



## Guidelines to Authors

### Manuscript Submission

- Save each chapter or contribution, including the accompanying references, figure legends, and tables, in a separate file in **.doc** or **.docx** format.
- Give each individual file your own name (or an abbreviation), the chapter number, and the format suffix, e.g., Ahmad3.doc or Ahmad 3.docx.
- Save the figures separately.
- Keep personal copies of the files.
- Submit the files to the editorial office electronically via e-mail, and CD-ROM, DVD.

### Writing Your Text

- You can use all the functions in **Word**, particularly displayed lists, type styles such as **bold** or *italics*, the indexing function, and the footnote function.
- Use the return key only at the end of a paragraph or after headings, displayed lists, and the like. Do not insert manual hyphenation, and do not use formats such as framing, centering, or shading.

#### Type

- Use a single **main font** for the entire text. We recommend *Times Roman*.
- For **special characters**, please use *Symbol* or *Arial Unicode*.

### Book Structure and Headings

A well-structured text and meaningful headings make it easier for the reader to get a general idea of the content. In addition, seamless transformation to various formats, such as eBook, requires a certain structure of the book.

#### Basic Rules

- A **book** consists of chapters, front matter, and back matter (optional).
- The **front matter** contains the title page, the table of contents, the preface, and for contributed volumes, the list of contributors. Optional items in the front matter include a foreword and list of abbreviations.
- **Chapters** contain the actual content of the book, i.e., text, figures, and tables. Each chapter should include a reference list; this is vital so that readers of single chapters of the eBook can make full use of the citations.
- Chapters may be organized in **parts**. If a book is divided into parts, all chapters should be within a part, except for an introductory chapter at the beginning of the book. Each part must contain at least one chapter.
- The **back matter** may contain an appendix or appendices, a glossary, and/or an index. Avoid including a reference list in the back matter, because these references will not be linked to the citations in the chapters.
- Number the chapters continuously throughout the book (do not restart with each part).
- Parts should be numbered with Roman numerals (Part I, Part II, Part III, etc.).
- Please list only the top three levels of headings in the **table of contents**.
- In **cross-references**, please give the chapter or section number (e.g., see Sect. 3.5.1).

## Abstract

Each chapter should be preceded by an abstract (10–15 lines long) that summarizes the content.

## Key Words

Each chapter should include a list of 5–10 key words to enhance the chapter's searchability.

## Technical Terms, Abbreviations

- Ensure that the **spelling** of names, terms, and abbreviations is **consistent**, including in tables and figure legends.
- **Abbreviations**, except for very common ones, must be defined the first time they are used and a list supplied with the manuscript.
- Please always use internationally accepted signs and symbols for **units**, so-called SI units.
- **Chemical compounds** should be named according to the systematic rules of the IUPAC or Chemical Abstracts.

*Please also note the following:*

- Species and genus names, mathematical/physical variables, and prefixes in chemical compounds should be set in *italic* type (e.g., *cis/trans*, *d/l*, *E/Z*, *o/m/p*, *R/S*, *t*-Bu, *tert*-butyl).
- L and D indicating optical activity should be set in SMALL CAPS (e.g., D- and L-dopa).

## Headings

All subject heads used in your text should appear in outline form in the table of contents in the following style:

### 1.1. First Level Heading

#### 1.1.1. Second level heading

##### 1.1.1.1. Third level heading

##### *i. Fourth level heading*

Be sure to make sure the levels are clearly indicated using different fonts, type sizes, and/or typefaces for each level heading.

## Tables

- Number the tables consecutively using the chapter number (e.g., Table 1.1) and ensure that all the tables are cited in the text in the correct order.
- Give each table a **heading**.
- To format the table columns, use the **table function**.
- Do **not** use the space bar to separate columns, and do **not** use Excel to create tables.
- If a table cell is to be left empty, please type a hyphen ( - ) in it.
- Please do not treat simple, **one-column lists** as tables, but instead set them as part of the running text. Use the **displayed list function** instead.
- Save the tables in the same file as the text, references, and figure legends; put each table on a separate page.

