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## What socially motivates farmers to grow organic cotton in central India?

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**Key words:** Cotton, yield variability, social motivations, biophysical motivations

### Abstract

*India is the largest producer of ‘organic cotton’, as it contributes about three quarters (74%) to the global organic cotton production. The Nimar valley of Madhya Pradesh in central India is important region for organic cotton production. In general, cotton yields are low and variable in the Nimar valley and often do not reach the attainable levels on several farms of the region. With a steeply increasing demand for organic fibre, it is important to safeguard and increase the production of organic cotton in a sustainable manner. The precise understanding of social and biophysical motivations of different farmers for following their respective farming practices is of high importance for sustainable future of organic cotton in central India. The study of the facts related to adoption of organic cotton production systems in the Nimar valley is particularly valuable for policy makers, smallholder farmers and sourcing organizations.*

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### Introduction

Organic agriculture is one of the most widely known alternative agricultural production systems advocated for its benefits. There have been strong calls for mainstreaming of organic agriculture in some of the developing countries as well and in some cases governments in different parts of the world have implemented pro-organic policies. This represents a remarkable opportunity, particularly for small and medium holding farmers in developing countries. Appropriate implementation of policy measures is necessary to fully utilize the potential of available scenario. Depending upon various socio-economic factors the adoption rates of organic farming practices vary among farmers in different regions. Understanding the motivation of farmers for adoption of their specific set of management practices is of crucial importance to design suitable policy measures. The objective of this study was to identify that what socially motivates farmers to grow organic cotton in the Nimar valley of central India.

### Material and methods

During the cotton season of 2015 (May-December), a primary survey of organic and conventional cotton farms was conducted in the cotton growing region of west Nimar. Survey questions were standardised in focussed group discussions with farmers, extension workers, research staff and

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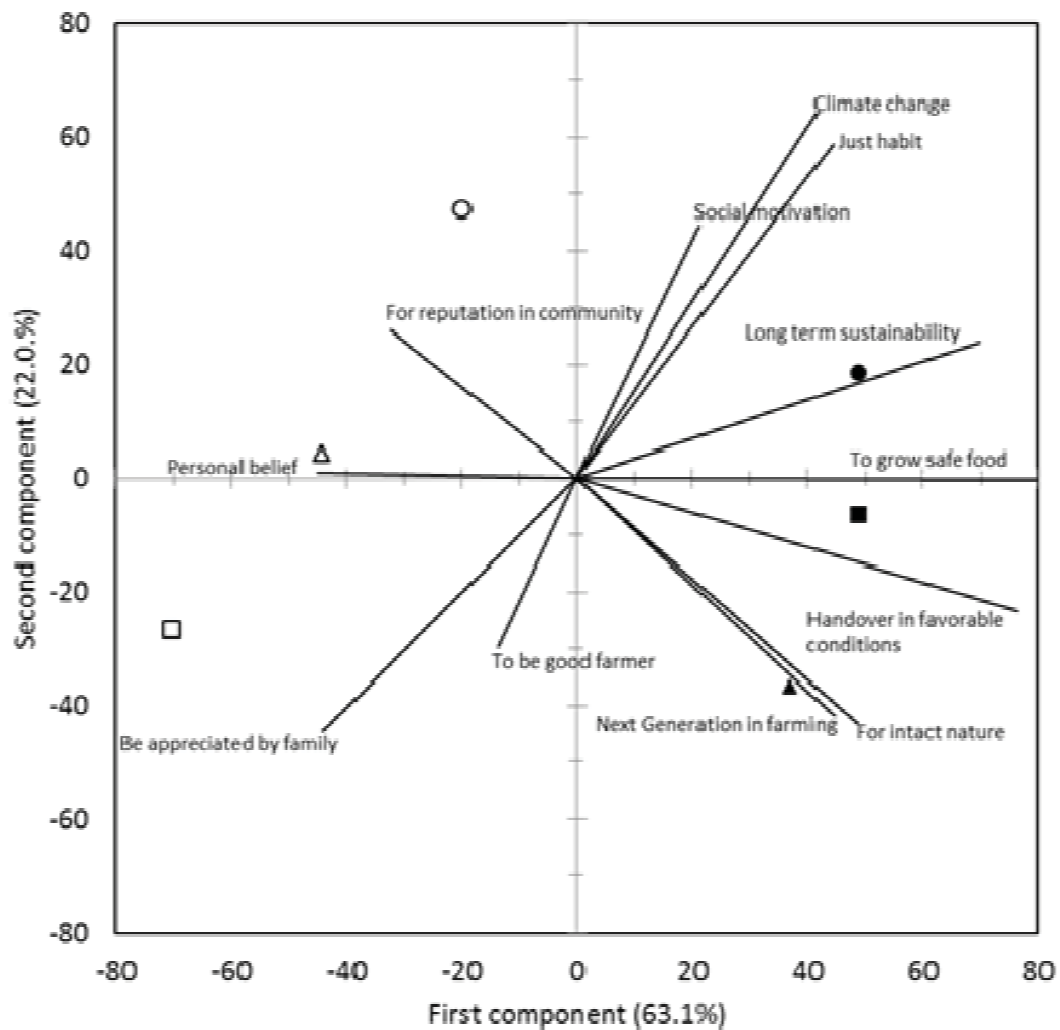
other stakeholders using the joint innovation platform of the Research Institute of Organic Agriculture (FiBL) and bioRe Association. For individual structured interviews, 60 organic and 60 conventional farms were randomly selected from five different cotton growing pockets/clusters of west Nimar. Each farm was treated as a single operational unit and the farmer responsible for decision-making was interviewed. Farmers were selected solely based upon their farming practices, irrespective of farm size, soil type, education, income or any other demographic factors. For data analysis, farmers were further grouped according to size of their land holdings, in order to broadly represent different socio-economic categories. They were grouped into small (<2ha), medium (2-4ha) and large (>4ha) holding farmers, with the small scale farmers recognized as being asset-poor (Singh *et al.*, 2010; Coventry *et al.*, 2015). Upon further subgrouping it was found that the number of respondents was too low in certain categories to arrive at statistically sound conclusions per group. However, the number of respondents are sufficiently large to be able to discern issues and emerging trends. The survey targeted whole farm information on cotton crop management practices (including variety selection, fertiliser management, weed and pest management, number of picking) as well as the information on farmer demography and attitudes. Each farmer was personally visited by one of the designated staff members of bioRe extension team. These staff members were appropriately trained in survey data compilation, to ensure standardized survey information input and coding. The data were compiled using an Excel spreadsheet and to derive inferences, Principal Component Analysis (PCA) was conducted on this data set.

