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ORGANIC AGRICULTURE AND ACCESS TO FOOD

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ISSUES PAPER: ORGANIC AGRICULTURE AND ACCESS TO FOOD

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I. INTRODUCTION

1. Food security is defined as a condition in which “all people, at all times, have physical, social and economic access to sufficient, safe, and nutritious food which meets their dietary needs and food preferences for an active and healthy life ... Food insecurity exists when people do not have adequate physical, social or economic access to food as defined above” (FAO 1996). “Food is accessible when individuals have access to adequate resources and entitlements for acquiring appropriate foods for nutritious diets. Entitlements are defined as the set of all commodity bundles over which a person can establish command given the legal, political, economics and social arrangements of the community in which they live (including traditional rights such as access to common resources) (FAO, 2006).

2. If food insecurity is a knot of interrelated problems related to lack of access, then food security is a web of mutually supporting elements that strengthen productivity and independence over time. Improvements must occur on many levels simultaneously, yet in policy environments that are often unresponsive. Given the complexity of this task, organic systems have a great potential to increase food access, reduce risk and build long-term investments that contribute to food security. A development approach focused on the means to produce or purchase food is urgently needed, especially for resource-poor and indigenous farmers, many of whom live in fragile environments, as well as for rural populations whose livelihoods are increasingly challenged by macro-economic factors.

3. Access to food involves entitlements for producing or acquiring food, which are discussed in this paper under three main headings:

- Access to productive natural resources including land, water, agroforestry, biodiversity, seeds and other genetic resources, and environmental services: using organic agriculture, resources for productivity and long-term sustainability are managed simultaneously; these include resilience under environmental stress and climate change. Efficient use of local resources is also more financially sustainable for farmers, reducing costs and improving net incomes.
- Access to diverse types of knowledge, including traditional and indigenous knowledge, current best practices for organic agriculture from other locations, locally relevant research and site-specific observation: knowledge engages the power of human creativity, skills and experience towards more reliable access to food, leveraging all local assets towards the community’s most critical needs.
- Access to domestic and international markets in which fair prices and stable, long-term contracts can be obtained: market opportunities are most often realized through the formation of effective farmer groups, which can leverage their efforts towards both improving local food supplies and maximizing returns from surpluses. Increasing production to meet expanding markets improves local labor markets and returns on labor costs. In addition, fair and meaningful urban, non-farm employment opportunities are urgently needed to ensure access of urban poor people to food entitlements.

4. Successful projects combine these elements to promote food security, self-sufficiency and self-reliance (such as income generation from non-farm sources to purchase food), through greater community control of agriculture and food systems. Impacts may be seen at the household, community, regional, and national levels.

5. Ensuring access to food at the household and family levels means that there are adequate amounts of nutritious and locally appropriate food accessible to all regardless of gender, age or family status. Ensuring access at the regional and national levels requires policy reforms along with significant financial and institutional support to rural infrastructure improvement, local capacity-building and empowerment of rural communities aimed at enhancing local food security.

6. While there are still only a limited number of global studies documenting the contributions of organic agriculture to increasing access to food, their findings provide a broad range of important insights, which highlight the urgent need for additional research and documentation of issues including:

- the role of organic agriculture in rural poverty alleviation (UN-ESCAP 2002);
- the role of non-certified organic agriculture in subsistence food systems (Scialabba and Hattam 2002); and
- the agro-ecology response to multinational corporations (Parrot and Mardsen, 2002).

7. The International Fund for Agricultural Development (IFAD) has explored the link between organic agriculture and poverty reduction in Asia, South Asia and Latin America (see enclosed Case Study; IFAD 2002 and 2004). Julia Johannsen and colleagues at the German NGO Forum on Environment and Development have discussed the flexibility of organic systems for reducing hunger in a variety of environmental and socio-economic situations (Globale Gerechtigkeit Ökologisch Gestalten 2005). Jules Pretty and colleagues at the University of Essex have described how organic agriculture makes a lasting investment in all forms of 'local capital' (Hine and Pretty 2006). In addition, the SAFE-World database at the Centre for Environment and Society at the University of Essex tracks case studies in organic agriculture, providing a valuable reference to projects in developing countries.

8. There has also been growing attention to the common ground between rural development and organic agriculture, chiefly around the issues of food security and environmental sustainability. FAO's overview papers noted the connections between organic agriculture and biodiversity (Scialabba, Grandi and Henatsch, 2003) and between organic agriculture and ecoforestry in protected area management, describing the links between sustainable natural resource management and the food supply (Scialabba and Williamson 2004)

9. While more systematic analysis is necessary, it appears that organic agriculture can make a unique contribution to improving access to food within market systems under certain conditions, and more significantly outside mainstream markets where most hungry people are found.

II. ACCESSIBILITY COMPONENTS

A. PRODUCTIVE RESOURCES

10. The essence of organic agriculture is its reliance on local assets. These include productive resources such as land, water, forests, biodiversity, and environmental services such as pollination, predation, and nutrient cycling. Access to land includes tenure or the ability to secure long-term lease or ownership of productive growing areas to improve soil fertility and other conditions through

organic methods. In turn, organic methods can increase efficiency and returns from the land, thus assuring farmers' ability to maintain tenure over time. This is the case made by the Southeast African-American Organic Farmers network, a new farmer organization in the southeastern United States (C. Hayes, personal communication, 2007).

11. Access to water implies sufficient clean water for agriculture and for food preparation and processing. Agroforestry provides collecting areas for food and food ingredients, and therefore plays an important role in facilitating access to food. It also serves two ecological roles: providing habitat for beneficial insects and birds; and enhancing water retention as degraded land is recovered.

12. Biodiversity includes indigenous wild animals, plants, birds, insects, and fish; it also incorporates agricultural genetic resources (such as plant varieties, locally adapted livestock and poultry breeds) and managed aquaculture stocks. Environmental services are the ways that organic agriculture is able to benefit from existing natural processes while conserving these processes for future food production. One example is the control of pests with beneficial insects instead of relying on costly and toxic pesticides, which kill beneficial insects as well as targeted pests.

13. By investing in soil fertility, utilizing local resources, and working with rather than against natural processes, organic agriculture increases the cost-effectiveness and resilience of food production. Water efficiency and crop diversification are also essential in this system. The result is reduced risk, which is more critical to food security than are maximum yields.

Household and Community Impact

14. When farmers have access to a broad range of productive resources and use organic systems, they are able to increase total yields, diversify their crops and improve their household incomes while ensuring the long-term sustainability of essential resources. Greater productivity coupled with lower input costs and reduced debt mean higher net incomes for households. Family and community members can meet the greater need for labour, increasing total community income. One improvement supports another, drawing on farmers' creativity, traditional practices, and leadership to direct research and other supporting resources towards the most urgent local needs.