## References

### Reference Citations

Cite references in the text by name and year in parentheses. Some examples:

- one author: (Ahmad 2013)
- two authors: (Ahmad and Farooq 2014)
- three or more authors: (Ahmad et al. 2014)

### Reference List

Each chapter should contain a reference list of its own. Entries in the list must be listed alphabetically, except for those following the numbered system of sequential citation. The rules for alphabetization are as follows:

- first, all works by the author alone, ordered chronologically by year of publication
- next, all works by the author with a coauthor, ordered alphabetically by coauthor
- finally, all works by the author with several coauthors, ordered chronologically by year of publication.

Personal communications and unpublished works should only be mentioned in the text. Do not use footnotes as a substitute for a reference list.

Reference list entries should be alphabetized by the last names of the first author of each work.

### Journal article

Farooq, M., K. Flower, K. Jabran, A. Wahid and K.H.M. Siddique (2011). Crop yield and weed management in rainfed conservation agriculture. *Soil Till. Res.* 117: 172–183.

Farooq, M., N. Kobayashi, O. Ito, A. Wahid and R. Serraj (2010). Broader leaves result in better performance of indica rice under drought stress. *J. Plant Physiol.* 167: 1066–1075

### Book

Cheema, Z.A., M. Farooq and A. Wahid (2012). *Allelopathy: Current Trends and Future Applications*. Springer-Verlag, Heidelberg 69121, Germany.

### Book chapter

Farooq, M., A. Wahid, S.M.A. Basra and K.H.M. Siddique (2010). Improving crop resistance to abiotic stresses through seed invigoration. In: Pessaraki, M. (ed). *Handbook of Plant and Crop Stress*, 3<sup>rd</sup> Edition, Taylor and Francis Group, LLC 6000 Broken Sound Parkway, Suite 300, Boca Raton, FL 33487. pp. 1031–1050.

### Online document

Leubner, G. (2014). Seed dormancy. <http://www.seedbiology.de/dormancy.asp>. Accessed on 03 March 2014

### Dissertation

Ahmad, N. (2012). *System productivity of conventional and conservation rice-wheat production systems*. M.Sc. (Hons) Dissertation, Department of Agronomy, University of Agriculture, Faisalabad, Pakistan

## Sources

If you copy text passages, figures, or tables from other works, you must obtain **permission** from the copyright holder (usually the original publisher) for both print and online formats. Please enclose the signed permission with the manuscript. Please be aware that some publishers do not grant electronic rights for free and that we will not be able to refund any costs that may have been incurred in receiving these permissions. As an alternative, material from other sources should be used.

The source must be acknowledged in the legend or table heading. If the source is in a foreign language, please provide a **translation**.

## Figures and Illustration Data

### *Digital Illustrations*

For the best quality final product, it is highly recommended that you submit all your artwork—photographs, line drawings, etc.—in an electronic format. The published work will directly reflect the quality of the artwork provided.

### **Electronic Figure Submission**

- Name your figure files with your name, “Fig,” and the figure number, e.g., Ahmad-Fig1.eps.
- Indicate what graphics program was used to create the artwork.

**Line Art** Black and white graphic with no shading.

- Check that all lines and lettering within the figures are legible at final size. All lines should be at least 0.1 mm (0.3 pt) wide.
- Line drawings should have a minimum resolution of **1200 dpi** at a width of 3 inches.
- Vector graphics containing fonts must have the fonts embedded in the files.

**Halftone Art** Photographs, drawings, or paintings with fine shading, etc.

- Halftones must be submitted in JPEG or TIFF format. Power Point slides are **not** acceptable.
- If any magnification is used in the photographs, indicate this by using scale bars within the figures themselves.
- Halftones should have a minimum resolution of **300 dpi** at a width of 3 inches. An exception may be the case of a radiographic image that cannot be reproduced in high-resolution format because the settings of the radiographic equipment did not produce a high-quality image originally.

**Combination Art** A combination of halftone and line art, e.g., halftones containing line drawing, extensive lettering, color diagrams, etc.

- Combination artwork should have a minimum resolution of **600 dpi** at a width of 3 inches.

### **Figure Lettering**

- To add lettering, it is best to use *Helvetica* or *Arial* (sans serif fonts) and avoid effects such as shading, outline letters, etc.
- Keep lettering consistently sized throughout your final-sized artwork, usually about 2–3 mm (8–12 pt).
- Variance of type size within an illustration should be minimal, e.g., do not use 8 pt type on an axis and 20 pt type for the axis label.
- Do not include titles or captions in your illustrations.