## Results

To identify the social motivations of different farmers for following their respective farming practices, PCA provided an overview on the relationship of organic or conventional farming practices on different sized farms to social motivational characters of the farmers. In the biplot figures below (Figure 1), the axis labels indicate the extent to which the mentioned factors account for the total variation in data. The proximity of a farming system group to a particular motivational character demonstrates the agreement of the farmers in that group to the influence from that character and the length of the vector shows the degree of influence compared to other characters. Analysis of survey data revealed that the motivational characters vary among farmers following specific farming practice and having different farm sizes. Besides the differences among different farm sizes, the points pertaining to organic and conventional farm groups spread into different coordinate quadrants (Figure 1) indicate the ideological differences among the followers of these two production systems. The first component of PCA accounting for 63.1% of the total variation, and first component + second component accounting for 85.1% of the total variation showed that these are the most common listed social motivational factors that impact on adoption of a specific management system for cotton production. Some of the social motivation factors such as perception of climate change, habitual reasons, long-term sustainability, interest to grow safer food and societal influence were more important on total variation than others as indicated by the long length of vectors in Figure 1.

Long-term sustainability of cotton was the major motivation for organic farmers with larger land holdings (> 4 ha). Whereas, growing safer food without pesticides and a wish to handover their land to the next generation in a better condition were expressed as main motivations by the organic farmers with medium sized holdings (2-4 ha). However, it is noteworthy that only 32.3% of the surveyed organic medium holding farmers wanted their children to become farmer one day. Motivation of small holding (<2 ha) organic farmers was to perform agricultural practices that are favorable for an intact nature and 33.3 % of them wanted their children to become farmers one day. In contrary to organic farmers, the motivation of conventional farmers was ambiguous. Large holding conventional farmers did not seem to derive their motivation from the mentioned social factors as indicated by the remote presence of point pertaining to this group in 2nd quadrate (Figure 1). The closest vector indicated that they were only concerned about their reputation in the

community. Medium holding conventional farmers believed that the conventional practice was a better way of farming (personal belief). However, the small holding conventional farmers seemed to be aloof of the studied social factors and therefore, the social motivation of this farming group remains unclear. The closeness to vectors of ‘personal belief’ and ‘appreciation from family’ may suggest lack of awareness and limited risk bearing ability, preventing a shift from the existing farming practices.



**Figure 1. Biplot for the principal component analysis of the respective social motivational characters of (●) large, (▲) medium and (■) small holding organic farmers; as well as (○) large, (□) medium and (□) small holding conventional farmers. Closeness of a farming system symbol to a particular motivational character confers the dominance of that motivation, whereas length of the vector line signifies the effect of that motivational character.**

## Discussion

Long-term sustainability of cotton, growing safer food without pesticides, agricultural practices that are favorable for an intact nature and a wish to handover their land to the next generation in a better condition were expressed as main motivations by the organic farmers. In contrary to organic

farmers, the motivation of conventional farmers was ambiguous. Studies conducted in Canada and United States have reported similar concerns as motivation of farmers for converting to organic e.g. concerns over environmental impact of farming and motivation for personal, family, or consumer health and safety (Cacek and Langner 1986; Lockeretz and Madden 1987; Molder et al., 1991; Hall and Mogyorody 2001; Cranfield et al., 2010). Understanding of social motivation behind the adoption of a farming system can help to make it ecologically sound, economically viable, Socially justifiable.

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