15. A growing body of case studies supports the link between the introduction of organic practices and an increase in total farm yields, with increased access to food. Among them is the Tigray Project in Ethiopia, initiated by the Institute for Sustainable Development (ISD) (Araya and Edwards 2006; Beley 2000). Based on the principles of farmer control and ecological land management, ISD has created a local food system that uses diverse crops (including a revival of pulses), produces high yields, optimizes livestock production, utilizes indigenous biodiversity and draws upon both indigenous and scientific knowledge. As a result, total farm yields, diet quality, food access, and net incomes have all increased among thousands of farmers in more than 80 villages. The project also illustrates two less-often noted elements of long-term change: the institutionalization of new practices through the participation of stakeholders and the importance of advocacy for farmers' rights, such as that to protect biodiversity.

16. Another example of diversified, integrated, and intensified organic agriculture is the World Fish Center fish pond and home crop production system in Malawi and elsewhere (Hine and Pretty 2006, Scialabba and Hattam 2002)). Access to food – including fish, with its unique health benefits – has been increased dramatically. The project features farmer control over fish genetic stocks, on-site

evaluation of resources and the continual on-farm mapping of resource flows and collaborative efforts of farmers and scientists.

17. Another good example of organic agriculture strengthening local food security and access is the Thailand-based Green Net rural development programme (Green Net-Earth net, 2007) which uses organic agriculture as an organizing platform. Family members must make decisions together regarding conversion of farms to organic production, and they must commit to enhancing and maintaining food plots as a requirement for organic certification. Family members are also trained, and in turn train others throughout the community to enhance the project's impacts.

Regional/National Impact

18. Farmers with access to productive resources can produce positive impacts far beyond their household and communities, including the stewardship of both wild and agricultural biodiversity. Biodiversity for food and agriculture encompasses all wild plants and animals, including trees, birds, fish, insects, fungi, soil microorganisms, and other organisms in or near agro-ecosystems as well as domesticated crops and animal breeds that have been selected for use in agriculture.

19. Genetic resources are an irreplaceable foundation for adaptation and improvement in agriculture. Use of genetic diversity is a time-tested strategy for reducing the risk of crop failure, as some varieties and crops are more resilient than others. Different crop varieties may also serve different dietary functions. While conventional agriculture tends to focus only on the highest-producing varieties of plants and animals, considerably reducing the genetic base of agro-biodiversity worldwide, organic agriculture's emphasis on adaptation places high value on locally-adapted stocks because of their ability to succeed in specific micro- and macro-environments.

20. Organic practices produce a profound external benefit: the conservation of diversity. It is only in organic agriculture (or similar high-knowledge and low-input sustainable systems) in which identification, use, evaluation, and conservation of a range of locally adapted, hardy, heirloom varieties of plants and animals is encouraged. Diversity must be used in order to be saved: only through its use can its value be demonstrated and it can continue evolving to fit new agricultural needs and environmental changes.

21. This is especially significant at a time when an estimated 20 percent of the world's domestic animal breeds are at risk of extinction (FAO DADIS 2006, Fowler and Mooney 1990). The important link between farmers and genetic conservation is recognized by the International Treaty on Plant Genetic Resources for Food and Agriculture. Ratified in 2001, the Treaty recognizes the contributions made by farm communities in conserving and improving plant genetic resources. It also recognizes their rights to participate equitably in benefit-sharing and in national decision-making about plant genetic resources (FAO 2007).

22. MASIPAG, a farmer-scientist partnership based in the Philippines, makes genetic conservation a high priority within its sustainable development programme. Through its collection, identification, multiplication, maintenance, and evaluation (CIMME) programme, indigenous varieties of rice, maize, and some vegetables are conserved directly by farmers. Livestock conservation is also underway, including the improvement of locally adapted stocks. The organization's description includes this statement: "With the practice of organic agriculture, the full genetic diversity of rice can be conserved, along with the related indigenous knowledge and cultural practices. This diversity is the

heritage of farmers' communities, who can continue the work handed down by generations; meeting their local nutritional, social, and economic needs through breeding and selection" (Cruzada 1998).

23. One benefit of using indigenous genetic resources is their potential for superior productivity under low-input conditions. Selection of locally adapted seeds and breeds for increased production is more effective than selecting imported, productive varieties for adaptation. Traits for adaptation respond relatively slowly to selection, requiring many generations to become fixed; this is especially true of adaptation to extreme environments. An example is the Gulf Coast native sheep of the southeastern United States. This breed, derived from imports of Spanish sheep beginning in the 1500s, has been shaped by natural selection to tolerate an environment that is usually very difficult. These sheep demonstrate heat tolerance, parasite and foot-root resistance, reproductive efficiency and longevity under low-input management, including low-quality forage.

24. Selection is now underway to improve meat performance while retaining environmental adaptation. Preliminary experience with Damara sheep, indigenous goats, and Nguni cattle in South Africa has led to similar conclusions (Sponenberg et al. 1994; D. Sponenberg, personal communication, 2007). A contrasting example comes from Cuba, where had a dairy herd composed of North American Holsteins, which had been selected for high production under high inputs was raised in the 1980s. When a shift to low-input, organic farming had to be made in the 1990s, these cattle could not survive, much less be productive.

25. In Indonesia, indigenous rice genetic diversity was nearly lost when planting of local varieties was forbidden in 1965. The NGO Puspaindo has been working with farmers since the 1990s to locate, conserve, and evaluate local varieties of paddy rice, as well as to encourage cultivation using organic methods. Observation suggests that locally adapted varieties can be very productive. The organization also collects and shares indigenous knowledge on the production and processing of this rice, and on the cultural traditions surrounding it (Sismanto 2002).

B. KNOWLEDGE

26. It is critical to understand that organic agriculture is a knowledge-based approach to agricultural problem solving as opposed to the product- or input-based approach of conventional systems. Organic agriculture requires asking specific questions such as 'how has this particular pest or disease become a problem?', then searching for the answers. It requires an understanding of farms as entire systems and farmers as capable experimenters and innovators with a wealth of knowledge and experience (Von der Weid, 2007). Organic agriculture should not be seen as a recent creation from northern countries, but as the ongoing adaptation of traditional knowledge and its validation internationally with modern science (Sligh 2002). The agro-ecological science to draw out critical patterns in this process is still in its infancy.

27. Jules Pretty and colleagues use the term 'human capital' to describe the "total capability residing in individuals, based on their stock of knowledge, skills, health, nutrition ... Peoples' productivity is increased by their capacity to interact with the productive technologies and with other people. Leadership and organizational skills are particularly important in making other resources more valuable" (Hine and Pretty, 2006).

