

Achieving sustainable cultivation of maize

Volume 2: Cultivation techniques, pest and disease control

Edited by Dr Dave Watson, CGIAR Maize Research Program Manager, CIMMYT, Mexico



 burleigh dodds
SCIENCE PUBLISHING

Publication date

31 Jul 2017

Price

£190 / \$240 / €230

ISBN

Hardback: 978-1-78676-012-8

Mobi: 978-1-78676-013-5

ePub: 978-1-78676-014-2

PDF: 978-1-78676-015-9

Format

152 x 229 mm / 6 x 9 in, 470 pages

Illustrations

Colour tables, photos and figures

Series

Burleigh Dodds Series in Agricultural Science: no. 2

BIC/THEMA classification

TVKC - Cereal crops, PSTD - Plant physiology, PSTP - Plant pathology & diseases, PSTS - Plant ecology, TVDR - Irrigation, TVF - Sustainable agriculture, TVG - Organic farming, TVKF - Fertilizers & manures, TVP - Pest control



Print (exc. US and Canada) and e-books (worldwide) distributed by NBN International.

Updated 27/07/17

New title information

Achieving sustainable cultivation of maize Volume 2

Cultivation techniques, pest and disease control

Edited by: Dave Watson, CGIAR Maize Research Program Manager, CIMMYT, Mexico

Endorsement:

"This publication promises to be a path-breaking contribution to agricultural research and development."

Professor Mankombu (M. S.) Swaminathan, Recipient of the first World Food Prize in 1987 and listed by Time magazine as one of the 20 most influential Asian people of the twentieth century.

Description:

Maize is one of the most important and widely grown cereal crops in the world and is a staple food for almost a billion people, particularly in the developing world. It has been estimated that maize yields need to increase by 60% by 2050. There is an urgent need to increase yields in the face of such challenges as climate change, threats from pests and diseases and the need to make cultivation more resource-efficient and sustainable.

Drawing on an international range of expertise, this collection focuses on ways of improving the cultivation of maize at each step in the value chain, from breeding to post-harvest storage. Volume 2 reviews research on improvements in cultivation techniques such as nutrient management, crop rotation, intercropping and other aspects of conservation agriculture. It also discusses developments in methods for combatting pests and diseases.

Achieving sustainable cultivation of maize Volume 2: Cultivation techniques, pest and disease control will be a standard reference for cereal scientists in universities, government and other research centres and companies involved in maize cultivation. It is accompanied by Volume 1 which reviews developments in breeding and ways research can be translated into effective outcomes for smallholders in the developing world.

Key features:

- Summarises current good agricultural practice in maize cultivation, from seed selection to nutrient management, conservation agriculture, rotations and intercropping;
- Reviews advances in understanding and managing diseases and pests such as viruses, nematodes and weeds;
- Discusses ways maize cultivation can be made more 'climate smart'

Audience:

Academic researchers in cereal science; International and national agencies supporting agricultural development; Cereal processors and companies supplying the agricultural sector (e.g. seed companies)

Editor details:

Dr Watson is Programme Manager for the CGIAR Research Program on MAIZE, based at the International Maize and Wheat Improvement Center (CIMMYT). Dave has worked for nearly 30 years in the transformation and sustainable intensification of agrarian systems, in both developed countries and developing countries. During the last decade, he worked as manager of the Innovative Partnership Programme for the International Livestock Research Institute (ILRI) and as the Director for Project Development and Management at the International Institute of Tropical Agriculture (IITA).

Table of contents:

