



World Scientific Series in
Grand Public Policy Challenges
of the 21st Century

Rachid Serraj • Prabhu Pingali *editors*

Agriculture & Food Systems to 2050

Global Trends, Challenges and Opportunities



This book features a comprehensive foresight assessment, exploring the pressures — threats as well as opportunities — on the global agriculture & food systems between now and 2050. The overarching aim is to help readers understand the context, by analyzing global trends and anticipating change for better planning and constructing pathways from the present to the future by focusing on the right questions and problems. The book contextualizes the role of international agricultural research in addressing the complex challenges posed by UN 2030 Agenda and beyond, and identifies the decisions that scientific leaders, donors and policy makers need to take today, and in the years ahead, to ensure that a global population rising to nine billion or more combined with rising incomes and changing diets can be fed sustainably and equitably, in the face of the growing climate threats.

Readership: Researchers and policymakers interested in global food security, agriculture and food systems, agri-businesses and policies.

678PP | NOV 2018
978-981-3278-34-9 (HC)
US\$198 / £175

Order your copy at <https://doi.org/10.1142/11212>



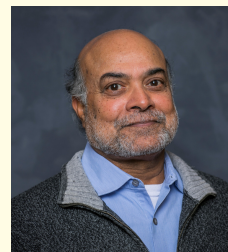
Contents

- **Agriculture and Food Systems: Looking towards 2030/2050**
 - Agriculture and Food Systems to 2050: A Synthesis (*Rachid Serraj, Lakshmi Krishnan & Prabhu Pingali*)
 - Global Drivers and Megatrends in Agri-Food Systems (*Albino Maggio, Fabiana Scapolo, Tine van Criekinge & Rachid Serraj*)
- **Food System Threats and Challenges**
 - Migration, Demography, and Agri-Food Systems (*Aslihan Arslan, Eva-Maria Egger & Paul Winters*)
 - Urbanization, Agriculture, and Smallholder Farming (*Peter B. R. Hazell*)
 - Climate Change Impacts on Agriculture (*Alex C. Ruane & Cynthia Rosenzweig*)
 - Environment and Natural Resources (*Kristel Van der Elst & Alex Williams*)
 - Food Systems, Diets, and Nutrition (*J. V. Meenakshi & Patrick Webb*)
- **Technological Innovation and Disruptive Futures**
 - Innovation in Breeding and Biotechnology (*Peter Langridge*)
 - Advancing to the Next Generation of Precision Agriculture (*Yanbo Huang & Molly E. Brown*)
 - Disruptive Futures: Prospects for Breakthrough Technologies (*Patrick van der Duin & Silke den Hartog*)
 - Investor Perspectives on Future Priorities (*Jonathan Crouch*)
- **Agricultural Transformation, Bioeconomy, and Sustainable Resource Use**
 - Agricultural Transformation Pathways toward the SDGs (*Marie-Hélène Schwoob, Peter Timmer, Martin Andersson & Sébastien Treyer*)
 - Ecological Intensification of Agriculture (*Pablo Tittonell*)
 - Renewable Energy in the Energy Future (*Jeffrey Skeer & Rodrigo Leme*)
 - Bioeconomy (*Regina Birner & Carl Pray*)
- **Food Systems Policy Futures**
 - Food Systems Approaches for the Future (*John Ingram & Monika Zurek*)
 - Global Trade Futures (*Kym Anderson*)
 - Food, Agriculture, and Nutrition Policy: Looking Ahead to 2050 (*Prabhu Pingali & Anaka Aiyar*)

About the Editors



Rachid Serraj



Prabhu Pingali

Rachid Serraj joined the ISPC Secretariat in 2012, coming from ICARDA where he served as director of the research program on diversification and sustainable intensification of production systems (DSIPS). He is a crop scientist with a broad production systems background, having worked for more than 30 years with national and international research organizations. He holds a PhD from the University of Montpellier, and has published more than 200 scientific publications on a wide range of topics. Before ICARDA, he worked as professor at the University of Marrakech, as visiting research associate with USDA and University of Florida, as principal crop physiologist at ICRISAT (India), Technical Officer with the joint FAO-IAEA Division in Vienna (Austria), and at IRRI (Philippines) as leader of the rice drought frontiers research. He has trained dozens of graduate students and postdocs, and serves on several international scientific panels and editorial boards. His research interests include crop adaptation to abiotic stresses and climate change, and sustainable natural resource management in unfavorable environments.

Prabhu Pingali is a Professor in the Charles H. Dyson School of Applied Economics and Management at Cornell University, with a joint appointment in the Division of Nutritional Sciences, and the Founding Director of the Tata-Cornell Agriculture and Nutrition Institute (TCI). Prior to joining Cornell, he was the Deputy Director, Agricultural Development Division of the Bill & Melinda Gates Foundation and Director of the Agricultural Development Economics Division (ESA) at FAO. In addition, he worked with the CGIAR for 15 years from 1987-2002, first with IRRI in the Philippines and then with CIMMYT in Mexico. Pingali is a member in the U.S. National Academy of Sciences and an AAEA Fellow. He has over three decades of experience working with some of the leading international agricultural development organizations as a research economist, development practitioner and senior manager. Pingali has written 10 books and over 100 referred journal articles and book chapters on food policy.