28. In the conventional agricultural model, knowledge is seen as the domain of off-farm experts instead of being held by farmers. It is tightly focused around: the most productive plants and animals; a specialized set of inputs (chemical-based fertilizers and pesticides, which are goods requiring credit to purchase or subsidies to distribute); and the free flow of fuel and water. Emphasis is placed on the system's transferability and local genetics are generally dismissed. Farmers in conventional systems are often labeled as 'end users' of the technology transferred, and existing knowledge is seen either as irrelevant or an obstacle to progress. As a result, knowledge in the conventional system tends to be hierarchical, deep but narrow and site-general rather than site-specific.

29. Increasing farmer and market dissatisfaction with the rising environmental costs of conventional agriculture and economic stresses are helping to drive the growth of organic markets, leading to the conversion of millions of hectares to certified organic farmland, permanent pasture and collecting areas. The continued expansion of organic agriculture is still limited in most countries, however. This transition has been made primarily by individuals and communities, with little or no institutional support from governments or the agriculture establishment. NGOs have been instrumental in training farmers as part of organic agriculture outreach programmes or, increasingly, as part of poverty-reduction efforts. The chief obstacles to expansion continue to be lack of knowledge about organic methods such as intensive cultivation, lack of information about certification and market access, and lack of site-specific research to address farmers' needs.

30. When NGOs from the North first brought information about certified organic agriculture to the South, it was based on formal certification standards and practices designed for their own temperate regions. This posed many challenges to developing country farmers. While organic systems have always emphasized the principle of reliance on local resources, organic agriculture must be further adapted to the resources of the tropics and sub-tropics in the developing world. This requires the continual involvement of farmers, local NGOs and universities, which have their own baselines of knowledge and experience. Partnerships of these groups, in the form of peer-based and farmer-centered programmes, are allowing organic agriculture to live up to its mission as a locally based system and evolve in all parts of the world.

31. Organic agriculture continues to evolve into a broad, diverse, and geographically adapted system. The concepts of participatory and grower-group certification systems are prime examples of continuing innovation, which are helping to mitigate some of the financial and market barriers faced by small farmers in developing countries. Such approaches can overcome economic barriers by applying local skills, knowledge and organizational development to facilitate access to much-needed local and valuable northern market opportunities. However, attaining international acceptance of these innovative strategies remains a challenge.

32. The Center for Indian Knowledge Systems, an India-based NGO, describes this goal with the following statement: "We strongly believe that the future lies in understanding and harnessing the potential of indigenous knowledge systems and integrating them into the mainstream of scientific, industrial and everyday thinking. Only then can we build a strong and self-reliant society" (CIKS, 2007).

Household Impact

33. One way to access to food is for more people to become farmers and gardeners, growing more food where it is needed. This is being accomplished by the creation of new intensive agriculture projects through investment in small-scale gardening in urban and rural areas. Training in organic

practices – such as increasing soil fertility, diversifying crops, intensifying production, and incorporating poultry, rabbits and other micro-livestock, goats, and even dairy cattle – is particularly beneficial to resource-poor households, especially women who only have access to kitchen gardens. Total yields are increased and may even include surpluses, which can be sold to generate income. In addition, when women are given opportunities to acquire the skills and knowledge in food production, they are able to assume more control over the household food supply and contribute their own skills and creativity to increasing it.

34. In Chile, organic vegetable garden systems developed by the Center for Education and Technology (CET) and by CET SUR, have demonstrated that even small gardens can be used to achieve year-round household food self-sufficiency, surpassing the productivity of conventional farms (Scialabba and Hattam 2002; Scott 2003; Shaw 1999). In addition, heirloom seeds of the Mapuche people are being used, conserved and shared, along with supporting indigenous knowledge.

35. In Havana, Cuba, urban organic gardening projects led by the Grupo de Agricultura (Funes-Monzote and Monzote 2001; Kost 2004; McKibben 2005; Rosset) have increased access to food through the intensive use of garden spaces. During the financial collapse of the early 1990s, thousands of gardens were constructed in Havana. Technical support and gardening supplies, including seeds, plants, fruit trees, and compost, were provided by the Cuban Government. These gardens were organic by necessity as there were no chemical inputs available. Kitchen, neighborhood and community gardens produced approximately one half of the country's fresh vegetables, 38 percent of its non-citrus tropical fruits and much-needed employment for thousands of Cubans.

Community Impact

36. While increasing families' access to food remains critical, often the combination of farmer-to-farmer exchange and community-wide organizing catalyzes impact. Community-wide strategies to increase access to food are highly effective approaches that can build on local strengths, problem-solving skills, and experiences of participating farmers and their families to accelerate success. Actions may be formal through organized groups or informal through common activities focused on a local demonstration center; both have transformative effects. As IFAD's work in Asia has shown, it is the existence of farmer groups that makes or breaks the success of organic projects (IFAD 2005). These important organizations are platforms for sharing site-specific knowledge and experience, demonstrating and training in new techniques, and engaging in locally based research.-

37. The crucial role of communities is best illustrated by the efforts of potato farmers in the mountains of Northern Potosi, Bolivia to improve their livelihoods and maternal and child health. Working in partnership with the United States-based NGO World Neighbors, through its Bolivia Integrated Development Program, farmers were able to initiate research on indigenous potato varieties, including seed-size variations, spacing and cultivation techniques. They also adapted findings from another World Neighbors project in Honduras on the use of mucuna (velvetbean) to increase maize yields. While velvetbean does not grow in high altitudes, the farmers identified lupin as an alternative. Potato yields increased dramatically with the use of lupin, rising still further when sheep manure was added. Yields for the 2 000 participating farmers in 198 communities increased to the extent that cultivation areas could be reduced (Scialabba and Hattam 2002; World Neighbours 2007).

38. In Pakistan, the Sindh Rural Women's Uplift Group has an Organic Fruit Production programme based at the Panwhar Farm. The Group owns a 43-hectare fruit orchard that is managed organically and produces high yields of citrus and mango. According to Farzana Panhwar, Managing Director of the group, the high quality of produce has enhanced its price, and more income has resulted in a two to threefold increase in community food security. Innovations in fruit varieties and post-harvest handling are expected to further increase the value of the farm's crops. Training and employment of women have also increased (Scialabba and Hattam 2002; F. Panhwar, personal communication, 2007).

Regional and National Impact

39. In many regions, there are a few tenacious problems that must be resolved in order to improve food security over a large area. Control of pests is a particularly important issue for organic agriculture since local resources are expected to replace the use of broad-spectrum pesticides with the same or improved effectiveness at lower cost. Research conducted in Kenya and Uganda by African Insect Science for Food and Health (ICIPE) has achieved striking results with the vutu-sukumu ('push-pull') pest management system (Hine and Pretty 2006; ICIPE 2007). The system was driven by farmers' needs, the research utilized a multi-disciplinary approach and its application was enlightened by traditional practices.