### **Figure Captions and Numbering**

- Number the figures consecutively using the chapter number (e.g., Fig. 1.1). Figure parts should be denoted by lowercase letters (a, b, c, etc.).
- Each figure should have a concise caption describing accurately what the figure depicts. Include the captions in the text file of the manuscript, not in the figure file.
- In the figure caption, identify and explain all elements in the figure (e.g., boxes, circles, arrows).
- Identify previously published material by giving the original source in the form of a reference citation at the end of the figure caption.

### **Figure Size**

- When preparing your figures, size figures to fit in the page width.
- For most books, the figures should be 78 mm (3 inches) or 117 mm (4.6 inches) wide and no higher than 198 mm (7.8 inches).

## Checklist

Title page	Title	<input type="checkbox"/>
	Name(s) of author(s)	<input type="checkbox"/>
	Mailing address(es)	<input type="checkbox"/>
	E-mail address of corresponding author	<input type="checkbox"/>
Abstract	Abstract for each chapter included	<input type="checkbox"/>
Key words	5–10 key words for each chapter included	<input type="checkbox"/>
Text	Text in <i>Times</i> , special characters in <i>Symbol</i> or <i>Unicode</i>	<input type="checkbox"/>
References	Reference list included at the end of each chapter	<input type="checkbox"/>
	Citations in text agree with the reference list	<input type="checkbox"/>
	All entries in the reference list mentioned in the text	<input type="checkbox"/>
	References follow the guidelines	<input type="checkbox"/>
	Journals abbreviated according to <i>ISSN</i>	<input type="checkbox"/>
Abbreviations	List of abbreviations included	<input type="checkbox"/>
Figures	All figures mentioned in text enclosed, complete and as separate files	<input type="checkbox"/>
	Consecutively numbered within a chapter	<input type="checkbox"/>
	Consecutively cited in text	<input type="checkbox"/>
	Legends included in the text file	<input type="checkbox"/>
	Credit line included in the legend for a previously published figure	<input type="checkbox"/>
Tables	Prepared with the table function	<input type="checkbox"/>
	Consecutively numbered within a chapter	<input type="checkbox"/>
	Consecutively cited in text	<input type="checkbox"/>
	Credit line included in the footnote for a previously published table	<input type="checkbox"/>
Electronic manuscript	Title of the book and author's name noted on label	<input type="checkbox"/>
	Text files saved in original format	<input type="checkbox"/>
	Each chapter saved as a separate file	<input type="checkbox"/>
	Graphics saved as separate files in original format and in JPEG or TIFF format	<input type="checkbox"/>
Permissions	Proof that any necessary permissions have been granted for the use of previously published material	<input type="checkbox"/>

## **STANDARD OPERATING PROCEDURES (SOPs)**

1. The information for submission of proposals for books will be circulated to the constituent departments.
2. Both books and practical manuals will be published under the project.
3. An editorial office of the project will be developed in the Department of Agronomy, UAF.
4. The editor(s) / authors will submit their proposals to the editorial office.
5. One editor should be a UAF faculty member; other editor(s) may be from national and overseas organizations.
6. Number of editors, of a book, should not exceed three.
7. Editor(s) will invite the scientists / experts from UAF and other local and overseas, public and private organizations.
8. Chapter authorship should not be restricted within UAF campus.
9. Global authorship is mandatory.
10. These initial proposals will be reviewed by the PI / Co-PI, and if necessary by a review committee constituted by the PI / Co-PI.
11. The PI and the Co-PI will be managing editor and co-managing editor, respectively of each published book under the project.
12. Best book proposals will be submitted to international publishers of good repute for potential publication.
13. The editor(s) will be communicated the decision and if the proposal is acceptable, the editor(s) will be formally asked for writing the book(s).
14. The editor(s) will make the final editing of the book, strictly following the instructions, and submit the book material to the editorial office.
15. The number of pages for each book will not be less 200 and will not exceed 350 printed pages.
16. The editorial office will make necessary arrangements for the preparation of galley proof and will send them back to the editor(s) for thorough editing / checking.
17. The final version of each book will be posted at the University web in pdf format.
18. The final version will be printed at the University press.
19. Published books will be distributed / marketed by the Endowment Fund Secretariat.
20. A committee constituted by the PI will propose the honorarium for the editor(s), and the price of each published book.
21. Editor(s) of each book will receive three complimentary copies of the respective book; whereas corresponding author of each book chapter will receive one complimentary copy of the respective book;
22. Income from the sale of books will be shared by UAF and EFS as 20:80, respectively.

