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How organic agriculture contributes to sustainable development

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Abstract

Organic agriculture can contribute to meaningful socio-economic and ecologically sustainable development, especially in poorer countries. This is due on the one hand to the application of organic principles, which means efficient management of local resources (e.g. local seed varieties, manure, etc.) and therefore cost-effectiveness. On the other hand, the market for organic products – at local and international level – has tremendous growth prospects and offers creative producers and exporters in the South excellent opportunities to improve their income and living conditions. Establishing whether organic agriculture is a viable alternative for a particular holding needs to be carried out on a case-by-case basis. What potential does organic agriculture have for solving the problems of hunger and poverty? What can organic agriculture contribute to achieving socially and ecologically sustainable development in poor countries? Central to organic agriculture are promotion of soil fertility, biodiversity conservation (e.g. native flora and fauna), production methods adapted to the locality and avoidance of chemical inputs. These methods, together with cultivation of a diverse range of crops, stabilize the delicate ecosystems in the tropics and reduce drought sensitivity and pest infestation. Organic agriculture reduces the risk of yield failure, stabilizes returns and improves the quality of life of small farmers' families. To date, no systematic attempt has been made to evaluate the benefits and effects of each system. In 2006, FiBL therefore launched a network of long-term system comparisons in the tropics that aims at examining the contribution of organic agriculture to food security, poverty alleviation and environmental conservation. The article presents this discussion based on experience gained in practice and encompasses the following hypotheses:

1. Organic agriculture is sustainable and diverse;
2. Organic farmers conserve resources;
3. Organic farmers produce more, better-quality products and achieve higher incomes;

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4. Organic products provide market access and create added value;
5. Organic agriculture increases self-confidence and mobilizes new partnerships.

Keywords

farming systems comparison in the tropics, organic agriculture in developing countries, sustainable development

1 A wealth of experience, but so far no systematic evaluation

The concept of organic agriculture builds on the efficient use of locally available resources, and on the use of adapted technologies (e.g. soil fertility management, closing of nutrient cycles, control of pests and diseases by means of natural antagonists). This concept opens up new ways of achieving sustainable development in the South and has therefore developed dynamically over the past decade (Willer and Yussefi 2006). Organic agriculture has the potential (Kilcher 2005):

1. to improve soil fertility, biodiversity and sustainability of agricultural production;
2. to conserve natural resources;
3. to improve agronomic and economic performance; to make yields more stable, especially in risk-prone tropical ecosystems; to achieve better food quality and food security;
4. to provide access to attractive markets through certified products;
5. to create new partnerships within the whole value chain as well as to strengthen self-confidence and autonomy of the farmers.

Organic farming is the subject of extensive research in northern countries, especially in Europe. A wide range of studies (Mäder et al. 2002, Offermann and Nieberg 2000, Stolze et al. 2000) have demonstrated the advantageous aspects of this system in terms of ecosystem functioning, soil fertility conservation and economic impact. NGOs and farmers' groups are increasingly adopting organic techniques as a method of improving productivity and food security in these systems. However, no systematic attempt has hitherto been made to track the extent to which these approaches are being employed, or their effectiveness compared to other approaches, in meeting economic, social and environmental objectives (Parrott and Kalibwani, in: Willer and Yussefi 2006).

What and how organic farming can contribute to food security and sustainable development in tropical countries is of particular interest for research and development, for stakeholders in the whole value chain, and for national authorities, as well as for national and international cooperation agencies concerned with policy development: in view of the diminishing financial resources available for agricultural research in development, it is important to invest in the most sustainable and cost-efficient strategies. The interest in secured data based

on a sound evaluation of organic farming vis-à-vis conventional solutions is therefore very high.

2 Long-term farming systems comparisons in the tropics

Based on this demand, in 2006 FiBL launched a network of long-term farming system comparisons in the tropics (Kenya, India and a site in Latin America that has yet to be defined). The aim of this project is to examine the contribution of organic agriculture to food security, poverty alleviation and environmental conservation. It covers cash crop-oriented systems as well as subsistence crop-based systems under a wide range of agro-ecological and socio-economic conditions.