40. Stem borers and striga (witchweed) are pests affecting maize, millets, rice and sorghum. These pests may account for maize losses of 15-40 percent in eastern Africa and 10–20 percent in southern Africa. When they occur together, they can cause the loss of an entire crop, threatening the food supply of 27 million people in the region. With the 'push-pull' approach, cereal grains are intercropped with silver leaf (*Desmodium* spp.) and molasses grass (*Melinis minutiflora*), which repel or 'push' the stem borers. Trap crops such as napier grass and Sudan grass, which are even more attractive to the stem borer than the maize or other crops, then attract and 'pull' the pests. This strategy creates significant increases in yields by reducing losses. *Desmodium*, a nitrogen-fixing plant suppresses striga and increases soil fertility. In addition, these plants are useful as fodder, which improves livestock health and enhances child health through increased milk production. ICIPE has trained a network of farmer-teachers, and over 3 000 farmers have begun to replace expensive pesticides with low-cost, knowledge-based, culturally appropriate practices based on an understanding of natural systems.

C. ACCESS TO MARKETS

41. Access to markets is essential for all farmers, as surplus crops can be sold to generate income. Domestic community, peri-urban and regional organic markets are expanding in countries such as Brazil, China, Egypt and India. In China, there is a rapidly growing market for 'green food', which is not organic, but grown with reduced chemical inputs. As Richard Sanders writes, "Given that these forms of agriculture reduce farmers' use of chemicals compared to conventional farming – chemicals which are costly to produce and environmentally degrading to use – they contribute to ensuring a more environmentally sustainable future for Chinese farming, post-WTO entry, whilst providing opportunities for farmers to enrich themselves at the same time: a 'win-win' state of affairs. This will remain the case, however, only so long as the state is prepared to create and reinforce appropriate institutional arrangements" (Sanders 2006).

42. In most developing countries, however, the international markets of Europe, North America and Japan have attracted the most interest. Gaining access to these markets – and the promise of fair prices and stable, long-term incomes – has made trade essential to improving incomes and livelihoods of many organic farmers. The challenge is assuring that this approach is balanced by the strengthening of local production and consumption cycles.

43. Access to global markets is a multi-step process requiring information and experience about crop and product selection, certification for import markets, quality standards, market timing, trade regulations, marketing contracts and several other factors. For this reason, success is best assured when farmers form groups that can advocate for their interests. This can also be accomplished through partnerships with NGOs that have legitimate trade experience, and through fair contracts with trading companies, food processors and other buyers.

44. Both domestic and global markets are important and can play complementary roles. As demonstrated by East Africa-based EPOPA (see enclosed Case Study) and Egypt-based SEKEM initiatives, it is possible to use organic agriculture to increase and diversify local food production, support local food supplies and tap market opportunities for value-added products. The key is to strike a balance these two markets.

45. As markets support organic expansion, there is often a ripple effect, spurring development of related enterprises such as those that supply compost, bio-pest and disease control stocks, seeds, plants, and other inputs, as well as crop-handling and processing facilities. These may not always be available, and they may be economically efficient only as an input-substitution transition (from synthetic inputs to natural inputs) before a resilient ecosystem is established that allows farmers to count on ecosystem self-regulation. Such ‘green’ businesses share the benefits of both domestic and international organic markets.

46. Currently, Europe and the United States account for over 80 percent of the rapidly growing organic market, now valued at US\$40 billion. This represents a significant market opportunity for farmers in developing countries as demand for organic tropical foods, medicines and other products continue to grow. However, many challenges still exist, including the need to build physical and information infrastructures, high travel costs, long distances to markets and the lack of adequate financial supports. In addition, since organic prices are neither institutionalized nor standardized, small farmers remain vulnerable to conventional downward pressures of market supply and demand, and the affects of market consolidation. Stimulating local market demand represents one of the most important long-term strategies for strengthening local food security and ensuring more equitable access to food. This can also reduce risk and support more stable and less volatile marketing of products.

47. Organic agriculture also enhances development of enterprises such as agro-tourism. For example, the success of the organic spice trade in Kerala, India has attracted the support of the State Government, which is now promoting organic farming through a programme called Organic Sustainability of Kerala. The tourism industry has in turn provided support, realizing the opportunity of branding Kerala as a ‘safe food destination’(Surendranath, 2003).

48. There are several organic agriculture and eco-tourism projects in Central America, including: El Triunfo Biosphere Reserve in Mexico where organic coffee production complements biodiversity conservation; organic cacao agroforestry in the Talamanca-Caribbean Biological Corridor in Costa

Rica where the transition to certified organic cacao has raised incomes, reduced pressure on the environment and slowed habitat loss; El Imposible and Los Volcanes National Parks in El Salvador where organic and shade coffees are being produced; and the possibility of organic agriculture development near the Monte Verde Preserve in Costa Rica (Scialabba and Williamson 2004).

49. It takes capital to develop new agriculture infrastructure such as roads and credit and savings systems, and enterprises such as processing and marketing systems. Much work remains in these areas, especially for ‘brick-and-mortar’ supports and training and education for farmers, bankers, lenders and rural development workers. Access to fair credit and support for locally owned regional food supplies and processing are essential to ensuring long-term local viability, economic stability and food security. While this true of all agricultural infrastructures, in organic agriculture these improvements benefit a broader community, with positive impacts on food and economic security.

50. While markets are most often thought of as opportunities for export, it is also necessary to consider the affects of imports of food on local production. Current trading practices may be based on predatory export/import policies such as the importation of subsidized foods from Northern markets, which undermines the ability of local farmers to obtain fair prices for their own crops. As a result, local production and market infrastructure is damaged along with local capacities to attain long-term food security and self-sufficiency. The potential of organic agriculture to produce more diverse crops with greater economic sustainability may protect countries from becoming trapped in such policies – if there is the political will to protect farmers and communities.

Household Impact

51. Maintaining family-wide, fair access both to the means of food production and to food for consumption is a critical component of food security. Organic projects that increase household income from new markets – while maintaining local household food production – represent a win-win trade scenario. To be fair, trade must be based on mutual positions of strength and need; it must raise incomes and enhance food security at both ends of the trading relationship.

52. With access to fair trade, household income can increase along with higher prices for indigenous crops that are inexpensive to grow or that grow only in a few regions. In Bolivia, Peru, and other Andean countries for example, farmers are growing organic quinoa for export (Bridges 2006). Quinoa is a highly nutritious, gluten-free grain used in a variety of processed foods in place of wheat or rice for the very rapidly growing gluten-free market. The high-altitudes of the Andes are ideal for quinoa, which does not thrive in other settings.

53. In Kenya, the Mount Kenya Organic Farm has improved food production for household and community supplies while producing certified organic borage for export (Hine and Pretty, 2006). This crop is inexpensive to grow, but its seeds can be cold-pressed into highly valued neutraceutical oil for export to Europe and the United States. Farmer groups market the product to Earthoil Kenya Ltd, generating an estimated US\$64 000 during the pilot year for the Nanyuki community of 80 smallholders. It is hoped that a market for organic honey will also be developed, as borage attracts large numbers of bees. The growth of the global market for organic medicinal herbs, many of which are indigenous to developing countries, creates another attractive opportunity for smallholders...

