

BURLEIGH DODDS SERIES IN AGRICULTURAL SCIENCE

BURLEIGH DODDS SERIES IN AGRICULTURAL SCIENCE

Understanding and fostering soil carbon sequestration

Edited by Dr Cornelia Rumpel, CNRS, Sorbonne University,
Institute of Ecology and Environmental Sciences Paris, France



bd burleigh dodds
SCIENCE PUBLISHING

AVAILABLE NOW

About the book

This collection reviews the wealth of recent research on important aspects of soil carbon sequestration in different environments and soil types and its contribution to ensuring a positive carbon budget at the farm and landscape level.

About the editor

Dr Cornelia Rumpel is Director of Research in the Institute of Ecology and Environmental Sciences at the French National Research Center (CNRS) located at Sorbonne University, where she leads a team investigating the fate of organic matter in natural and managed terrestrial ecosystems, including the mechanisms determining soil organic carbon sequestration. She is also working with industry and at the science policy interphase providing expertise in the areas of land management and climate change.

Understanding and fostering soil carbon sequestration

Available in print and digital formats:

ISBN - print 978-1-78676-969-5

Pages 914

Pub. Date November 2022

Price £170/\$220/€205/C\$290

Series No AS121

Order via our online bookshop at

<https://bdspublishing.com>, your usual book supplier, or pass to your librarian.

Enquiries to info@bdspublishing.com

For a complete list of titles visit www.bdspublishing.com

T: +44 (0) 1223 839365

E: info@bdspublishing.com

www.bdspublishing.com

 @bdspublishing

 Burleigh Dodds Science Publishing

bd burleigh dodds
SCIENCE PUBLISHING

Understanding and fostering soil carbon sequestration

Edited by: Dr Cornelia Rumpel, CNRS, Sorbonne University, Institute of Ecology and Environmental Sciences Paris, France

1. Introduction: soil carbon sequestration – a process linking soils to humanity: C. Rumpel, CNRS, Sorbonne University, Institute of Ecology and Environmental Sciences Paris, France

Part 1 Understanding carbon sequestration in soils

2. Mechanisms of soil organic carbon sequestration and implications for management: Ingrid Kögel-Knabner, Chair of Soil Science, TUM School of Life Sciences and Institute for Advanced Study, Technical University of Munich, Germany
3. Plant influences on soil organic carbon dynamics: Xiaojuan Feng, Institute of Botany, Chinese Academy of Sciences and College of Resources and Environment, University of the Chinese Academy of Sciences, China
4. Biological basis of soil organic carbon sequestration: a complex set of interactive processes: Patrick Lavelle, Institute of Ecology and Environmental Sciences Paris, Sorbonne University, France
5. Understanding soil organic carbon dynamics at larger scales: Sebastian Doetterl, ETH Zurich, Switzerland
6. Benefits and trade-offs of soil organic carbon sequestration: C. Rumpel, CNRS, Sorbonne University, Institute for Ecology and Environmental Sciences Paris, France
7. Soil inorganic carbon: stocks, functions, losses and their consequences: Kazem Zamanian, University of Hannover, Germany and Nanjing University of Information Science and Technology (NUIST), China
8. Soil organic carbon sequestration and climate change: M. Sanaullah, University of Agriculture Faisalabad, Pakistan
9. Innovative agriculture management to foster soil organic carbon sequestration: María de la Luz Mora, Universidad de La Frontera, Chile

Part 2 Measuring carbon sequestration in soils

10. Measuring and monitoring soil carbon sequestration: Matthias Kuhnert, Institute of Biological & Environmental Sciences, University of Aberdeen, UK
11. Advances in measuring soil organic carbon stocks and dynamics at the profile scale: Christopher Poeplau, Thünen Institute of Climate-Smart Agriculture, Germany
12. Advances in digital soil mapping to assess baseline levels and carbon sequestration at the landscape scale: Amin Shariffar, University of Tehran, Iran
13. Modeling soil organic carbon dynamics, carbon sequestration and the climate benefit of sequestration: Carlos A. Sierra, Max Planck Institute for Biogeochemistry, Germany and Swedish University of Agricultural Sciences, Sweden
14. Digital tools for assessing soil organic carbon at farm and regional scale: M. J. Aitkenhead, The James Hutton Institute, UK

Part 3 Fostering carbon sequestration in soils

15. Promoting carbon sequestration in soils: the importance of soil, region and context-specific interventions: Rattan Lal, CFAES Rattan Lal Center for Carbon Management and Sequestration, The Ohio State University, USA
16. Agriculture practices to improve soil carbon storage in upland soil: Thomas Kätterer, Swedish University of Agricultural Sciences (SLU), Sweden
17. Agricultural practices to improve soil carbon sequestration in rice paddy soils: Hyeon Ji Song, Gyeongsang National University, South Korea
18. Managing grasslands to optimize soil carbon sequestration: A. Chabbi, Institut National de Recherche Agronomique et Environnement (INRAE) – Unité de Recherche Pluridisciplinaire Prairies et Plantes Fourragères (UR P3F), France
19. Optimizing forest management for soil carbon sequestration: Andreas Schindlbacher, Federal Research and Training Centre for Forests, Natural Hazards and Landscape (BFW), Austria
20. The contribution of agroforestry systems to improving soil carbon sequestration: Lydie-Stella Koutika, Research Centre on the Durability and the Productivity of Industrial Plantations (CRDPI), Republic of the Congo
21. Management of organic soils to reduce soil organic carbon losses: Sonja Paul, Agroscope, Switzerland
22. Fostering carbon sequestration in humid tropical and subtropical soils: Deborah Pinheiro Dick, Federal University of Rio Grande do Sul, Brazil
23. Management of carbonate-rich soils and trade-offs with soil inorganic carbon cycling: Iñigo Virto, Universidad Pública de Navarra, Spain; and Rosa M. Poch, Universitat de Lleida, Spain
24. Management of soil carbon sequestration in urban areas: C. Rumpel, CNRS, Sorbonne University, Institute of Ecology and Environmental Sciences Paris, France

Part 4 Socioeconomic, legal and policy issues

25. Soil organic carbon on the political agenda: Luca Montanarella, European Commission, Joint Research Centre (JRC), Italy
26. Creating frameworks to foster soil carbon sequestration: Beverley Henry, Queensland University of Technology, Australia
27. Economic considerations for the development of a carbon farming scheme: Siân Mooney, O'Neill School of Public and Environmental Affairs, Indiana University, USA
28. Understanding the value of and reasoning behind farmer adoption of carbon centric practices: Michelle M. Wander, University of Illinois at Urbana-Champaign, USA
29. Legal issues of implementing soil organic carbon sequestration as negative emission technology: Alexandra Langlais-Hesse, CNRS-Université de Rennes, France

*Lead authors listed only. To view the full table of contents, please visit our website.