# **Sample Book Proposal**

## **CONSERVATION AGRICULTURE**

**Editors**

**MUHAMMAD FAROOQ**

**University of Agriculture, Faisalabad 38040, Pakistan**

**KADAMBOT H.M. SIDDIQUE**

**The University of Western Australia, Crawley WA 6009, Australia**



## **BACKGROUND AND JUSTIFICATION**

Conventional agriculture has largely been characterized by tillage, which leaves soil vulnerable to erosion. Continuous use of conventional farming practices with conventional tillage and burning crop residues has degraded the soil resource base and intensified soil degradation by about 67%, with concomitant decreases in crop production capacity. Soil loss is expected to be a critical issue for global agricultural production under conventional farming practices. For instance, global erosion rates from conventionally ploughed agricultural fields averaged one to two orders of magnitude greater than erosion under native vegetation, long-term geological erosion and rates of soil production. Likewise, conventional tillage has also made agriculture the major contributor to global warming due to increasing greenhouse gas emissions. Soil and vegetation on the earth's land surface store three times as much carbon as is present in the earth's atmosphere. Land clearing and degradation turn this valuable carbon sink into a major source of greenhouse gas emissions.

Conservation agriculture is widely recognized as a viable concept of creating a sustainable agriculture. It is a resource-saving agricultural production system that aims to achieve production intensification and high yields while enhancing the natural resource base through compliance with four interrelated principles viz. minimal soil disturbance, permanent residue cover, planned crop rotations and integrated weed management, along with other good production practices of plant nutrition and pest management.

Conservation agriculture is environmentally friendly and requires less fuel resulting in lower carbon dioxide emissions, one of the gases responsible for global warming. In addition, conservation agriculture is very effective in reducing soil erosion. A wide range of other environmental benefits in conservation agriculture including reduced run-off, improved nutrient cycling, reduced soil degradation, reduced soil and water pollution, and enhanced activities of soil biota.

Conservation agriculture systems with location-specific adjustments works in all kind of environments/ecologies; from the Equator, e.g. Kenya, Uganda to 50°S, e.g. Argentina, to 65°N, e.g. Finland, sea level to 3000 m, e.g. Bolivia, soils from 90% sand, e.g. Australia, Brazil, to 85% clay, e.g. Brazil (Oxisols, Alfisols) and from 250 mm of rain, e.g. Western Australia to

2000 mm, e.g. Brazil, or 3000 mm, e.g. Chile. But, it is spreading widely on large mechanized farms and rainfed systems. It represents a shift in production paradigm and scientists working on it struggled till pre-seeding herbicides were made available but there after there is no looking back.

Although, there have been several recent publications on conservation agriculture focusing on different aspects of it; however, no single book is available covering basic concepts, elements, potential benefits, experiences and challenges of conservation agriculture. The proposed volume will serve as a text book on conservation agriculture focusing on elements of conservation agriculture, its regional experiences, role of conservation agriculture in sustainable agriculture, and biological and environmental conservation, its adoption. Crop breeding and application of biotechnology and microbiology in conservation agriculture will also be covered in the proposed book.

The proposed book will attract a wide readership from students and researchers in the field of agronomy, ecology, plant physiology, crop breeding, soil science etc., The proposed volume will be a ready reference on conservation agriculture and will reinforce the understanding for its utilization to develop eco-friendly agricultural systems ensuring a peaceful living on earth to all of us and future generations.

## Part 1: Introduction

### 1. Conservation Agriculture: Concepts, Brief History and Impacts on Agricultural Systems

\*Muhammad Farooq<sup>1, 2</sup>, Kadambot H.M. Siddique<sup>2</sup> and Rattan Lal<sup>3</sup>

<sup>1</sup>Department of Agronomy, University of Agriculture, Faisalabad, Pakistan

<sup>2</sup>The UWA Institute of Agriculture, The University of Western Australia, Crawley WA 6009, Australia

<sup>3</sup>School of Environment & Natural Resources, The Ohio State University, Columbus, OH 43210, USA.