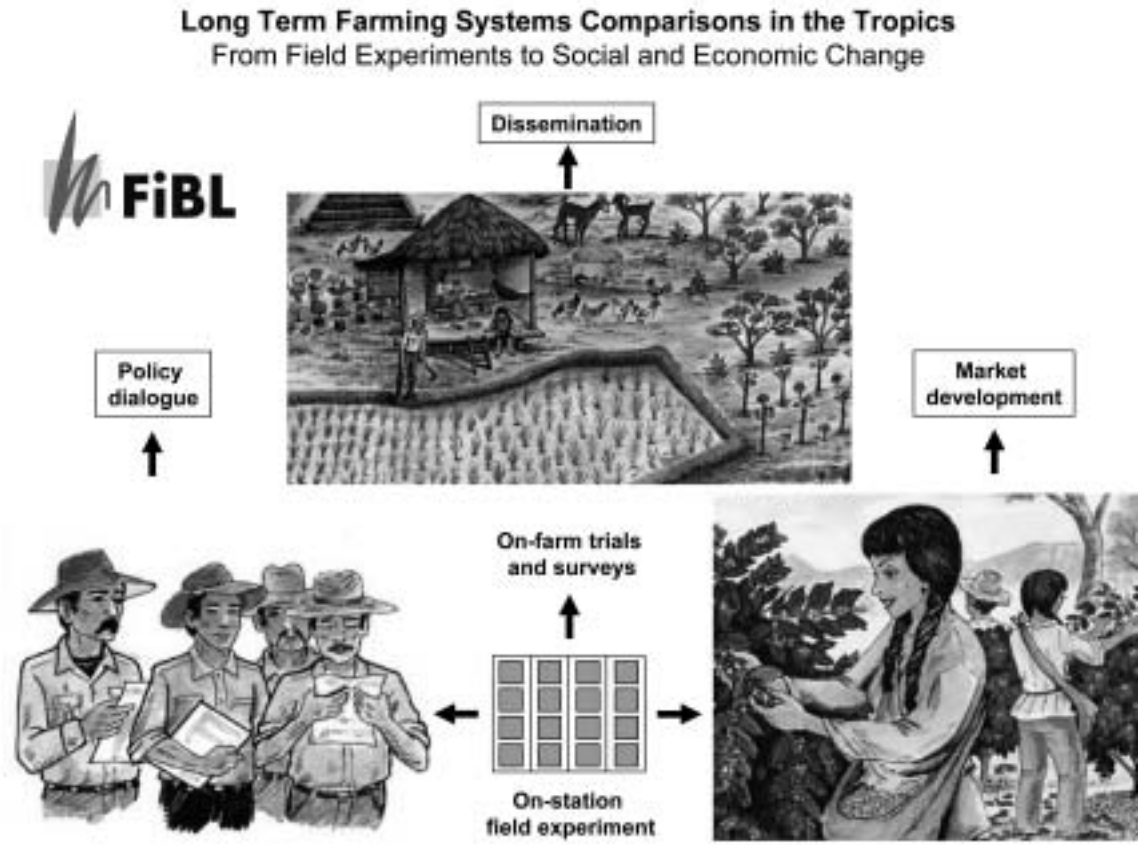

Chart 1: Approach and research methodology of the FiBL long-term farming systems comparisons in the tropics.

The core components of the project are long-term comparative field experiments on randomised plots with exact statistical profiles. Crop portfolio and management practices reflect current local practice for the system in question. This experimental design will allow for a precise comparison of agronomic and ecological parameters. To ensure that the plot experiments are run in a manner that closely reflects practice, farmers' groups are involved in defining the systems and managing the field plots.

In addition, data from existing farms and their field crops will be collected and analysed. For this, FiBL and its partners in the tropics will analyse a representative number of organic and nearby conventional farmers in the regions of interest. Strong emphasis will be placed on ensuring a statistically valid selection of farms. It will be ensured that the farms under comparison are subject to the same soil and climatic conditions and are typical for farming systems in the relevant regions. Here, the main focus will be on economic and social parameters, but agronomic and ecological aspects will also be studied.

Taking into account the different types of organic agriculture that prevail, FiBL intends to investigate (a) traditional farming (mostly small-scale, for home consumption and local markets, traditional methods), and (b) agricultural production for export markets (often medium to large-scale, improved methods). The systems will be evaluated in terms of food security, poverty alleviation and environmental conservation. Accordingly, the physical yields of the organic and conventional systems will be measured, and inputs and outputs will be recorded. This will allow input-output analysis of both farming systems and the systems will be characterized by their efficiency. A set of indicators for environment conservation will be assessed, relating to soil, water, landscape and biodiversity. A socio-economic study will be carried out based on farmers' records and on data assessed in the field plots. Semi-structured interviews will cover social issues.

Further, we aim successively to integrate innovation packages into the long-term system comparison trials (e.g. improved crop rotations, soil management, cover crops, biodynamic preparations). For this purpose, new agro-ecological technologies developed both by local farmers and/or international/national agricultural research institutes will be tested under local conditions, adapted if necessary, and introduced into the system comparison experiments at pre-defined intervals (e.g. every five years).

Picture 1: Organic farmers from Karatinga (Kenya) discussing their experiences with organic farming in a pepper nursery. These pioneers in organic farming in Africa are important partners of the FiBL network of long-term farming systems comparisons in the tropics. Participatory on-station and on-farm research generates new knowledge that is shared with other farmers. Such learning processes lead to sustainable innovation.

The results of the system comparison trials will show benefits of and challenges for organic agriculture. These results will be communicated through appropriate channels to all relevant stakeholders and interested parties. The results will support farmers' organizations, research, extension, development cooperation, trade and national authorities in their strategic orientation, and in developing action plans for organic farming. The outcomes of the system comparisons can also be utilized as a basis to develop and disseminate organic farming technologies further according to the specific requirements of the farmers.

Initial results of the long-term farming system comparisons in the tropics will be available within a few years. Even now, a wealth of experience is available from farmers and farmers' groups in the South that have already adopted organic farming methods. The following discussion is based on this experience, which has been gained especially through international cooperation projects of FiBL and its partners in the arid and humid subtropics and tropics.

