



Tropentag, September 9-11, 2020, virtual conference

“Food and nutrition security and its resilience  
to global crises”

## How Do Organic and Conventional Production Systems Perform: Evidence from Long-Term Study in India

AMRITBIR RIAR<sup>1</sup>, BHUPENDRA SINGH SISODIA<sup>2</sup>, GURBIR BHULLAR<sup>1</sup>

<sup>1</sup>*Research Institute of Organic Agriculture, Dept. of International Cooperation, Switzerland*

<sup>2</sup>*Biore Association, India,*

### Abstract

Organic agriculture has gained a reputation for being ecologically sustainable, however sometimes it faces criticism for productivity and profitability aspects in comparison to conventional farming production. This is specifically a matter of concern when aiming at finding solutions to agricultural challenges of smallholder farmers in the developing countries. Through the ‘long-term farming systems comparison (SysCom) program’, FiBL together with local partners, runs a network of field experiments in the tropics, which aims at obtaining solid scientific evidence on the performance of organic and conventional production systems.

Here we present the findings from the SysCom long-term experiment located in (Madhya Pradesh State) the Central Indian cotton belt. The climate of the project area is semi-arid and cotton, soybean and wheat are the major crops grown in this region. Four management systems (treatments) namely (a) organic, (b) biodynamic, (c) conventional and (d) conventional farming with genetically modified (GM) cotton, are being tested in the field trial on bioRe research station since 2007. After analysis of twelve years of data, we found that for cotton crop, total production cost was highest in Bt-conventional system followed by conventional system and organic systems (org + bio-dynamic) respectively. On an average, there was a yield gap (Seed yield of Conventional systems – Seed yield of organic systems) of nearly 20% for cotton and main wheat crop. Average yield of second wheat crop following cotton in rotation was above 50% for organic systems than conventional systems. However, Soybean crop performed consistently equal in organic and conventional systems. However, the profitability – being the output function of input costs – was not consistent with the productivity outcomes. The detailed analysis of productivity and profitability of different systems, with and without premium prices for cash crop, will be presented.

**Keywords:** Farming systems, organic vs. conventional, productivity, profitability