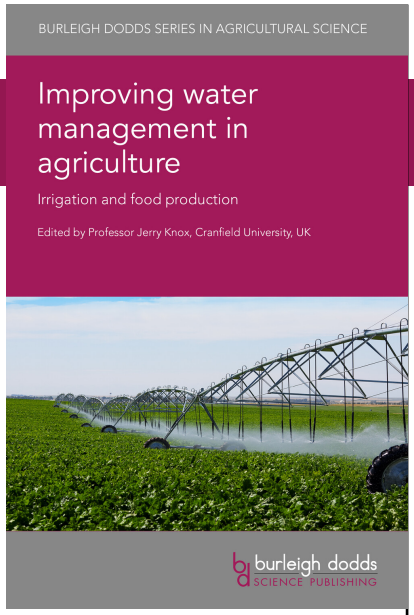

New title information

Improving water management in agriculture

Irrigation and food production

Edited by: Professor Jerry Knox, Cranfield University, UK

Description:

Irrigated agriculture accounts for around 70% of global water use. However, an estimated 60% of irrigated cropland remains highly water-stressed, a problem intensified by the effects of climate change.

Improving water management in agriculture: Irrigation and food production considers ways of addressing this challenge. It reviews advances in monitoring and optimizing irrigation efficiency, ways of retaining and re-using water resources as well as how farmers can work collaboratively with other stakeholders to manage watersheds more sustainably.

The book highlights key areas where innovation is required to ensure that water use is optimised at farm and watershed scales. The book encourages farmers to reassess their current irrigation models and implement alternative practices which improve efficiency with a reduced environmental impact.

Key features:

- Provides a comprehensive overview of the interventions available to optimise water management in agriculture, including rainwater harvesting and farm reservoirs
- Considers the development and application of alternative irrigation techniques which carry a reduced environmental impact, such as solar powered irrigation
- Addresses the importance of diversification and collaboration in securing water resources for a rapidly growing population

Audience:

Researchers and scientists involved in water and irrigation science, agronomists, as well as government and private sector agencies responsible for agriculture and water resource management

Editor details:

Dr Jerry Knox is Professor of Agricultural Water Management based within the Water Science Institute at Cranfield University, UK. Professor Knox has an international reputation for his research on the science, engineering and management of water for agriculture, including assessing the relationships between water resources, drought, crop productivity and the environment, and the sustainability of irrigated production in the context of climate impacts and food security. His current research addressing water and climate risks is focussed in sub-Saharan Africa and Latin America. He is Editor of *Outlook on Agriculture* and Associate Editor for *Irrigation Science*.

Publication date
30 Apr 2024

Price
£150 / $195 / C$255 / €180 / A$270

ISBN
Hardback: 978-1-80146-274-7
ePub: 978-1-80146-275-4
PDF: 978-1-80146-276-1

Format
152 × 229 mm / 6 × 9 in, 400 pages

Illustrations
Color tables, photos and figures

Series
Burleigh Dodds Series in Agricultural Science: no. 138

BIC/THEMA classification
TVDR - Irrigation, TVK - Agronomy & crop production, TVF - Sustainable agriculture, TVB - Agricultural science

Distributors
INGRAM Publisher Services UK
Print books (exc. US and Canada)
Taylor & Francis Group an informa business
eBooks (worldwide)

Updated 05/12/23

Table of contents:

Part 1 Water for agriculture: externalities, drivers for change and future demands

- 1. Introduction: improving water management in agriculture: *Jerry Knox, Cranfield University, UK*;
- 2. Forecasting future water use in agriculture: *Upali Amarasinghe, IWMI, Sri Lanka*;
- 3. Monitoring agricultural water use, data challenges and potential solutions for sustainable water management: *Tim Foster, University of Manchester, UK*;

Part 2 Managing water for agriculture

- 4. Agronomic practices to optimise soil water retention: *Stephen Anderson, University of Missouri, USA*;
- 5. Advances in drainage design and management for irrigated agriculture: *Henk Ritzema, Wageningen University, The Netherlands*;
- 6. Tracking plant water abiotic stresses and signalling for irrigated horticulture: *Ian C. Dodd, Lancaster University, UK*;
- 7. Managing energy demands in irrigated agriculture: *Juan Rodriguez-Diaz, University of Cordoba, Spain*;
- 8. Solar powered irrigation: current developments and future uptake: *Muhammed Arif Watto, University of Agriculture - Faisalabad, Pakistan*;
- 9. PRECIMED: development of a DSS for precision irrigation in Mediterranean agriculture: *Maria Fernanda Ortuno Gallud, Spanish National Research Council, Spain*;

Part 3 Securing water resources for agriculture: diversification and collaboration

- 10. Advances in farmer-led irrigation development in Africa: *Philip Woodhouse, University of Manchester, UK*;
- 11. Improving water use in agriculture to reduce environmental impact: the irrigation efficiency paradox: *Bruce Lankford, University of East Anglia, UK*;
- 12. Developments in water sharing and water trading to secure supplies for agriculture: *Sarah Wheeler, University of Adelaide, Australia*;
- 13. Irrigation modernization in India: *Martin Burton, Independent Consultant, UK*;

Part 4 Reducing the environmental impacts of irrigation

- 14. Managing climate change, droughts and water scarcity affecting agriculture: *Ray-Shyan Wu, National Central University, Taiwan*;
- 15. Integrating biophysical and ballistic models to assess the agronomic and environmental impacts of precision irrigation: *Andre Daccache, University of California-Davis, USA*;
- 16. Water-energy-food nexus (WEF): *Oscar Melo, Pontificia Universidad Católica de Chile, Chile*;

Related products:

Advances in Conservation Agriculture Volume 1, 978-1-78676-264-1, 21 Jan 2020, GBP 150.00, EUR 180.00, USD 195.00, CAD 255.00, and AUD 270.00

Advances in Conservation Agriculture Volume 2, 978-1-78676-268-9, 21 Jan 2020, GBP 150.00, EUR 180.00, USD 195.00, CAD 255.00, and AUD 270.00

Advances in Conservation Agriculture Volume 3, 978-1-78676-475-1, 08 Feb 2022, GBP 150.00, EUR 180.00, USD 195.00, CAD 255.00, and AUD 270.00

Climate change and agriculture, 978-1-78676-320-4, 28 Apr 2020, GBP 150.00, EUR 180.00, USD 195.00, CAD 255.00, and AUD 270.00

Precision agriculture for sustainability, 978-1-78676-204-7, 06 Nov 2018, GBP 180.00, EUR 215.00, USD 235.00, CAD 305.00, and AUD 325.00

Water management for sustainable agriculture, 978-1-78676-176-7, 09 Jul 2018, GBP 190.00, EUR 230.00, USD 245.00, CAD 325.00, and AUD 340.00