Community Impact

54. The most effective strategy for creating and optimizing market access is for small farmers to organize into cooperatives or other democratically run grower groups. These groups can leverage community production into a single unit and then advocate from a position of greater strength for appropriate certification, favorable contracts and fair prices. The organic grower group model allows for highly organized groups of farmers to save on costs by establishing internal organic certification systems, in which they pay only one certification fee for the entire group rather than for each of the individual members. Over 100 000 limited-resource organic farmers in Africa, Asia and Latin America have accessed northern markets through this creative strategy, many for the first time. This has translated into over US\$500 million in organic retail sales in the United States alone for such products as organic coffee, chocolate, and sugar (Equal Exchange, 2007). Partnerships between farmer organizations and NGOs are often especially powerful in creating mutually beneficial trade relationships and assuring that internal-control systems are fully functional. Winning global acceptance and organic accreditation is the key to expansion of this effective but challenging approach.

55. The Uganda-based Export Promotion of Organic Products from Africa (EPOPA) initiative has been a model in developing global markets for farmers in East Africa through the private sector. Founded in 1994 by the Swedish International Development Agency (SIDA) and implemented by Agro Eco and Grolink, consultancies based in the Netherlands and Sweden, EPOPA's mission is 'Development Through Trade'. Within the initiative, partnerships are created to link small farmers with global market opportunities. EPOPA provides the knowledge of trade processes and market potential, training farmers in crop production and handling; the farmers supply knowledge of local crops and techniques. Premium prices obtained for products enhance farmers' incomes. Organic practices used for export production are also improving household and community food production through higher yields and better quality food crops with resilience to environmental and financial risk (Burke, 2007).

Regional/National Impact

56. Facing the challenges of certification and market access, farmer and other partnering organizations have pioneered participatory certification systems which have significantly impacted organic producers around the world. The challenges include growing costs, complexity and burden of organic certification schemes that are tailored to international markets. Community members are trained in certification techniques, reducing external and third-party certification costs so that resource-poor farmers can access organic markets they could not otherwise afford. New legislation in Bolivia, Brazil, Costa Rica, and India is allowing accreditation of participatory guarantee systems for the domestic markets in these countries. This has significant potential for farmers in Brazil and India, where the domestic markets are large and increasing rapidly.

57. This model is also an effective way of organizing community support systems to re-link farmers with consumers. For example, the Brazil-based Ecovida describes its innovation as a participatory guarantee system for ecological and organic foods (Ecovida 2004). The network is characterized by group problem solving and communication, building upon the local certification system developed by French winemakers in early 1900s, who wanted to distinguish their products from those of less superior quality. Ecovida's principles include commitments to social equity,

solidarity, cultural values and community autonomy. Its goal is to create an environmentally and financially sustainable system that supports both local and global markets. One of its major challenges is to achieve recognition and accreditation by Northern governments, certifiers and their markets.

III. CONCLUSIONS

58. While the macro-economic barriers facing poor farmers cannot fully be resolved by any one production system, the use of organic agriculture to achieve food security continues to be controversial. In public debate, organic agriculture is framed as either the single most important answer or the worst possible path to be considered.

59. Perhaps this disparity arises from the ways food security is understood and how it is measured. High yields of individual crops do not assure that food reaches people, nor do emergency food systems create self-sufficiency. Organic agriculture can be seen as advantages when total household farm yields and nutritional impact are measured along with the cost-effectiveness of production. This is particularly the case when community benefits such as environmental sustainability, water and energy efficiency, conservation of diversity, labor markets, ecosystem resilience, farmer capacity and social stability are considered. Financial benefits include higher net incomes, higher wages in local labor markets and reduced debt.

60. With the limited number of studies available and the difficulties in scaling-up positive outcomes, it can be concluded that organic farming production systems are increasing access to food through improvements in:

- Productive resources – organic farms are managed for increased productivity and conservation of local resources, including land, water and biodiversity; organic production methods increase farm yields through low-cost and low-input techniques that not only improve food security but provide opportunities for crop diversification, which improves nutrition;
- Ownership and empowerment – organic agriculture supports farmers' access to locally-controlled resources such as seeds, breeds and food systems, supporting food self-sufficiency;
- Income and livelihoods – organic agriculture increases incomes by reducing external production costs including debt payments and increasing returns on labour;
- Knowledge – indigenous knowledge and experience are complemented by new production methods, participation in site-specific research, participatory education, farmer-to-farmer exchange and community building; and
- Poverty reduction and rural development – reversing the rural exodus through development of viable local agricultural enterprises.

61. The greatest advantage of organic production and marketing systems is the engagement of knowledge and creativity by farmers, their families and their communities. Some of the greatest benefits from organic farming are conferred to indigenous and resource-poor people who have the fewest opportunities and live in some of the most fragile ecosystems – the most vulnerable to hunger and most urgently in need of food security. Organic agriculture allows farmers to build on their own strengths to achieve sustainable access to food. This is not only the foundation of modern organics, but the basis for the continued survival of farmers in developing countries.

IV. RECOMMENDATIONS FOR ACTION

62. There are several constraints to the expansion and optimization of organic agriculture that must be addressed. Many of these factors specifically relate to organic agriculture while others relate to the larger context in which a transition to organic agriculture is occurring. Work is underway to meet these challenges, although much remains to be done.

A. POLICY MEASURES

63. There is need to accelerate mutual recognition among organic guarantee systems, including government-to-government and NGO-to-government organic guarantee systems, and global acceptance of participatory and grower-group models in developing countries: This would reduce the proliferation of multiple accreditation requirements and costs for accessing northern markets (USDA/NOP 2007); a multi-agency initiative is underway to provide policy recommendations through an international task force (FAO/IFOAM/UNCTAD 2007). In addition, there is an urgent need to protect organic guarantee options – and market access – for hundreds of thousands of resource-poor farmers around the world. Significant challenges lie ahead, including a recent decision to reject recognition of grower group systems for organic certifiers. If this decision is fully implemented, it will close American market to hundreds of grower groups representing over 100 000 small farmers in developing countries.

64. There is need to protect farmers' rights to seeds, to conserve biodiversity, and to enhance local ecosystems: this includes policy reforms as well as the expansion of geographically based indicators and specialty foods, which protect indigenous varieties and local food products through legally recognized labeling schemes. Efforts should be in accord with the International Treaty on Planet Genetic Resources (FAO 2007).

65. There is need for the rapid expansion verifiable, full-supply chain fair-trading practices linked to the growing international trade of organic products: such practices are an improvement over many current trading practices, which can harm local food security through predatory export/import policies that destabilize local markets by lowering prices.

