

# Organic farming for sustainable livelihoods in developing countries? The case of cotton in India

Frank Eyhorn

Organic farming has experienced considerable growth, not only in industrialized countries. Is it primarily an approach to safeguard consumer health and the environment, or can it also contribute to poverty reduction in developing countries?

Drawing on 3 years of research on organic cotton farms in the Maikaal bioRe® project in central India, this book assesses the potential and the constraints of organic farming for improving rural livelihoods. It further integrates lessons learnt in other organic cotton projects in Asia and Africa, making it the presently most in-depth and comprehensive work on the socio-economic impact of organic farming in a developing country. The research builds on a conceptual frame that allows investigating rural livelihoods in a holistic and interdisciplinary way. The book not only addresses scientists in the fields of rural development and tropical farming systems, but also provides recommendations for practitioners and policy makers.

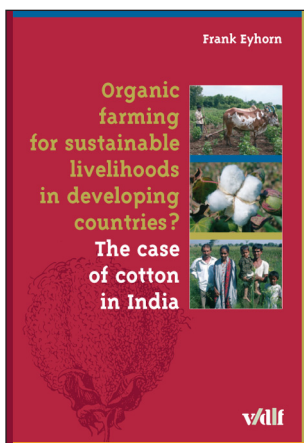
*“Dr. Frank Eyhorn’s research on organic cotton grown in the central state of India is a pioneering work. It paves the way for the possibility of chemical-free, environment- and health-friendly sustainable farming, involving lower costs and yielding higher returns to the farmers. The model is capable of being replicated globally.”*

Sri Sompal, former Chairman of the National Commission for Farmers and Minister of State for Agriculture and Water Resources, India.

*“That the organic production of cotton provides benefits not only for the environment and human health, but also for the socio-economic situation of farmers, is the main message of this well-documented comparative study of conventional and organic farming. It is a significant and motivating message for furthering the use of organic production methods in developing countries.”*

Dr. Joan S. Davis, Environmental Chemist, Eawag: Swiss Federal Institute of Aquatic Sciences & Technology.

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# Organic farming for sustainable livelihoods in developing countries?

## The case of cotton in India

*Frank Eyhorn*

### Executive summary

Based on the example of cotton farming in India, this research examines in how far conversion to organic management can be a viable option for improving the livelihoods of farmers in developing countries. While cotton cultivation provides livelihood for an estimated 10 million Indian households, stagnating cotton yields, high input costs and low cotton prices have led many of them into indebtedness. By substituting synthetic fertilizers and pesticides with farm-own resources and labour, organic farming not only could have the potential to improve natural resource management, but also to reduce production costs and obtain a better price for the produce. Development agencies and companies are increasingly trying to utilize this potential by organizing organic farmer groups and linking them to the growing market demand in industrialized countries. Maikaal bioRe® in central India is one of these initiatives, involving 1500 small and medium-sized farms with a production of 1'000 t cotton fibre in 2005.

### *Conceptual approach and research methods*

In a comprehensive field study, we analyzed the impact of organic farming on rural livelihoods, and whether conversion is a feasible option from the perspective of the farmers. To approach these two questions, we developed a conceptual framework that captures the relevant dimensions of livelihoods and of the adoption of innovation. We complemented the widely accepted Sustainable Livelihoods Framework with approaches that allow addressing non-economic aspects of rural households and the process of developing livelihood strategies. This conceptual framework formed the basis for designing a farming system comparison study in which 60 organic and 60 conventional farms were monitored over a period of two cropping seasons. With a range of qualitative studies we further analysed decision-making processes and obstacles in the adoption of organic farming.

### *The impact of organic farming*

The results of the system comparison study based on Maikaal bioRe show that, in addition to not using synthetic inputs, organic farms applied about twice the amount of organic manures, had more diverse cropping patterns and kept more cattle than conventional farms. Despite the widespread belief that organic farms are less productive, cotton yields in organic farms that had completed the conversion period were on par with those in conventional farms. At the same time, nutrient inputs and input costs per crop unit were lower by a factor of two, indicating higher efficiency of the organic system. Surprisingly, the organic cotton system did not require significantly more labour than the conventional system. Due to 10–20% lower production costs and a 20% organic price premium, average gross margins from organic cotton fields were, depending on the year, 30–40% higher than in the conventional system. Although the crops grown in rotation with cotton were not included in the extension system and were sold without price premium, organic farms achieved 10–20% higher incomes from agriculture.

