Tropentag, September 14-16, 2022, hybrid conference

"Can agroecological farming feed the world?
Farmers' and academia's views"

Using best practice approach to build resilience in organic cotton systems in central India

Akanksha Singh[1], Bhupendra Singh Sisodia[2], Ishwar Patidar[2], Gurbir Bhullar[3], Amritbir Riar[1]

[1] *Research Institute of Organic Agriculture (FiBL), Dept. of International Cooperation, Switzerland*
[2] *Biore Association, India*
[3] *Berner Fachhochschule School of Agricultural, Forest and Food Sciences (HAFL), Agronomy, Switzerland*

Abstract

Cotton plants are a primary sources of worlds' industrial textile and it is estimated that globally approx. 2.78 % of arable land is under cotton plant cultivation. Conventional cultivation of cotton is a highly input-intensive process, requiring large quantities of pesticides, fertilisers and water resources. Growing cotton organically can significantly reduce negative environmental impacts of cotton. However, yield of organic cotton is often recorded to be lower than the yield of conventional cotton. There is a need to develop system-based approaches that increase productivity of the cotton systems. Our study is based on a long-term trial that has been comparing organic and conventional cotton systems since the year 2007, in central India. In our study region cotton is grown in a two-year crop rotation with wheat and soybean. For better adaption of organic cotton production, it is crucial to increase overall economic returns from all crops involved in the cotton rotation system. In the initial phases of our study we recorded a yield gap of up to 25 % between organic and conventional cotton production. To mitigate this yield gap, we adopted multiple best practice approaches using agroecological principles. Our recent results show that such approaches can not only reduce the yield gap but also increase soil organic carbon in the organic cotton systems; resulting in systems that are potentially more resilient to climatic changes. We will discuss our results and highlight the need to invest in agroecological and socio-economic research to eliminate yield gaps between organic and conventional agriculture and to identify barriers to adoption of sustainable techniques.

Keywords: Adoption, best practice approach, cotton, organic, system productivity, yield gap

Contact Address: Akanksha Singh, Research Institute of Organic Agriculture (FiBL), Dept. of International Cooperation, Ackerstrasse, CH-5070 Frick, Switzerland, e-mail: akanksha.singh@fibl.org