66. Need to evaluate emergency food relief, nutrition and education programmes for potentially negative impacts on access to food. There is also a need to develop greater capacity for local and organic procurement.

67. There is need to increase organic farmers' access to local credit, markets and infrastructures: this includes lack of adequate or 'fair share' of financial and human capital to maximize opportunities and minimize the burden of debt. The 'organic fair share' should at least reflect and be indexed to the current and projected overall market share of organic agriculture.

68. There is need to strengthen the rights of indigenous farmers and encourage the exchange of knowledge among resource-poor farmers producing organic products: This can accelerate innovation and help to develop local skills, providing a foundation for improving access to food through local markets and enhancing food security for non-farming communities as well.

B. RESEARCH NEEDS

69. There is need for increased documentation of local success stories and research on local organic production and marketing needs: increased documentation and information sharing would provide the foundation for rapid expansion of site-specific, farmer-centered and community-based initiatives to provide technical assistance and transfer best practices to marginalized farmers in all parts of the world.

70. There is need for more systematic large-scale research assessments: more research is required to document the contributions and challenges of organic agriculture to increasing poor people's access to food.

71. There is need for educational and research-based training initiatives to meet the rapidly growing demand for organic products: special focus is needed on training farmers, institutions and civil-society partners to meet the specific challenges that organic farmers in developing countries face in accessing and participating in markets. Training credit, contracts, marketing, certification and regulatory policies is critically needed.

72. There is need for research, development and pilot testing of site-specific farmer- and community-driven entrepreneurial business incubators: this would rapidly expand local knowledge, infrastructure and business activities aimed at strengthening local food security through organic agriculture.

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CASE STUDIES

Contribution of Organic Agriculture to Poverty Alleviation in Asia and Latin America

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Introduction

IFAD's two thematic evaluations based on case studies in Latin America (2002) and Asia (2004) were conducted to understand the potential value of organic agriculture for rural farmers and to evaluate the role of organic agriculture as an option for development programmes. Specifically, the goal was to review practical lessons, to make recommendations for determining when and where organic agriculture could become a feasible project alternative, and to highlight key issues that must be considered at the design and implementation stages.

Within Asia, thematic evaluations were done with 14 case studies in China and India. In Latin America (Argentina, Costa Rica, Dominican Republic, El Salvador, Guatemala and Mexico), seven case studies were analysed in which small-farmer groups had been successful in adopting organic technologies and marketing of their products. In total, the study covered 14 farmer groups comprising more than 5 100 small farmers, each with about 2 ha of land who, in tota, cultivated more than 9 000 ha.

The thematic evaluations, done over several months, compared different organic management examples from many different agro-ecological zones with a primary focus on crop farming systems. A diverse range of agricultural products was analysed, including coffee, banana, cacao, vegetables, sugar cane, honey, etc. The diversity of products enabled the analysis of different production systems in terms of their technical and marketing challenges for small farmers.

Specifically, this project analysed case studies in which groups of small farmers in various countries were successful in adopting organic technologies and marketing their products. Information obtained from other examples and reviews of the global organic sector were also integrated into the final recommendations. Reports were reviewed by specialists in rural development, rural poverty and organic agriculture. External specialists were used to review and provide feedback on individual country reports.

To validate the findings further, workshops were organized for various stakeholders such as international organizations working with rural poverty and with organic agriculture, representatives of non-governmental organizations, producers, buyers and distributors of organic products. At interviews carried out after the workshop, members of the Core Learning Partnership (including FAO), provided their views on the study's findings and on constraints and problems that might be specific to the various regional contexts in which IFAD operates.

Results

Results of evaluations were summarized according to findings. The following explains some of them. Farmers' potential for success in organic management were strongly influenced by characteristics of

small farmers, including the technologies and production systems they had previously applied, their land tenure situation and household makeup.

- Farmers received higher prices for certified organic products although the premium received over the price of conventional products varied greatly. The type of relationship that farmers established with buyers played a key role in price margins, with higher prices being obtained when farmer organizations engaged in long-term relationships with buyers.
- Small farmers dominated organic production in all the countries in which case studies were carried out. Such a dominant presence suggests that small farmers may have some comparative advantages in organic production. First, most small farmers already produce more or less organically, using few or no chemical inputs. In addition, they are likely to experience a lower incidence of pests and diseases when they switch to certified production. Another important factor is that the technologies of organic production are labour intensive and require little investment. Finally, organic agriculture makes small farmers less dependent on chemical inputs that have to be purchased, which are priced higher for small farmers because of increased transaction costs in rural areas. Organic agriculture is also advantageous to small farmers because it uses their traditional knowledge.
- Organic agriculture provides advantages to the wider community, promoting erosion control, soil fertility and cover, biodiversity and a reduction in the use of potentially toxic chemicals.
- The health factor of not having to handle harmful chemicals is particularly important to small farmers.

For small and poor farmers, organic farming can be an effective risk management tool that reduces input costs, diversifies production and improves local food security. For rural communities, it can provide improved incomes, better resource management and more labour opportunities. In terms of agricultural competitiveness, organic agriculture meets the increasing demands for improved food safety methods and traceability that are becoming the hallmark of high-value agricultural trade. For governments, organic agriculture reduces the possibility of environmental contamination, reduces the use of chemical inputs (often imported) and minimizes public health costs associated pesticide poisoning. For nearly everyone involved in its production, processing and trade, organic agriculture simply earns more money.

Many factors were found to limit the success of organic agriculture. A few of these are highlighted below.

- limited domestic market channels for organic products,
- need for support systems for technology, initial financing for certification and input production, and marketing;
- lack of adequate technical advice (extension) on production technology;
- costly certification processes for small farmers and uneven certification systems that often lack the necessary checks and balances to ensure credibility;
- limited public investment in organic agriculture;
- lengthy conversion process that discourages many conventional farmers who thus would require various types of conversion support;
- insufficient supply of technologies and of professionals specialized in organic technologies;
- scarcity and high cost of organic fertilizers;
- need for farmers' organizations that can deal with complex organic issues;
- dependence on specific contracts or relationships with a limited number of buyers;

- lack of land tenure security, interfering with implementing land-conservation measures required by organic farmers and making farmers with unstable land tenure less likely to produce organic products.

Lessons and recommendations

Several lessons were drawn from the evaluations.