In addition to these economic benefits, organic management does not burden soil and groundwater with synthetic fertilizers and pesticides. Most organic farmers have observed a considerable improvement of soil fertility after conversion, especially of soil structure and water retention. Nevertheless, analysis of soil organic matter, water retention capacity and nutrient contents in soil samples of organically and conventionally managed fields only detected minor differences between farming systems. Soil analysis results probably did not reproduce the improvements perceived by the

farmers due to the large heterogeneity in site conditions and management practices. Farming system effects on soil fertility and water use are therefore more likely to be detected in longer-term system comparison plot trials.

#### *Adopting organic farming as part of a livelihood strategy*

Most of the conventional farmers in the researched region showed little confidence in the future of farming, as decreasing net returns and increasing indebtedness jeopardized the economic viability of their farms. Accordingly, the main motivation of those who converted to organic farming was to secure and improve their livelihoods by improving soil fertility in order to stabilize yields, reducing production costs, getting access to markets with higher cotton prices and reducing their dependency on loans and money lenders. While adopters of organic farming perceived the long-term outcomes mainly as positive, during the transitional phase most of them were confronted with income losses and additional workload. In the initial 2–3 years of conversion, yields usually dropped by 10–50%, and the reduced production costs and the organic price premium were not sufficient to compensate for lower revenues. In the initial years of the Maikaal bioRe project, therefore mainly wealthier farmers and farmers who were leaders in their community adopted organic farming, while marginal farmers hesitated to take the risk of conversion.

Managing the economic constraints of the conversion period emerged as an important entrance barrier to organic farming, especially for small and resource-poor farmers. In the long-term, however, smallholders are likely to be better off in the organic farming system, as they can substitute expensive off-farm inputs with farm-own resources and underutilized family labour. Lower production costs and stabilized incomes help them to reduce their vulnerability to drought and market price fluctuations. Eventually, the improved economic performance enables them to get out of the previous debt-cycle and to re-invest in agricultural intensification and in diversifying their livelihood base. This not only improves their quality of life, but also their social status in the village.

The relatively large number of farmers who dropped out of the organic farmers group because they had used banned inputs demonstrates that not all farmers who once decided to convert to organic farming stick to this system. The fact that mostly farmers of high socio-economic status defaulted indicates that an opportunistic calculus is involved. At the same time, the particularly high indebtedness among defaulting farmers seems to stimulate opportunistic behaviour. The strong spread of Bt-cotton in the region further tempted many farmers to try out the new technology in order to reap fast benefits. In addition, defaulting farmers were probably less suited for organic farming in the long term, as they had lower availability of cattle and labour. In order to be sustainable, organic cotton initiatives therefore need to select suitable farmers and strengthen their commitment to the organic farming system.

#### *Conclusions*

The results have shown that smallholder organic farming systems can produce similar yields as in conventional farming after completing a transitional period of 3–4 years. However, if innovation in farming shall really improve rural livelihoods, the focus needs to shift away from yields to a broader perspective that includes sustainability of the management of the production base, economic viability of the farm operations (i.e. the relation of costs and revenues) and livelihood security. It is in these fields where organic farming offers the most promising potentials. The challenge in utilizing these potentials lies in enabling poor farmers to overcome the obstacles of the conversion period. Appropriate extension approaches that facilitate conversion, and mechanisms for bridging the initial income gap are thus needed. Adoption of organic farming, however, not only requires acquiring new know-how and skills, but also a change in attitude. Only if the involved farmers develop emotional ownership for the organic cotton initiative and an identity as a group, free-riding can be prevented and the long-term sustainability of the undertaking be ensured.