Part 1 Maize cultivation techniques

1. Modelling crop growth and grain yield in maize cultivation: *Alam Sher, Xiaoli Liu and Jincai Li, Anhui Agricultural University, China; and Youhong Song, Anhui Agricultural University, China and The University of Queensland, Australia*
2. Optimizing maize-based cropping systems: sustainability, good agricultural practices (GAP) and yield goals: *Charles Wortmann, Patricio Grassini and Roger W. Elmore, University of Nebraska- Lincoln, USA*
3. Maize seed variety selection and seed system development: the case of southern Africa: *Peter S. Setimela, Global Maize Program, International Maize and Wheat Improvement Centre (CIMMYT), Zimbabwe*
4. Good agricultural practices for maize cultivation: the case of West Africa: *Alpha Kamara, International Institute of Tropical Agriculture (IITA), Nigeria*
5. Zero-tillage cultivation of maize: *Wade E. Thomason, Bee Khim Chim and Mark S. Reiter, Virginia Tech University, USA*
6. Conservation agriculture for sustainable intensification of maize and other cereal systems: the case of Latin America: *Bram Govaerts, CIMMYT, Mexico; Isabelle François, Consultant, USA; and Nele Verhulst, CIMMYT, Mexico*
7. Precision maize cultivation techniques: *Louis Longchamps, Agriculture and Agri-Food Canada, Canada; and Raj Khosla, Colorado State University, USA*
8. Improving nutrient management for sustainable intensification of maize: *Kaushik Majumdar, International Plant Nutrition Institute - South Asia, India; Shamie Zingore, International Plant Nutrition Institute - sub-Saharan Africa, Kenya; Fernando Garcia and Adrian Correndo, International Plant Nutrition Institute - Latin America - Southern Cone, Argentina; Jagadish Timsina, University of Melbourne, Australia; Adrian M. Johnston, International Plant Nutrition Institute, Canada;*
9. Crop rotation: a sustainable system for maize production: *Bao-Luo Ma, Ottawa Research and Development Centre, Agriculture and Agri-Food Canada; and Zhigang Wang, Inner Mongolia Agricultural University, China*
10. Intercropping in sustainable maize cultivation: *Abeya Temesgen, Shu Fukai and Daniel Rodriguez, The University of Queensland, Australia*
11. Climate risk management in maize cropping systems: *Daniel Rodriguez, Caspar Roxburgh, Claire Farnsworth, Ariel Ferrante, Joseph Eyre, Stuart Irvine-Brown, James McLean, Martin Bielich, Queensland Alliance for Agriculture and Food Innovation (QAAFI), The University of Queensland, Australia*
12. Advances in maize post-harvest management: *Tadele Tefera, International Center of Insect Physiology & Ecology (ICIPE), Ethiopia*

Part 2 Maize pests, diseases and weeds

13. Economically important insect pests of maize: *William D. Hutchison and Theresa M. Cira, University of Minnesota, USA;*
14. Nematodes associated with maize: *T. L. Niblack, The Ohio State University, USA*
15. Control of rodent pests in maize cultivation: the case of Africa: *Loth S. Mulungu, Sokoine University of Agriculture, Tanzania;*
16. Rapid response to disease outbreaks in maize cultivation: the case of maize lethal necrosis: *George Mahuku, International Institute of Tropical Agriculture (IITA), Tanzania and P. Lava Kumar, International Institute of Tropical Agriculture (IITA), Nigeria*
17. Controlling aflatoxins in maize in Africa: strategies, challenges and opportunities for improvement: *Amare Ayalew and Martin Kimanya, Partnership for Aflatoxin Control in Africa, Ethiopia; Limbikani Matumba, Lilongwe University of Agriculture and Natural Resources, Malawi; Ranajit Bandyopadhyay and Abebe Menkir, International Institute of Tropical Agriculture, Nigeria; Peter Cotty, USDA-ARS, USA;*
18. Integrated weed management in maize cultivation: an overview: *Khawar Jabran, Duzce University, Turkey, Mubshar Hussain, Bahauddin Zakariya University, Pakistan and Bhagirath Singh Chauhan, The University of Queensland, Australia*
19. Weed management of maize grown under temperate conditions: the case of Europe and the United States: *Vasileios P. Vasileiadis and Maurizio Sattin, National Research Council (CNR), Institute of Agro-Environmental and Forest Biology, Italy and Per Kudsk, Aarhus University, Denmark;*

Related products:

- Achieving sustainable cultivation of maize Volume 1, 978-1-78676-008-1, 09 Jun 2017, USD 190.00, EUR 180.00, CAD 255.00, and GBP 150.00
- Achieving sustainable cultivation of rice Volume 1, 978-1-78676-024-1, 22 May 2017, USD 175.00, EUR 170.00, CAD 240.00, and GBP 140.00
- Achieving sustainable cultivation of rice Volume 2, 978-1-78676-028-9, 22 May 2017, USD 190.00, EUR 180.00, CAD 255.00, and GBP 150.00
- Achieving sustainable cultivation of wheat Volume 1, 978-1-78676-016-6, 30 Jun 2017, USD 265.00, EUR 250.00, CAD 355.00, and GBP 210.00
- Achieving sustainable cultivation of wheat Volume 2, 978-1-78676-020-3, 31 Jul 2017, USD 165.00, EUR 155.00, CAD 220.00, and GBP 130.00