustainable Agriculture

Songstad, D.D.; Hatfield, J.; Tomes, D.T. (Eds.)

2014, XIV, 384 p. 71 illus., 59 illus. in color., Hardcover

ISBN: 978-3-642-55261-8