3 Organic agriculture is sustainable and diverse

Humid tropical conditions such as hot temperatures, high annual rainfall and poor soil properties require appropriate agricultural practices. The tropical rain forest as an original ecosystem with its closed nutrient cycles and biodiversity serves as an ideal model concerning nutrient management and cropping patterns. The diversity of the production system is therefore of special importance in the tropics: simplified systems and monocropping harm soil fertility and the ecological balance to a much greater extent than in temperate climates because soil oxidation and pest population dynamics run permanently and more rapidly in the tropics. Heavy rainfall and high temperatures accelerate mineralisation of the nutrients and retard accumulation of soil organic matter. Tropical farming can only be sustainable if the primary rules of this natural system are respected.

Central to organic agriculture are promotion of soil fertility, conservation of biodiversity (e.g. native flora and fauna), production methods that are adapted to the locality and avoidance of chemical inputs. Use of such methods and cultivation of a diverse range of crops stabilize the delicate ecosystems in the tropics and reduce drought sensitivity and pest infestations. Organic production reduces the risk of yield failure, stabilizes returns and therefore enhances food security for small farmers' families. Organic farmers do not fight against the natural dynamics; on the contrary, they use them to their advantage. The perennial vegetation in the tropics offers excellent alternatives to simplified production systems:

1. Agroforestry: agricultural production in forestry systems and under shade trees.
2. Intercropping: a combination of two or more crops on the same plot and at the same time.
3. Rotation: one crop is followed by another crop, preferably from a different botanical family.

In 1997, the Cuban Ministry of Agriculture started a project in cooperation with FiBL, local traders and investors (ASI, Agricultural Services and Investments) with the objective of developing the production and marketing of organic citrus products, tropical fruit, coconuts, sugar, coffee and cocoa. FiBL and the Cuban Institute for Tropical Fruit Production (IIFT) coach the farmers and agricultural employees during the conversion process. Nine years on since its launch, this project now has more than 2000 participating farmers and covers more than 6000 ha of land. Most farmers are located in the eastern and central provinces. The large-scale cooperatives in the central provinces have specialized in a few products, while the small mountain farmers' cooperatives produce a range of agricultural goods in agroforestry systems.

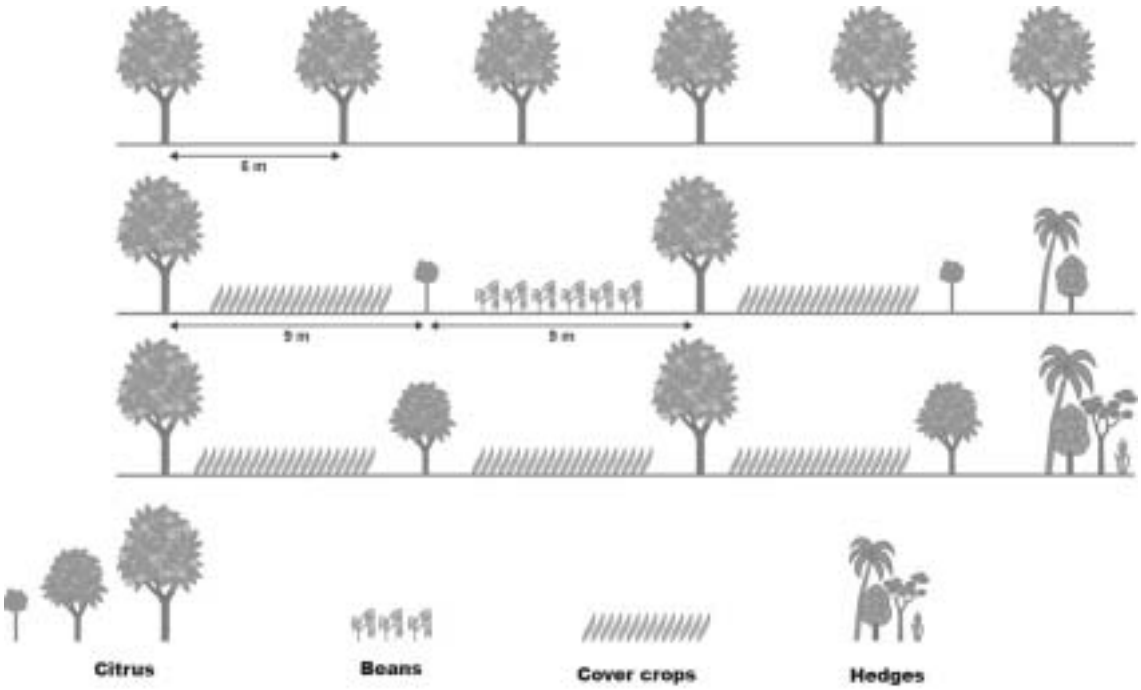

Chart 2: Conversion of an existing citrus orchard into an intercropping system

Picture 2: Agroforestry is a centrepiece of organic agriculture in the tropics. The cooperative "El Jobo" in Cuba applies this system with success: besides the cash crops coffee, cocoa and grapefruit, the farmers of El Jobo plant a large number of shading trees (Inga, Erythrina, Leucaena, etc.) and self-sufficiency crops (banana, beans, potatoes etc.). Agroforestry systems result in greater stability in the agro-ecological system, improve soil fertility, add nitrogen to the soil (N-fixation), protect the soils against erosion and weeds, add large amounts of organic matter by distributing leaf litter, and keep the soil humid by providing the area with shade and covering it with mulch. Agroforestry creates a high diversity of plants and micro-climatic effects; it is a very sustainable production system.