\*Corresponding author's email: [farooqcp@gmail.com](mailto:farooqcp@gmail.com)

- 1.1. Introduction
- 1.2. History and Adaption of Conservation Agriculture
- 1.3. Elements of Conservation Agriculture
  - 1.3.1. Permanent or semi-permanent organic soil cover
  - 1.3.2. Minimal soil disturbance
  - 1.3.3. Planned rotations
  - 1.3.4. Weed control in conservation agriculture
- 1.4. Impacts of Conservation Agriculture on the Productivity of Agricultural Systems
- 1.5. The Role of Policy and Institutional Support
- 1.6. Conclusions

## Part 2: Elements of Conservation Agriculture

### 2. Crop Rotations and Residue Management in Conservation Agriculture

\*Leonard Rusinamhodzi<sup>1</sup> and Justice Nyamangara<sup>2</sup>

<sup>1</sup>CIMMYT, Harare, Zimbabwe.

<sup>2</sup>Wageningen University, Wageningen, the Netherlands.

\*Corresponding author's email: [leonard.rusinamhodzi@gmail.com](mailto:leonard.rusinamhodzi@gmail.com)

- 2.1. Introduction
- 2.2. Crop Rotations in Conservation Agriculture
  - 2.2.1. Meta analysis of yield data from different crop rotations
  - 2.2.2. Constraints to systematic crop rotations
- 2.3. Crop Residues Management in Conservation Agriculture
  - 2.3.1. Meta analysis of yield data from different crop residues management practices
  - 2.3.2. Constraints to crop residues management
- 2.4. Future outlook
- 2.5. Conclusions

### 3. Weed Management in Conservation Agriculture Systems

\*A.R. Sharma, V.P. Singh, K.K. Barman and Raghwendra Singh

Directorate of Weed Science Research, Jabalpur, Madhya Pradesh, India 482 004

\*Corresponding author's email: [sharma.ar@rediffmail.com](mailto:sharma.ar@rediffmail.com)

- 3.1. Introduction
- 3.3. Weed problems in conservation agricultural systems
- 3.4. Weed management
  - 3.4.1. Preventive measures
  - 3.4.2. Cultural practices
  - 3.4.3. Mechanical measures
  - 3.4.4. Chemical weed management
  - 3.4.5. Integrated weed management
- 3.5. Herbicide tolerant crops
- 3.6. Pay-offs and trade-offs in adopting conservation agricultural systems
- 3.7. Future outlook
- 3.8. Conclusions

## **4. Nutrient Management Perspectives in Conservation Agriculture**

**Christos Dordas**

Aristotle University of Thessaloniki, Faculty of Agriculture, Forestry and Natural Environment, Department of Agriculture, Laboratory of Agronomy, University Campus, 54124 Thessaloniki, Greece  
E-mail: [chdordas@agro.auth.gr](mailto:chdordas@agro.auth.gr)

- 4.1. Introduction
- 4.2. Nutrient Management Perspectives
  - 4.2.1. Nutrient use efficiency
  - 4.2.2. Management of N, P and K in sustainable agriculture
- 4.3. Crop management and its Effect on Nutrient Management
  - 4.3.1. Crop rotations and residue management
  - 4.3.2. Tillage and nutrient management
  - 4.3.3. Impact of conservation agriculture on arbuscular mycorrhizal fungi and rhizobacteria
- 4.4. Breeding for Better Nutrient Use Efficiency in conservation agriculture
  - 4.4.1. Developing new genotypes for conservation agricultural systems
  - 4.4.2. Use of biotechnology in conservation agriculture
- 4.5. Nutrient Management and Weed Dynamics in Conservation Agriculture
- 4.6. Nutrient Management and Insect-pests and Disease Infestation in Conservation Agriculture
- 4.7. Challenges and Future outlook
- 4.8. Conclusions

## **5. Farm Machinery for Conservation Agriculture**

**\*Saidi Mkomwa and Patrick Makungu**

African Conservation Tillage Network, KARI NARL Compound, Waiyaki Way, Nairobi, Kenya  
\*Corresponding author's email: [saidi.mkomwa@act-africa.org](mailto:saidi.mkomwa@act-africa.org)

