

# Tropentag 2023

International Research on Food Security, Natural  
Resource Management and Rural Development

## Competing pathways for equitable food systems transformation: trade-offs and synergies

Book of abstracts

**Editor:** Eric Tielkes

**Reviewers/scientific committee:** Ayobami Adetoyinbo, Folkard Asch,  
Christian Bateki Adjogo, Bonnie Blaimer, Michael Brüntrup,  
Robert Cárcamo Mallen, Tsu-Wei Chen, Michelle Chevelev-Bonatti,  
Claudia Coral, Teresa Da-Silva-Rosa, Emmanuel Donkor, Christoph Gornot,  
Stef De Haan, Caroline Hambloch, Harry Hoffmann, Gudrun Keding,  
Marcos Lana, Katharina Lohr, Dagmar Mithöfer, Janvier Ntwali, Regina Rößler,  
Constanze Rybak, Lilli Scheiterle, Barbara Schröter, Johannes Schuller,  
Verena Seufert, Stefan Sieber, Jonathan Steinke, Silke Stöber, Götz Uckert,  
Martin Wiehle, Stefan Winter

**Editorial assistance:** Janna Pfister

# Impressum

Bibliografische Information der Deutschen Nationalbibliothek

Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über <http://dnb.ddb.de> abrufbar.

1. Aufl. - Göttingen: Cuvillier, 2023

Tropentag 2023: Competing pathways for equitable food systems transformation: trade-offs and synergies Tielkes, E. (ed.) - Witzenhausen, DITSL

© DITSL

Steinstrasse 19, 37213 Witzenhausen

Telefon: 05542-6070

<https://www.ditsl.org>

Alle Rechte vorbehalten. Ohne ausdrückliche Genehmigung des Verlages ist es nicht gestattet, das Buch oder Teile daraus auf fotomechanischem Weg (Fotokopie, Mikrokopie) zu vervielfältigen.

The authors of the articles are solely responsible for the content of their contribution.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means without prior permission of the copyright owners.

Online-Version: <http://www.tropentag.de/>

© CUVILLIER VERLAG, Göttingen 2023

Nonnenstieg 8, 37075 Göttingen

Telefon: 0551-54724-0

Telefax: 0551-54724-21

[www.cuvillier.de](http://www.cuvillier.de)

1. Auflage, 2023

Gedruckt auf umweltfreundlichem, säurefreiem Papier aus nachhaltiger Forstwirtschaft.

ISBN 978-3-7369-7880-5

eISBN 978-3-7369-6880-6

## Effect of long-term management on yield of dicotyledon plants in cotton systems

ISHWAR PATIDAR<sup>1</sup>, AKANKSHA SINGH<sup>2</sup>

<sup>1</sup>*bioRe Association, Agronomy, India*

<sup>2</sup>*Research Inst. of Organic Agriculture (FiBL), International Cooperation, Switzerland*

Organic agriculture is a promising solution to sustainably improve crop yields. For several crops, yield from organic farming have been recorded to be lower than yield from conventional farming. However, such data is context dependent and there is very little information on performance of organic systems in the tropics. Particularly, solid data on the benefits and drawbacks of organic agriculture in the tropics is still missing.

In 2007, we set up a long-term farming system comparison trials (LTE) for cotton systems in Madhya Pradesh India. Cotton is the main cash crop in our region and is grown in a two-year crop rotation. The other crops grown with cotton in our region are chickpea, wheat and soybean. In our field trials we are comparing the following treatments: (i) organic, (ii) bio dynamic, (iii) conventional, and (iv) BT conventional (genetically modified) cotton. We have been taking data on multiple parameters such as crop yields, soil nutrients, soil microbial properties and system profitability

Our data indicates that with good management organic systems can become more sustainable than conventional systems both economically and ecologically. Multiple indicators in our trials show this; the performance of crops has improved over the years, reducing the profitability gap between organic and conventional farming systems. In addition, positive impacts on soil fertility indicators (e.g., soil organic carbon) are detectable after 10–12 years in our organic LTE systems. We have also recorded our organic systems to harbour higher biodiversity. Despite our positive results, adaption of best management practices by the farmers remains one of the biggest challenges.

We need more studies on long-term cumulative effect of system approaches on fertility, health and the productive capacity of agricultural lands in conventional and organic farming systems. We need to understand what extent system approaches can enhance the resilience of cotton systems.

**Keywords:** Chickpea, cotton, crop rotation, dicotyledon, long term system, organic, soybean, treatment, wheat

---

**Contact Address:** Ishwar Patidar, bioRe Association, Agronomy, 5th mile stone mandleshwar road kasrawad khargone mp, 451228 Kasrawad, khargone, India, e-mail: ishwar.biore@gmail.com