One of the most important tasks on the road to organic production is to identify strategies to increase the diversity of the production system. Organic farmers in the tropics therefore combine the systems referred to above to achieve an optimal mixture of diversity in space and diversity in time. The Cuban example shows how

the diversity and sustainability of the system can be increased step by step in the conversion process of citrus plantations (see chart 2):

1. Increase the distance between the rows of citrus trees from 6 to 9 metres, cutting down several rows of citrus trees. Lower-density plantings are better adapted to the organic production system; they increase ventilation and light interception and thus decrease disease pressure. Lower tree density gives space for crops in the alleyway between rows.
2. Plant young trees between the rows. At the same time, intercrop beans for self-sufficiency and leguminous crops for fodder, or just cover crops, such as *Neonotonia wightii*.
3. Create a diverse mosaic of citrus units and other crops from an existing plantation: divide large plots (over 100 ha) into smaller plots of about 1-2 ha and plant hedges or other fruit trees along the plot borders.
4. Between the rows (in the alleyway) it may be possible to intercrop permanently with pasture (sheep), beans or other crops. However, this may be difficult in the case of older plantations where the trees are adapted to a certain type of management; in such cases, a step-by-step procedure is recommended (introduction of new crops and elements at yearly intervals), to allow the root systems of the citrus trees to adapt to new competition in the soil. For larger, mechanized organic farms it may be difficult to continue intercropping as soon as the newly planted citrus trees are in production. In such cases, cover crops may be more appropriate in order to avoid disturbances in citrus management.

4 Organic farmers conserve resources

The soils that are most predominant in many humid tropical regions are weathered ferralitic soils such as oxisols and ultisols. These soils are comparatively infertile, in other words, they are low in organic matter and have a low water-holding capacity. This causes drought stress and hinders crop growth between the rainy seasons, although the yearly rainfall amount is actually abundant. Large amounts of rainfall are often lost as run-off. This is especially the case in hilly areas and is the main cause of erosion and landslides. Soil and water conservation technologies therefore play an essential role in the tropics.

Organic farmers protect their soil from erosion by soil bunds and terraces, minimum tillage and contour cultivation. Planting cover crops, mulching, intercropping and agroforestry play an important role in protection against erosion and landslides, because their rooting system stabilizes the soil. Further, these technologies increase the organic matter content of the soil, which also has positive effects on water-holding capacity. Additionally, the vegetation cover conserves humidity by protecting the soil from direct solar radiation.

The fertility of tropical soils is highly influenced by their organic matter content. In the natural ecosystem of the rain forest, plant growth is vigorous and biomass is rapidly decomposed into humus and organic matter by soil organisms. Due to hot temperatures and high air humidity, organic matter is mineralised very quickly. To maintain the balance in the soil and to increase the organic matter content, organic farmers in the tropics cover their soils with dead or living vegetation. This covering biomass not only delivers organic material, but also protects the soil structure.

Organic matter also plays an important role in water-holding capacity, neutralizing acidity and enhancing workability of tropical soils.

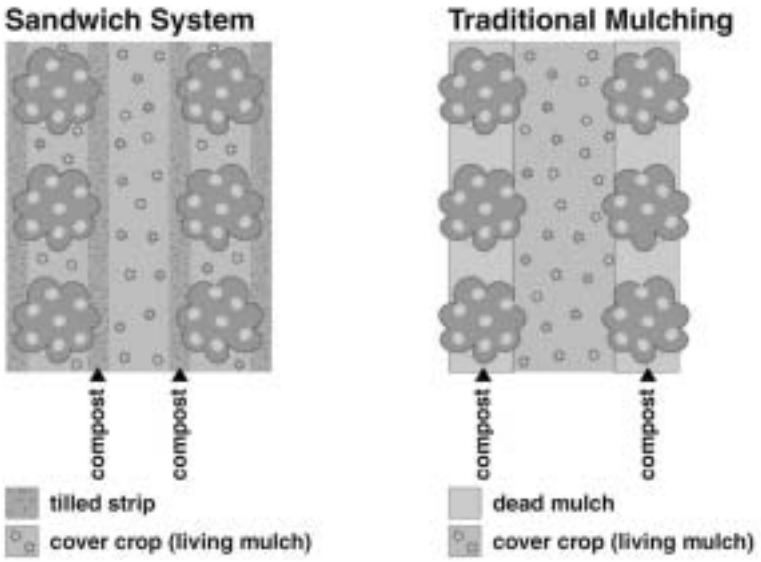

Chart 3: The FiBL sandwich system

The sandwich system (right; compared to traditional mulching on the left) consists of a small strip with cover crops directly under the tree strip and softly tilled strips to the left and the right of the cover strip. This system supports an efficient application of compost on tilled strips. The alleyway is planted with a leguminous cover crop. In dry areas, it is often not possible to have a permanent cover crop. In these areas, it is therefore recommended to plant a green cover crop during the rainy season, supplemented with dead mulch. This system achieves several aims of organic agriculture: soil cover with selected valuable crops, avoidance of erosion, target-oriented organic fertilization and avoidance of competition for water in the area of the fine roots.

