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This collection provides a comprehensive review of the wealth of research on key developments in sensor technology to improve monitoring and management of crop health, soil health, weeds and diseases.

This book also reviews advances in proximal and remote sensing techniques to monitor soil health, such as spectroscopy and radiometrics, as well as how sensor technology can be optimised for more targeted irrigation, site-specific nutrient and weed management.

About the editors

Dr Craig Lobsey is Lecturer in Mechatronic Engineering at the University of Southern Queensland, Australia.

Dr Asim Biswas is a Professor in the School of Environmental Sciences at the University of Guelph, Canada.

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Advances in sensor technology for sustainable crop production

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- Advances in remote/aerial sensing of crop water status: Wenxuan Guo, Texas Tech University and Texas A&M AgriLife Research, USA; and Haibin Gu, Bishnu Ghimire and Oluwatola Adedeji, Texas Tech University, USA
- 2. Advances in remote sensing technologies for assessing crop health: Michael Schirrmann, Leibniz Institute for Agricultural Engineering and Bioeconomy, Germany
- Advances in remote/aerial sensing techniques for monitoring soil health: Jeffrey P. Walker and Nan Ye, Monash University, Australia; and Liujun Zhu, Monash University, Australia and Yangtze Institute for Conservation and Development, Hohai University, China

Part 2 Advances in proximal sensing technologies

- 4. Advances in using proximal spectroscopic sensors to assess soil health: Kenneth A. Sudduth and Kristen S. Veum, USDA-ARS, USA
- Advances in using proximal ground penetrating radar sensors to assess soil health: Katherine Grote, Missouri University of Science and Technology, USA
- 6. Using proximal electromagnetic/electrical resistivity/electrical sensors to assess soil health: Alain Tabbagh, Sorbonne Université, EPHE, UMR7619, Métis, 4 place Jussieu 75252 Paris CEDEX 05, France; and Seger Maud and Cousin Isabelle, INRAE, Centre Val de Loire, UR0272 SOLS, 2163 Avenue de la Pomme de Pin, CS40001 Ardon, F-45075 Orléans Cedex 2, France

7. Using ground-penetrating radar to map agricultural subsurface drainage systems for economic and environmental benefit: Barry Allred, USDA-ARS – Soil Drainage Research Unit, USA; and Triven Koganti, Aarhus University, Denmark

Part 3 Advances in sensor data analytics

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- Advances in proximal sensor fusion and multi-sensor platforms for improved crop management: David W. Franzen and Anne M. Denton, North Dakota State University, USA
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