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Long-term Farming System Comparison Trial in India

Background

Developing sustainable farming system on large scale is very important for sustainable development of global agriculture. Scientific information about organic vs. conventional agriculture in the tropics is sparse.

Objectives

The main objective is to assess the productivity and profitability of a cotton-based production system under organic and conventional management in central India.

Material and Methods

- Located in a semi-arid climatic zone with Vertisol soil in Madhya Pradesh, India.
- > Time: Started in 2007-ongoing.
- Sampling of agronomic, ecological and economic data (plot level).
- Crop rotation (2 year): Cotton-soybean-wheat under bio-dynamic, organic and conventional (with/ without Bt-cotton) management (Figure 1).
- Dissemination of results by stakeholder visit (e.g. farmers visits with evaluation).
- > Experimental Design:

Conclusion

- Despite relatively lower yields the organic cotton is economically viable and sustainable compared to conventional production.
- crucial factors for the economic profitability have to be considered such as access to knowledge and organic inputs (fertilizers, pesticides, non-GM seeds), existing market demand and certification system have to be considered.

Publication

Forster D, Andres C, Verma R, Zundel C, Messmer M, Mäder P (2013) Yield and Economic Performance of Organic and Conventional Cotton-based Farming Systems – Results from a Field Trial in India. PLoS ONE 8(12): e81039.

More Information and Contact

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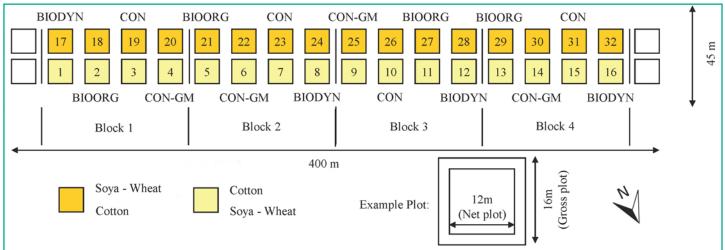


Figure 1: Experimental design of the long-term experiment in India. Farming Systems: bio-dynamic (BIODYN), organic (BIOORG), conventional without Bt-cotton (CON) and conventional with Bt-cotton (CON-GM).

Achievements

- > 7%-15% lower yield for all organically produced crops compared to conventional systems.
-) lower production costs in organic systems, therefore similar gross margins in all systems.
- > over 2000 people(farmer, scientist etc.) visit the LTE between 2011 to 2013.

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