Fortunately, in the humid tropics, it is not only decomposition processes that are rapid, but also composition processes. Animal manure, green manure and compost favour the composition processes and can replenish nutrients required by crops and supply the soil with essential organic matter. Additionally, legume plants are a highly valuable source of nitrogen. Closed nutrient cycles and efficient use of local resources – for example compost, dung or seeds – are especially important for subsistence farmers depending on few and limited assets. For this reason, organic agriculture means adapted technologies, e.g. for the farmers of the village Tekelioglu (near Izmir, Turkey).


Picture 3 and 4: The 32 organic farmers of Tekelioglu (near Izmir, Turkey), together with Rapunzel Turkey, initiated a project to improve soil fertility through production and application of high-quality compost. At the start of the project, farmers regarded animal manure as waste (picture on the left), and most nutrients were lost. FiBL, together with the organic producers of Tekelioglu, developed a 2 ha compost plate (picture on the right), calculated the mixture of locally available raw material (manure, straw, green material), trained and coached a local person to be responsible for compost production. Today, high-quality compost is produced on this plate for all the farmers of the village, and valuable local resources are used in an optimal way. In parallel, imports of organic fertilizers have been reduced and soil fertility improved.

Organic farming helps to conserve resources not only in the humid tropics, but also in the arid tropics: soils in the arid tropics vary widely according to the climatic and geological conditions. Predominant are aridisols, which are mostly dry mineral soils with a high pH, and may be calcic, sodic or saline. In spite of their morphological differences, all soils in the tropical drylands are profoundly influenced by two factors: little yearly rainfall and high temperatures. On one hand, high temperatures promote rapid soil organic matter oxidation. This, together with a low nutrient content, is one important reason for the soil's vulnerability to overexploitation. On the other hand, hot temperatures promote soil crusting, especially on bare land, which leads to impermeable soil surfaces. As a consequence, a large part of the rainfall is lost by run-off.

Organically managed dryland soils have a high potential to counter soil degradation and desertification as they are more resilient both to water stress and to nutrient loss. Water and nutrient retention capacity is increased due to a higher level of organic matter and permanent soil cover. Micro-organisms have a good feeding base and create a stable soil structure. Due to the resulting higher moisture retention capacity, the amount of water needed for irrigation can be reduced substantially. Several practical examples of organic agricultural systems in arid areas show how organic agriculture can help restore degraded lands to fertility.

Picture 5: Organic farmers in the tropics promote the balance between growth, decomposition and mineralisation. Organically managed soils have a high potential to counteract soil degradation as they are more resilient both to water stress and to nutrient loss. In the picture: organic farmers from Hazoua (Tunisia) discussing strategies to reduce water evaporation of the soil during a visit by FiBL in 2004.

Water collecting, water saving and soil moisture conservation strategies have highest priority in semi-arid and arid regions. As water is the limiting factor for crop yields, every drop of rain or irrigation water needs to be retained in the agricultural field. The following strategies are applied by organic farmers in Tunisia, for example, to improve water use efficiency:

1. **Increasing water infiltration:** Maximum infiltration of rainfall water through the soil surface and top layer must be achieved. Crust formation and clogged soil pores (often a result of soil erosion) that promote water run-off should be prevented. Application of compost, incorporation of plant material and mulching are important means of building up organic matter in the topsoil layer, which increases infiltration and improves the rate of water conservation.
2. **Reducing evaporation:** Reduction of water evaporation is essential. Mulches and canopies of trees decrease evaporation by shading. Hedges slow down winds, thereby also reducing evaporation. Regular hoeing of the topsoil interrupts the soil's capillary system.
3. **Water harvesting and collection:** To avoid water losses after strong rains, surface run-off is collected using bunds and ideally brought into the proximity of the plants. To avoid run-off from the field, the water is retained with micro-catchments and by field contour cultivation. Run-off water that has left the fields is slowed down by terraces, bunds on contour lines, dams and hedges and, if possible, collected.
4. **Efficient irrigation:** The application of furrow and drip irrigation instead of flood or sprinkler irrigation contributes consistently to a more sustainable use of water and reduces potential negative impacts of overuse of water.

5 Organic farmers produce more, better-quality products and achieve higher incomes

Organic agriculture is based on a combination of traditional, indigenous knowledge and modern agro-ecological research. In traditional farming systems, organic agriculture often enables a direct increase in production. In the long run, this is

even possible for high-input farming systems. Additionally, organic farms harvest more products on the same area, thus providing more food for the farmers' families and reducing the dependency on a few products in the market.