- 5.1. Introduction
- 5.2. Mechanised Soil Corrective Operations
  - 5.2.1. Treating compacted soils and hardpans
  - 5.2.2. Removing ridges and furrows
  - 5.2.3. Terraces, bunds or other erosion-control structures on steep-sloped land
- 5.3. Mechanised Field Preparation Options in Conservation Agriculture
  - 5.3.1. Hand tools for planting basins, pot holes, and ripping
  - 5.3.2. Two wheel and four wheel tractor based ripping systems
- 5.4. Implements for Mechanical Management of Cover Crops and Weed Control
- 5.5. Direct Seeding
  - 5.5.1. Manually operated tools and practices
  - 5.5.2. Tractor operated direct seeding equipment
- 5.6. Resources for Mechanized Conservation Agriculture
- 5.7. Future Outlook
- 5.8. Conclusion

## **6. Managing Insect Pests and Parasitic Weeds in Cereal-Based Cropping Systems through a Conservation Agriculture Approach**

**\*Zeyaur Khan, Charles Midega, Toby Bruce and John Pickett**

International Centre of Insect Physiology and Ecology, Nairobi, Kenya.  
\*Corresponding author's email: [zkhan@icipe.org](mailto:zkhan@icipe.org)

- 6.1. Introduction
- 6.2. Insect-Pests in Cereal-Based Cropping Systems
- 6.3. Parasitic Weeds in Cereal-Based Cropping Systems
- 6.4. Conservation Agriculture for Managing Insect Pests and Parasitic Weeds
  - 6.4.1. Adaptation to climate change
  - 6.4.2. Implementation of conservation agriculture approach
- 6.5. Challenges and Future Outlook
- 6.6. Conclusions

## Part 3 Modeling and Crop Improvement for Conservation Agriculture

### 7. Breeding for Conservation Agriculture

**\*T.M. Chattha and R. Trethowan**

Plant Breeding Institute, The University of Sydney, Cobbitty, NSW 2570, Australia.

\*Corresponding author's email: [tarik.chattha@sydney.edu.au](mailto:tarik.chattha@sydney.edu.au)

- 7.1. Introduction
- 7.2. Crop Genetics Operating under Conservation Agriculture and Varietal Improvement
- 7.3. Success Stories of Breeding for Conservation Agriculture
- 7.3. Is Current Breeding Methodology Adequate?
- 7.4. Breeding Targets for Conservation Agriculture
- 7.5. Future Outlook
- 7.6. Conclusions

### 8. Modeling Conservation Agriculture

**\*Bruno Basso<sup>1</sup> and Luigi Sartori<sup>2</sup>**

<sup>1</sup>Department of Geological Sciences and W.K. Kellogg Biological Station, Michigan State University, USA

<sup>2</sup>Department of Agro-Forestry Systems, University of Padova, Italy

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- 8.1. Introduction
- 8.2. A System approach to Conservation Tillage
- 8.3. Modeling Tillage systems and Residues management
  - 8.3.1. Effects on soil physical, biological and chemical properties
  - 8.3.2. Water dynamics
  - 8.3.3. Carbon turnover
  - 8.3.4. Nutrient dynamics
  - 8.3.5. Effects on crop yield
- 8.4. Climate Change and Long-Term Impact of Conservation Tillage
- 8.5. Case Studies
- 8.6. Future Outlook
- 8.7. Conclusions

## Part 4 Status of Conservation Agriculture: some case studies

### 9. Conservation Agriculture in the Middle East

**\*S. Loss<sup>1</sup>, D. Feindel<sup>1</sup>, A. Haddad<sup>1</sup>, Y. Khalil<sup>1</sup>, A. Alrijabo<sup>2</sup> and C. Piggitt<sup>3</sup>**

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- 9.1. Introduction
- 9.2. Conservation Agriculture in the Fertile Crescent
- 9.3. Australia's Gift to the Middle East
- 9.4. Adoption of Conservation Agriculture in Iraq and Syria
- 9.5. Strategies for Success of Conservation Agriculture
  - 9.5.1. Adaptive Research
  - 9.5.2. Zero-tillage Seeders
  - 9.5.3. Participatory Extension
- 9.6. Adoption of Conservation Agriculture in Other Countries (Iran, Jordan, Lebanon)
- 9.7. Challenges for Conservation Agriculture in the Middle East
- 9.8. Conclusions

## 10. Impact of Conservation Agriculture on Productive Efficiency, Income, Poverty and Food Security in Syrian

\*Y. Yigezu<sup>1</sup>, A. Muger<sup>2</sup> and T. El-Shater<sup>1</sup>

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<sup>2</sup>The University of Western Australia, Crawley WA 6009, Australia