- The role of organic agriculture in development cannot be fairly assessed within the narrow economic terms of market premiums. More than merely providing higher incomes, organic agriculture has potential to contribute to long-term resilience and stability, particularly in terms of resource conservation, crop diversification, food security and a number of positive environmental externalities.
- Organic projects require that time be built into the process for farmers to test and learn new technologies and methods. Knowledgeable extension services are critical. Local know-how, especially from experienced farmers and knowledgeable elders, can smooth the transition and reduce risks. It is also important to provide farmers good access to sources of knowledge about the application of organic methods to their crops and agro-ecological conditions.
- Development policies must recognize the critical need to integrate professional marketing support.
- In countries with expensive and complex certification systems, it is important either to promote legislative changes to make the system friendlier to small farmers or to have some mechanism to subsidize the costs.
- Not all small farmers have ability to convert successfully to organic production. Projects should focus first on those likely to succeed and eventually incorporate other farmers. The most important capacities needed by small farmers who shift to organic production are: i) high farmer motivation; ii) good soil characteristics; iii) similar previously applied systems of production and technologies; iv) secure land tenure; v) availability of family labour.
- Farmer organizations play a key role in the incorporation of small farmers into organic production because they can: i) make it possible to take advantage of economies of scale through collective marketing; ii) train many small farmers and promote the adoption of new technologies; iii) organize monitoring systems; and iv) attract the help of government agencies and/or NGOs.
- NGOs have played the most influential role in the emergence of organic agriculture and have supported small farmer associations in adopting organic production methods and in selling their organic products. Selected NGOs with know-how and experience in organic production should be considered preferential partners for projects.

The results of this work highlighted the following needs for converting to organic farming.

- Establish networks of governmental, non-governmental and private sector professionals and organizations to gather and share information about the state of the art in organic production and facilitate connections among people in these networks to do business or to share experiences.
- Undertake other regional studies on the feasibility of organic agriculture as an alternative in projects targeting small farmers and on the handling of the constraints and problems that may appear when promoting organic agriculture in regions other than LAC and Asia, to corroborate findings. Such studies could pay particular attention to location-specific issues such as soil characteristics, dominant land tenure and production systems and government policies.

- Undertake research on whether or not organic agriculture is a lower-cost technology, and whether or not it promotes biodiversity.
- Undertake research on the value and dangers of subsidizing farmer operations during the transitional period.
- Undertake research on the extent to which programmes should focus on export markets. For small farmers, local markets would have major advantages over export markets because of lower volume requirements, easier nurturing of relationships with buyers, more flexibility and a wider assortment of products that could be sold. However, local organic markets are almost non-existent and, where they do exist, often lack regulation.
- Undertake research on the effects of organic agriculture on the health of producers, workers and the environment.

Conclusions

Organic farming systems embody many elements of sustainability that make them suitable tools to reduce poverty and improve food security including:

- support of long-term commitment to soil fertility, particularly addressing soil erosion and degradation or desertification;
- reduction of external energy consumption and water requirements;
- belief in knowledge-intensive rather than capital- and resource-intensive contexts;
- couples traditional knowledge with modern methods such as bio-controls and efficient nutrient management; and
- integrates traditional knowledge, joint problem solving and farmer-to-farmer exchange in order to improve community relations and lead to greater involvement and commitment of producers.

East African Smallholders' Access to Organic Export Markets

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The growing international market for organic products is the driving force behind the organic movement in Uganda. As early as 1994, a few commercial businesses had begun engaging in organic agriculture with interest in export markets (Alastar 2004). The Swedish International Development Agency (SIDA) recognized the opportunity for smallholder farmers to engage in organic exports from Africa in the 1990s. In 1994, SIDA developed the Export Promotion of Organic Products from Africa (EPOPA) programme with the objectives of initiating and facilitating export of certified organic products from Africa in order to increase farmers' incomes while encouraging sustainable agricultural practices in the country. Now in its thirteenth year, the programme has engaged over 40 000 smallholder farmers along with more than fifteen export companies in Uganda.

EPOPA operates within the private sector, partnering with agribusinesses to assist them in organizing and certifying private smallholder farmers. The programme is implemented by Agro Eco, a consultancy company in the Netherlands, and Grolink, another organic consultancy company based in Sweden. The EPOPA programme is modeled on the motto 'Development through Trade' in which exporters partner with smallholders, employing field staff to work with farmers. Through the programme, active organic management is introduced and internal control systems are set up. Organic certification is then requested for products, and exporters are assisted in identifying and accessing export markets.

EPOPA's intervention in smallholders' access to organic markets has developed through initiatives requiring knowledge and understanding of specific processes within the organic export business. Facilitating smallholder farmers' access to these markets requires approaches to assist them in overcoming the many constraints they normally face. These include identifying farmers, sensitization and training of farmers in organic practices, registration and contracting of farmers, assisting in certification of organic products and linking smallholder producers with appropriate exporters.

EPOPA's targeted support to exporters helps smallholders to access premium markets for their produce, providing them with secure and sustainable incomes. Smallholder farmers in rural Uganda can earn a premium on organic exports – extra income that is important for attaining food security and improving their livelihoods. Additional benefits of adopting organic agricultural practices include increased yields, safer and more nutritious foods, reduced risk of crop failures through diversification and preservation of local knowledge. The following case study clearly demonstrates many of the benefits of organic agriculture.

Example: Smallholder farmers producing organic cocoa for export in Bundibugyo District, Uganda

ECSO Ug Ltd is an organic export project within the EPOPA programme that exports organic cocoa and vanilla from Bundibugyo District in western Uganda. The project includes over 2 000 smallholder farmers located in a hilly and mountainous area at the foothills of the Rwenzori Mountains. This case study gives an overview of the project, including agricultural systems, the organic cocoa export

business, farmer premiums earned and the resulting impact on food security in the project area by presenting findings from a baseline study conducted in 2003 and a subsequent impact study conducted in 2005.

The project was built on the hypothesis that smallholder farmers with access to organic markets would have improved incomes, and that these improved incomes not only reflected the vibrancy of the organic markets but also the social and environmental benefits conferred upon participating households. Lessons learned included the following:

- Sustainable farming practices accompanied by certified organic requirements contributed to increased yields, diversified food production and improved soil erosion.
- Premium prices motivated smallholders' access to export markets by selling more of their products for export.
- Increased household incomes led to improvements in the livelihoods of participating farmers.

The results highlight where access to organic export markets has succeeded, faced challenges and how the premiums earned on organic products have positively impacted food security within the project area. Successes or failures within the project will be presented, as well as opportunities and constraints as experienced during the implementation of the project.

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Improving Income Security in India's Small Farmers through Organic Agriculture

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Introduction

BioRe, located in the Indian state of Madhya Pradesh, supports farmers in organic cotton production in the Narmada valley which spreads along the Narmada River some 200-300 m above sea level, bordered by the Vindhyas in the north and the Satpura range to the south. The valley is part of the central Indian cotton belt.

Farming systems in the region are cotton based. Cotton is grown in rotation with cereals (wheat, maize and sorghum), pulses (soybean, pigeon pea, chickpea, moong bean) and other food crops such as chilli and onions. The climate is semi-arid, with an average annual precipitation of 800 mm in a single peak monsoon season, usually lasting from mid-June to September.