Picture 6: The farmers of the organic coconut cooperative in Baracoa (Cuba) produce more than just coconut in their agroforestry system:

- Cash crops: coconut, grapefruits, cocoa, honey;
- Self-sufficiency crops: rice, beans, maize, lettuce, yams, sweet potatoes, avocado, plantains and other vegetables;
- Creole pigs, chicken and sheep roaming freely;
- Wood from shade trees such as Inga, Erythrina, Leucaena.

Diversity in agricultural production and value added products increases income-generating opportunities and spreads the risks of failure over a wider range of crops and products.

Farmers usually experience a decline in yields after renouncing the use of synthetic inputs and converting their farm to organic production. Once the agro-ecosystem is restored and organic management systems are fully implemented, however, yields increase significantly. The development of yields varies, and depends on inherent biological factors and natural resources, the farmer's expertise and the extent to which synthetic inputs were used under previous conventional management. If conversion to organic takes place on the basis of a low-input system, which is often the case for poor farmers in developing countries, yields under organic management tend to be more stable compared to the previous management system.

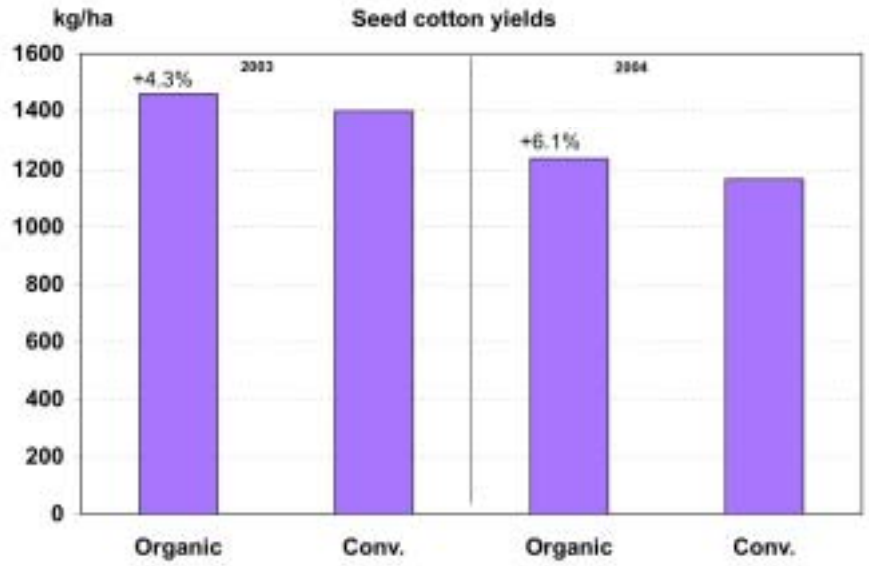

Chart 4: To investigate the economic viability of organic cotton farming and its impact on the livelihood of the involved farmers, the Swiss Agency for Development and Cooperation (SDC) and WWF Switzerland mandated FiBL to conduct a detailed study on organic cotton farming in the bioRe India project in central India. Over a period of two years, an Indo-Swiss research team collected and compared agronomic data from 60 organic and 60 conventional farms. One striking (though statistically not significant) result was that average cotton yields in organic fields were 4-6% higher in the two years of observation. The research results show that organic cotton farming does have the potential to be an economically sound business proposition even for marginal farmers.

If conversion is from a high-input system, yield losses are frequent in the initial years due to a number of interrelated factors: soil organic matter and biological activity take time to become established; many conventional farms are on a pesticide “treadmill” (El-Hage and Hattam 2002) that does not permit the establishment of beneficial organisms for pest, weed and disease suppression; fertility problems are common until full biological activity has been restored, nitrogen fixation has improved and beneficial insects and natural predators have become established.

The productivity of organic agriculture systems varies through the different stages of management:

- In transition from conventional to organic management;
- Organic management based on input substitution;
- Complete shift to a systems approach.

The need to secure farm economic viability in the short-term results in few farms achieving a systems approach (El-Hage and Hattam 2002).

Most comparisons of the efficiency of alternative production systems focus merely on the gross yield of marketable commodities. However, yield and productivity comparisons offer a limited, narrow, and often misleading picture of the different production systems. Profitability and long-term economic viability would be a better indicator for evaluating the benefits and limitations of a production system. Moreover, the multiple environmental benefits of organic farming (see previous chapter), difficult to quantify in monetary terms, are essential ingredients in any comparison. The FiBL long-term farming system comparisons in the tropics take this issue into consideration.