\*Corresponding author's email: [y.yigezu@cgiar.org](mailto:y.yigezu@cgiar.org)

- 10.1. Introduction
- 10.2. Measurement of Impact Indicators
- 10.3. Modelling Impacts
- 10.4. Impacts of Conservation Agriculture on Productive Efficiency
- 10.5. Impacts of Conservation Agriculture on Income and Poverty
- 10.6. Impacts of Conservation Agriculture Technology on Food Security
- 10.7. Conclusions

## 11. Conservation Agriculture in South Asia

H. Rehman<sup>1</sup>, A. Nawaz<sup>2</sup> and \*M. Farooq<sup>2,3</sup>

<sup>1</sup>Department of Crop Physiology, University of Agriculture, Faisalabad-38040, Pakistan

<sup>2</sup>Department of Agronomy, University of Agriculture, Faisalabad-38040, Pakistan

<sup>3</sup>The UWA Institute of Agriculture, The University of Western Australia, Crawley WA 6009, Australia

\*Corresponding author's email: [farooqcp@gmail.com](mailto:farooqcp@gmail.com)

- 11.1. Introduction
- 11.2. History of Conservation Agriculture in South Asia
- 11.3. Present state of Conservation Agriculture in South Asia
- 11.4. Experiences with Conservation Agriculture in South Asia
  - 11.4.1. Crop performance
  - 11.4.2. Soil quality
  - 11.4.3. Weeds, diseases and insect-pests
  - 11.4.4. Environmental impacts of Conservation Agriculture
  - 11.4.4. Economic aspects of Conservation Agriculture
- 11.5. Challenges for Conservation Agriculture in South Asia
  - 11.5.1. Cultural and economic entrenchment of tillage agriculture
  - 11.5.2. Crop residues and management
  - 11.5.3. Yield levels
  - 11.5.4. Weed, insect-pest and disease challenges
  - 11.5.5. Availability of suitable seeding and planting equipment and inputs
  - 11.5.6. Problem oriented research and training
- 11.6. Prospects for up-scaling Conservation Agriculture in South Asia
  - 11.6.1. Effects of climate change
  - 11.6.2. Soil and crop management related policies
  - 11.6.3. Evolution of production costs and commodity prices
  - 11.6.4. Regional differences affecting uptake
- 11.7. Conclusions

## 12. Conservation Agriculture in South East Asia

\*Jean-Claude Legoupil<sup>1</sup>, Pascal Lienhard<sup>1</sup> and Anonh Khamhoung

<sup>1</sup>Conservation Agriculture and Systems Engineering, CIRAD, France

<sup>2</sup>Department Land Management and Development of the Ministry of Agriculture and Forestry, Vientina, Laos

\*Corresponding author's email: [legoupil@cirad.fr](mailto:legoupil@cirad.fr)

- 12.1. Introduction
- 12.2. History and Current Status of Conservation Agriculture in South East Asia
- 12.3. Conservation Agriculture and Ecological Intensification: an Alternative to Conventional Farming Systems
  - 12.3.1. Economic returns of conservation agriculture systems at field and farm level
  - 12.3.2. Impact of conservation agriculture on soil fertility and on environment
  - 12.3.3. Carbon sequestration and climate change impact
- 12.4. Regional challenges
  - 12.4.1. Restoration of soil fertility in degraded areas
  - 12.4.2. Provision of alternatives to slash and burn
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- 12.5.6. Limited public resources
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## 13. Conservation Agriculture in China

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## 14. Conservation Agriculture in Australia and New Zealand

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  - 14.4.4. Deep drainage
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- 14.6. Future Outlook

## 14.7. Conclusions

# 15. Conservation Agriculture in Europe

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# 16. Conservation Agriculture in Latin America

A. Calegari<sup>1</sup>, C.F. Araujo Jr.<sup>1</sup>, R.A. Peiretti<sup>2</sup>, M.B. Giraudo<sup>3</sup>, P. Wall<sup>4</sup>, \*M.-S. Turmel<sup>4</sup>, B. Govaerts<sup>4</sup> and A. Speratti<sup>5</sup>

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### 16.4.3. Innovations in elements of conservation agriculture

## 16.5. Future Outlook

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## 17. Conservation Agriculture in North America

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- 17.3. Regional Experiences with Conservation Agriculture
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- 17.5. National policies affecting Conservation Agriculture in North America
- 17.6. Future Direction and Trends