In 2006, there were 4 991 farmers associated with BioRe, mostly from small and medium sized farms in 457 villages spread over the states of Madhya Pradesh and Maharashtra. It is predicted there will be 6 000 farmers in 2007.

A pilot project was initiated in 1991 with a few farmers on 15 acres. Remei AG – a Swiss company – developed partnerships with manufacturers to produce a range of quality, fashionable, ecological-social garments made of bioRe's organic cotton. In 1995, the supply chain was completed when Coop, a retail company, joined. Coop is Switzerland's second largest supermarket chain and Europe's market leader in ecological-social products. Through this partnership, textiles made of bioRe's cotton have entered the mass market.

Results

BioRe has been successful and work has been continuous due to strong partnerships. Remei works at understanding market needs and development for production in India as well as in bioRe's Tanzania operation. This paper looks at farming and marketing aspects of BioRe's work with farmers to improve income security.

Farming level

The fact that the project has grown from a few farmers to nearly 6 000 farmers shows that it is beneficial to the farmers to be a part of bioRe. A system comparison study, "Growing cotton under ground water stress", was conducted with the active collaboration of the Research Institute of Organic Agriculture (FIBL) over two cropping seasons in 2004 and 2005. It found cotton yields of the organic farms that had completed the conversion period were on par with those in the conventional farms. At the same time, the input costs per crop unit were lower by a factor of two. Due to 10 to 20 percent lower production costs and a 20 percent organic price premium, average gross margins from organic cotton fields were, depending on the year, 30 to 40 percent higher than the conventional systems.

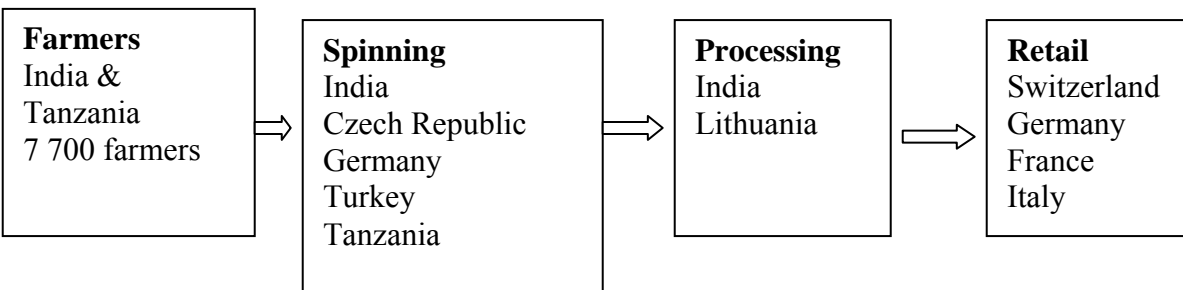
Since the rotational crops were sold without premium, organic farms achieved 10-20 percent higher incomes from agriculture.

Farmer training has been one of the main focus areas. Since setting up the training centre in January 2004, more than 4 500 farmers have received training from the onsite demonstration/experimental farm. On farm training encourages farmers to see first hand the lessons they are being taught.

Business model

Farmers who are part of the bioRe chain receive a five-year purchase guarantee, organic price premiums and social benefits such as interest free loans for building up sustainable infrastructures. All of this is due to bioRe's innovative business model that builds networks, market knowledge and partnerships among all participants.

- All holder value - Network management to build links for farmers, industrialists, traders and retailers from different cultures to work together.
- Linking supply and demand - Connects farmers, spinners, processors and retailers around the world.



- Market, product, communication - Builds market awareness to ensure the needs and demands of the retailers are addressed, in terms of flexibility, availability and pricing.
- Partnerships with farmers, producers and retailers - Establishes partnerships with all levels of the industry including: i) farmer partnerships – addressing the issues of global competition and drops in prices amidst rising production costs, and supporting farmers with knowledge transfers, purchase guarantees, premium prices and certification; ii) producer partnerships – based on a shared vision, ecological criterion, ILO standards and regulated working hours; and iii) retail partnerships – outreach includes Coop Switzerland, Coop Italy, and Monoprix France.

Constraints encountered

Farming Level

Of the various constraints encountered, the main ones are availability of organic cottonseeds and dependence on hybrid seeds for the quality of cotton that is needed by the spinning industry. There is also the looming threat of GMOs in the region. Although located in a semi-arid belt where sufficient water is not available for the crops and a bad monsoon year could lead to a drastic drop in yields, however, the organic farmers are somewhat insulated due to lower production costs, they would not be hit so badly and, moreover, planting of border crops and intercropping helps preserve moisture and reduces the irrigation rounds.

The issue of crop rotations is slowly becoming a constraint. Over the years, due to reduction of land area, lack of irrigation in all the fields and the farmers' cash needs for such expenses as family marriages, there has been a tendency to narrow crop rotations, in this case cotton being planted after cotton. Poor handling of cow dung has traditionally led to huge nutrient losses. Compost training has had problems mainly with traditional mindsets plus they lack the water and shaded areas needed for the composting process to be successful. Credit availability is also an issue, with farmers having to borrow money at 2.5 to 3 times more than the normal interest rates, which leads to indebtedness.

BioRe has managed to release farmers from some of their dependency. They are no longer dependent on traders for inputs, loans and sales, they are able to pay back loans and have fewer new debts. However, some farmers have old debts and the level of indebtedness due to marriages or medical expenses remains a problem.

Marketing Level

In terms of marketing, there are constraints at production, processing and retail levels. At production level, the vast number of cotton varieties leads to differences in quality. At processing level there are issues of quality variations, lot sizes, and ecological, labour and social questions. At retail level, there are issues related to reduction of sales and increased in prices.

Conclusions

In terms of food security, organic farmers' incomes have increased by 10 to 20 percent, a substantial improvement in their finances. Higher crop diversity, due to intercropping of the cotton crop with legumes, adds to their family food baskets. An FIBL study found that 29 percent of the organic cotton fields had an intercrop of legumes, compared to 3 to 11 percent of conventional farms. BioRe has had success improving credit problems, and is giving interest free loans for sustainable infrastructure development and provides grants to farmers on the basis of needs. One of the recent innovations has been the establishment of a mobile health hospital that goes directly to the farmers' homes. This has helped to reduce the cost of diagnosis by 50 to 60 percent.

BioRe sees ways to address the farmers' credit needs even further and is exploring the micro finance sector. BioRe is entering into further collaboration with FIBL for a ten-year system trial comparing the yields and cultivation costs of organic and conventional systems. Further, the detrimental impacts of narrow crop rotations need to be studied and quantified. There is also a need to develop composite/local cotton varieties with improved quality parameters to remove farmers from the annual cycle of purchasing of cotton seeds. The partnership model that has been enumerated can easily be expanded to other countries and perhaps to other crops as well.

The new vision of bioRe is defined as "100 10 02". This is bioRe's way of saying: 100 000 farmers in ten years with double purchasing power.

References

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