Organic farmers not only produce more crops, but also achieve more sustainable yields, better quality, and in many cases even higher yields and incomes, mainly due to the following reasons:

- In developing countries where organic agriculture is not subsidized, synthetic inputs are expensive and labour is relatively cheap, market-oriented organic farmers can achieve higher returns thanks to reduced production costs and diversified production. In many cases, price premiums are not a sufficient incentive to certify and market organic products. Farmers have adopted organic practices nevertheless because the avoidance of external inputs saves on production costs while yields are more stable.
- The risk of crop failure due to drought or pest damage is lower in organic production, mainly due to higher diversity and improved overall soil fertility (soil structure, biological activity etc.).
- Efficient use of locally available resources such as manure, seeds and irrigation water contribute significantly to more stable and even higher yields, especially if highly valuable local resources (e.g. animal manure) had been lost before conversion.
- More intensive cultivation (e.g. irrigation, crop care) due to improved financial situation.
- Lower pesticide residues than conventionally grown foods (El-Hage and Hattam 2002). However, organic foods are not pesticide free, due to many factors beyond the control of the organic farmer, for example pesticide spray drift from adjacent fields or soil or irrigation water contamination.
- Organic farming can contribute significantly to improving the livelihood of smallholders, as it generates higher incomes and involves less risk. Organic farming therefore motivates farmers to invest in their future: in capacity-building, in production, processing and marketing, in manpower and in their family.

6 Organic products provide market access and create added value

Certified organic products provide access to attractive local and international markets for developing countries, while the producers generate higher incomes. In addition, due to long-term contracts, income is generated more continuously than in conventional trade: To guarantee a fair share of the international organic trade

benefit to those contributing most to the production of food, trade must include social regulations. For this reason, numerous organic products in developing countries also embrace social standards in accordance with fair trade labels such as “Max Havelaar” or “Transfair”.

For example, conventional producers in Tunisia are selling most of their products as “no names” to a mass market without a label of origin. Only very few consumers in Europe know that a large share of so-called “Italian” extra virgin olive oil is actually of Tunisian origin. The Tunisian Ministry of Agriculture aims to liberate its producers from this dependency and in 2002 initiated a diversification programme in which organic agriculture plays an important role. One objective of the project is to provide Tunisian producers access to the local and international organic market and thus enable Tunisian products to create their own image. Ultimately, this strategy should provide Tunisian farmers with new income opportunities and higher added value for their products.

Picture 7: In the context of a FAO-funded project, FiBL contributed to developing a strategy and an action plan for the development of organic agriculture in Tunisia. A core issue in this action plan is promoting the local and international market for Tunisian products. The project launched organic market initiatives in several multi-stakeholder-workshops. Today, important organic products from Tunisia include: couscous and pasta for the local market from the family enterprise “Napolis”; Deglet Nour dates from Hazoua oasis for export to Europe, olives from Tabarka with the original label “Biomama”, mainly for the local market, and olive oil from Sfax, now successfully exported as “extra virgin olive oil from Tunisia”.

Picture 8: Lebanese consumers are quality-conscious and sensitive to regional provenance. The organic market initiative “Wadi El Tayim” is a women’s cooperative that produces Lebanese specialities using artisan processing techniques. Their main markets are Arab communities abroad, familiar with the much-valued Lebanese cuisine.

In spring 2005, the Swiss State Secretariat for Economic Affairs (seco) mandated FiBL to implement a project for the development of organic agriculture in Lebanon. This project pursues two main strategies: founding a Lebanese-owned certification body, Libancert, and developing the market for organic produce. For the latter strategy, a multiple-target approach was chosen. As a first step, the stakeholders in organic agriculture were brought together under the umbrella of the newly founded Association for Lebanese Organic Agriculture (ALOA). The tasks of the association are to provide market intelligence to the operators in the organic market and to foster demand for organic produce. The second step is to support several organic market initiatives that are expected to have a significant impact on the development of the market for organic produce. Despite all the setbacks of the war, the organic movement in Lebanon will fight to continue its development, with support of seco and FiBL.

Picture 9: A group of kaki producers in the region of Valandovo, southern Macedonia, has converted its production to organic methods and has formed an association. This allows the group to gain self-confidence and facilitates access to larger markets for their products; this in turn may positively influence their incomes and socio-economic conditions. They receive advice on production techniques and marketing strategies. Local consultants have been trained in the context of a FiBL project in Macedonia aimed at developing organic agriculture in the country as a whole. It is financed by the Swiss Agency for Development and Cooperation (SDC). The project offers knowledge transfer to the government and to teaching institutions as well as to farmers' organizations and market partners.

7 Organic agriculture raises self-confidence and mobilizes new partnerships

Very often, conventional agriculture puts farmers in a situation of high dependency on agro-industry and its high-tech solutions, which are difficult to understand. Organic agriculture profoundly respects indigenous knowledge, women's knowledge and local solutions. Producers thus gain control over the production cycle and increase their self-confidence. Local and international organic producers play an active role in advancing their production methods and in developing standards.

Developing organic farmers' organizations, standards, certification systems, extension services, education, research and markets brings producers together in a new manner. Stronger partnerships within the organic community enable better connections with external institutions. Such communities are in a stronger position to demand and assert their rights and to maintain or improve their economic position.

Picture 10: The development of a strategy and an action plan for organic farming in the context of the FAO project in Tunisia referred to above brings all stakeholders of the organic value chain together: farmers, processors, traders, certifiers, researchers, advisors and authorities. One of the main challenges is to develop an organic movement from rather isolated producer and trader initiatives. The project aims to create new partnerships at national and international level by empowering producer groups, developing farmer field schools, creating a national organic farming association and further developing the recently established "Centre Technique de l'Agriculture Biologique" in Sousse.