## 18. Conservation Agriculture in Sub-Saharan Africa

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- 18.2. History and Present Status of Conservation Agriculture in Sub-Saharan Africa
- 18.3. Experiences with Conservation Agriculture: Some Case studies
- 18.4. Challenges for increased adoption of Conservation Agriculture in Sub-Saharan Africa
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- 18.5. National Policies affecting Conservation Agriculture
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## Part 5 Conservation Agriculture in Agricultural Systems

### 19. Conservation Agriculture and Soil Carbon Sequestration

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- 19.2. Carbon and Nitrogen Cycling
- 19.3. Importance of Soil Organic Matter
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    - 19.4.1.2. Tillage
    - 19.4.1.3. Fertilization
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  - 19.4.2.1. Reducing soil disturbance
  - 19.4.2.2. Utilizing available soil water
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- 19.5. Managing Soil Carbon: Conventional Versus Conservation Agriculture
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## 20. Application of Microbiology in Conservation Agriculture

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- 20.1 Soil Microbiology
  - 20.1.1. Soil environment
  - 20.1.2. Biological component
- 20.2 Microbe-plant-interaction
  - 20.2.1 Rhizosphere
  - 20.2.2 Symbiotic interactions (mutualism, parasitism, predation, competition)
  - 20.2.3 Plant growth promoting rhizobacteria
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- 20.5 Conclusions

## 21. Conservation Agriculture in Organic Farming: Experiences, Challenges and Opportunities

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- 21.2. Experiences and Case Studies
  - 21.2.1. Challenges
  - 21.2.2. Surveys and long term experiments
  - 21.2.3. Soil organic matter biological activities
  - 21.2.4. Soil compaction and soil aggregate stability
  - 21.2.5. Weeds control and impacts on crop yields
- 21.3. Opportunities
  - 21.3.1. New equipment
  - 21.3.2. Research on cover crops, intercrops
- 21.4. Conclusions and Future Directions

## 22. Farmer Adoption of Conservation Agriculture

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#### 22.1. Introduction

#### 22.2. Farmer Adoption of Conservation Agriculture

##### 22.2.1. Financial considerations in adopting conservation agriculture

##### 22.2.2. Meta-regression analysis of financial analyses of conservation agriculture: how attractive is it?

##### 22.2.3. Other considerations in adopting conservation agriculture: a review of empirical adoption studies

###### 22.2.3.1. Farmer awareness or perception of soil problems

###### 22.2.3.2. Biophysical characteristics of the farm

###### 22.2.3.3. Land tenure, farm income/profitability and labour supply

###### 22.2.3.4. Knowledge and access to information about conservation agriculture practices

###### 22.2.3.5. Role of 'stewardship', collective benefits, networks and social capital

#### 22.3. Problems and New Approaches in Studying Adoption of Conservation Agriculture

#### 22.4. Future Outlook

#### 22.5. Conclusions

## 23. Conservation Agriculture and Climate Change

### <sup>1</sup>M. Pisante<sup>1</sup>, F. Stagnari<sup>1</sup>, M. Acutis<sup>2</sup> and M. Bindi<sup>3</sup>

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#### 23.1. Introduction

#### 23.2. Conservation Agriculture and Climate Change

##### 23.2.1. Variation

##### 23.2.2. Adaptation

##### 23.2.3. Mitigation

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##### 23.3.1. SOC accumulation

##### 23.3.2. Soil biodiversity

##### 23.3.3. Soil moisture

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##### 23.4.2. Nitrous oxide

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##### 23.5.1. Runoff and erosion, nutrient losses in surface water

##### 23.5.2. Nitrate leaching

#### 23.6. Research and Technology System Transfer

#### 23.7. Conclusion

## **TIMELINE / DEADLINES**

<b>S. No.</b>	<b>Activity</b>	<b>Deadline</b>
1	Circulation of the SOPs and relevant information	November 01, 2013
2	Receipt of book proposals	November 30, 2013
3	Review and revision of book proposals	January 31, 2014
4	Invitation for writing / editing the books	February 06, 2014
5	Receipt of complete book draft	August 30, 2014
6	Receipt of corrected proof	December 31, 2014
7	Posting of books, in pdf format, on the university web	January 30, 2015
8	Printing and distribution	April 30, 2015