PLANT HEALTH

WHAT CAN ORGANIC AGRICULTURE CONTRIBUTE TO SUSTAINABLE DEVELOPMENT: LONG-TERM FARMING SYSTEMS COMPARISON TRIALS IN KENYA

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BACKGROUND

In Europe, numerous studies have proven the advantages of organic agriculture in terms of ecosystem services and economic impacts. Organic farming is now increasingly being taken up by farmers, NGOs, national programmes and agricultural development agencies in tropical countries as a means to improve food security and rural livelihoods in a sustainable way. Demand for reliable data on the environmental and socio-economic performance of organic agriculture is high, but only few attempts have yet been made to systematically assess this farming system alongside conventional practices.

OBJECTIVES

1. Place the debate on organic farming in developing countries on a rational basis.
2. Foster agricultural policy dialogue in the developing world.
3. Identify the challenges for organic agriculture in tropical countries and thus gain the ability to address them in a targeted way.
4. Contribute to the development of organic and sustainable agriculture in developing countries
5. Improved structures and contents of agricultural policy, research, education, training, extension, production and market.
6. The field trials on station serve as physical reference points, accessible to all stakeholders, comparing organic and conventional farming systems on a long term.

THE APPROACH

To fill this gap, FiBL and its partners in the developing world are running long-term farming system comparisons of 10–20 years duration in Kenya, India and Bolivia. In sub-humid central Kenya, field trials are being conducted to compare organic and conventional systems of farming. The long-term field trials are set up in the sub-humid highlands of central Kenya (in Chuka site which is in Upper Midland (UM) two agro-ecological zone, also called Main Coffee Zone and Thika site which is in Upper Midlands (UM) three, named sunflower-maize agro-ecological zone) where the organic farming system is being compared with the conventional farming system at two input levels, resulting in four treatments: Conventional High Input, Organic High Input, Conventional Low Input and Organic Low Input. Whereas the input level in the low-input treatments is driven by the availability of farm-owned resources, the input level in the high treatments is driven by crop requirements and profitability. The 'Conventional High Input' treatment is based on data and recommendations of the Ministry of Agriculture while the 'Organic High Input' treatment draws from the International Forum for Organic Agriculture Movement (IFOAM) recommendations for organic agriculture in the tropics.

The trial features a 3-year rotation with maize and vegetables. The replicated field trials now make it possible to monitor the effects of organic agriculture on yield, biomass, soil properties (chemical, physical and biological), plant health, gross margins, nutrient content of inputs and harvested crop products, weeds coverage and biodiversity and product quality, e.g. flavor and pesticide residue levels.

Table 1. Crop rotation for the long-term system comparison trial in Kenya project

Year	Season	CONV HIGH	CONV LOW	ORG HIGH	ORG LOW
1	Long	Maize	Maize	Maize + Green manure	Maize
1	Short	Cabbage	Kale and Spinach	Cabbage + Green manure biomass	Kale and Spinach
2	Long	Baby corn	Maize and beans	Baby corn + Green manure	Maize and beans
2	Short	French beans	Legumes (beans and soy bean)	French beans + Green manure biomass	Legumes (beans and soy bean)
3	Long	Baby corn	Maize and beans	Baby corn + Green manure	Maize and beans
3	Short	Irish Potato	Irish potato or local vegetables	Irish Potato + Green manure biomass	Irish potato or local vegetables

Ms. Kanini of the Ministry of Agriculture, Chuka explains to the farmers aspects of production and marketing of French beans. A farmer contributes to the discussion during the farmer field day plenary session.

BENEFICIARIES AND EXPECTED IMPACTS ACKNOWLEDGEMENTS

1. Farmers will benefit from joint learning processes
2. Market organizations and trade companies will benefit from the increased awareness for organic products among consumers.
3. Agricultural NGOs and extension services. The research findings will provide basis for strategic orientation. Advisory contents on organic farming and sustainable agriculture will be derived from the research.
4. National authorities, development agencies and multilateral donors. The research will provide support in policy orientation, programming and action plans.
5. National and international research institutions.

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