By building on local knowledge and using local services such as organic extension and certification programmes and local market development, the approaches applied in organic agriculture revitalize traditional customs and local self-reliance. Employment opportunities and higher incomes encourage farmers to remain in agriculture and to invest in rural communities. Producer cooperatives have better access to markets and can negotiate their needs as equal partners in the food supply chain. A growing number of certified organic small-scale farmers organized in democratic cooperatives meet fair trade requirements: farmers are paid adequately to cover costs of production and receive a social premium to improve the quality of life.

Picture 11: India is already exporting a range of organic products such as tea, spices, cotton, rice, etc. The Indian domestic market is promising, although still small. To gain consumers' confidence, valid certification is an essential prerequisite for marketing. In 2001, a group of organizations and corporate bodies took the initiative to set up the Indian Organic Certification Agency INDOCERT (www.indocert.org). It has become an important element of the organic movement in India and mobilizes new forces and partnerships. In 2003, together with other partners, INDOCERT created the International Competence Centre for Organic Agriculture (www.iccoa.org), a service provider for networking, capacity-building and market development in the organic sector in India. Among other activities, ICCOA implements the Indian Organic Market Development Project (2005-2007), which focuses on the following main areas: awareness-raising, market intelligence, developing organic market initiatives, and the India Organic trade fair (www.indiaorganic2006.com). Both projects are funded by the Swiss State Secretariat for Economic Affairs (seco) with technical support from FiBL.

8 Investments to overcome constraints on the road to organic farming

The above discussion provides evidence that organic agriculture is a great opportunity for poor countries and can contribute substantially to sustainable development. The target-oriented implementation of organic farming enables efficient use of locally available resources, which is a central element of adapted technologies. Organic agriculture also presents an opportunity to achieve socio-economic sustainability, because it is committed to:

1. participatory technology development
2. fair trade
3. autonomy and self-determination.

Nevertheless, there are some critical questions towards organic farming from the point of view of development policies:

1. “Brussels, Tokyo and Washington” are defining organic agriculture worldwide. Such desk-created” standards may create trade barriers for some developing countries (Vogl, Kilcher and Schmidt 2005). How can producers from poor countries increase their participation in global standards development and how can they define their own locally adapted standards in order to increase sovereignty and identification?
2. Inspection, certification and accreditation are becoming increasingly complex and thus a greater hurdle for small farmers in developing countries. The creation of local, indigenous certification programmes and smallholder group certification, which builds on the presence of an internal control system, are important solutions. How can the standard-setters in government authorities, IFOAM, UNCTAD, FAO and private labelling programmes consider this issue in their discussions on harmonization? How can they include “accreditation” in current discussions on harmonization?
3. Many small farmers in poor countries do not have access to the organic market. How can authorities and market partners from richer countries make the organic market more transparent and improve market access for small farmers from poor countries? How can they reduce especially non-tariff trade barriers such as organic certification?
4. Income and benefits for organic trade are not always equally distributed. How can organic trade guarantee a fair share of consumers’ expenditure to all participants in the value chain, especially to producers? Is certified fair trade the right and only answer to this question?
5. Organic agriculture is a know-how-intensive farming method. To be competitive, organic farmers need to experiment with new techniques, and must manage land, labour, capital and innovations quite differently from conventional farmers. How can research and development improve access for small farmers to this know-how and to specific inputs, such as seeds and biological methods of pest control?
6. Does organic agriculture reach the poorest of the poor? Are other models such as “low external input systems” more appropriate for this target-group?

The greatest constraints faced by poor farmers on the road to organic agriculture are lack of knowledge, access to markets, certification, agricultural inputs, and lack of organization. Greater investment in practice-oriented research, capacity-building and extension, accessible local certification schemes and harmonized standards, organic market initiatives, fair trade relationships and inspiring partnerships within the movement can help to overcome these constraints. Developing these tools and services in such a way as to enable participatory learning processes will lead to sustainable innovation within the rural communities and thereby contribute to sustainable development.

FiBL develops organic agriculture globally

The mission of the Research Institute of Organic Agriculture (FiBL), founded in 1973, is to contribute to the development and improvement of organic and sustainable agricultural practice worldwide. FiBL does this through:

- Practice-oriented research and development to improve understanding of organic farming systems and of farming's environmental, economic and social impacts.
- High-quality extension services to make the latest organic farming methods easily accessible to farming communities, public and private-sector extension services and other education centres throughout the world.

FiBL supports partners in markets in transition and emerging markets to make organic agriculture a viable alternative. The desire to find ecologically and economically sustainable solutions must be rooted in the region or country itself. FiBL projects therefore are based on local initiatives, local ownership, local knowledge and community-based networks, promoting the refinement and dissemination of this knowledge. Major activities of the FiBL International Cooperation Department include:

1. Development and evaluation of adapted technologies and local solutions for organic farming practice;
2. Conversion planning, workshops and training sessions, training manuals and technical leaflets, curricula development and internet platforms;
3. Development of local and international markets and value chain development, linking demand and supply, quality management and processing technology.
4. Development of certification, standards, strategies and policies for organic farming.

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