From:

Organic Agriculture and Agribusiness: Innovation and Fundamentals

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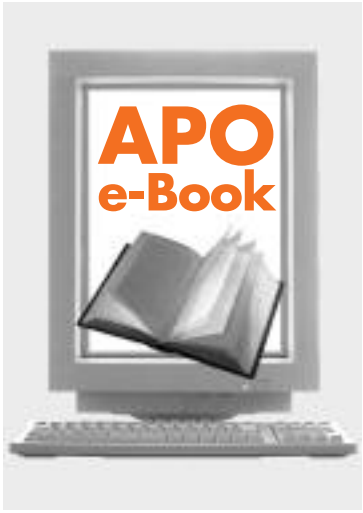

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Organic Agriculture and Agribusiness: Innovation and Fundamentals

ASIAN PRODUCTIVITY ORGANIZATION

Selected papers of the three APO projects, viz.,: 1) Seminar on Organic Farming for Sustainable Development (06-AG-GE-SEM-04); 2) Study Meeting on Organic Agriculture for Promoting Green Productivity and Agribusiness Exports (07-AG-32-GE-STM-B); and 3) Training Course on Organic Farming: Organic Production and Inspection (08-AG-15-GE-TRC-B).

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FOREWORD

Organic agriculture performs multiple functions. It is an important tool for achieving Green Productivity in agriculture and mitigates the negative impacts of conventional input-intensive agriculture by excluding the use of agrochemical inputs from the production system, minimizing environmental pollution, promoting reuse and recycling of organic farm waste and crop residues, improving biodiversity, and enhancing soil productivity. Organic agriculture and agribusiness also contribute to improved rural livelihoods and sustainable development through generating rural employment opportunities and increasing farm incomes. Organic agriculture is not for more affluent countries alone but can be applied successfully in other situations. In less developed countries especially, it can contribute to foreign exchange earnings, Green Productivity, and sustainable socioeconomic development.

Organic agribusiness is expanding fast worldwide, and the Asia-Pacific region is no exception. The global organic market is driven by consumer perceptions that organic agrifood products are healthier, cleaner, and more ethical than conventional ones. As a result, the demand for organically grown products has risen significantly in recent years, even in developing countries in the region. Such expanded demand for organic products is expected to continue in the foreseeable future.

Organic agrifood products, however, remain niche products, although they command premium prices. Marketability at a premium depends on consumer confidence in the reliability and integrity of the products. To promote organic agriculture, the fundamentals of organic agribusiness, such as a credible system of standards, certification, and traceability, should be established. At the international level, the harmonization of organic standards and certification procedures is important to facilitate cross-border trade. All this will require stringent legislation, policy and institutional support, internationally recognized standards, and concerted efforts of all stakeholders. Many developing Asian Productivity Organization (APO) member countries, however, do not have adequate legislation, policy, and institutional arrangements in place.

The APO champions Green Productivity as a tool for achieving sustainable socioeconomic development in the Asia-Pacific region. To promote Green Productivity in agriculture, the APO organized several projects over the past few years, including three on organic agriculture/farming in India, Pakistan, and Sri Lanka in the 2006–08 period. This volume presents selected papers from those three projects covering aspects of organic agriculture and agribusiness. I hope that it will serve as a useful reference on the subject in APO member countries and elsewhere.

The APO is grateful to the Government of India, especially the National Productivity Council and Ministry of Agriculture; the Government of Pakistan, including the National Productivity Organization and Pakistan Agricultural Research Council; and the Government of Sri Lanka, particularly the National Productivity Secretariat and Ministry of Agricultural Development and Agrarian Services, for hosting the projects. Special thanks are due to Dr. Tej Partap for editing the present volume.

Shigeo Takenaka
Secretary-General

Tokyo, April 2010

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In 2008, the Asian Productivity Organization (APO) commissioned Dr. Tej Partap, Vice-Chancellor, Himachal Pradesh Agriculture University, India, to edit and compile this publication. The APO would like to express its grateful appreciation to Dr. Tej Partap for editing this publication. Special acknowledgement is due to all the references consulted during the preparation of the APO publication on Organic Agriculture and Agribusiness: Innovations and Fundamentals.

The APO would also like to extend special thanks to the Government of India, especially the Ministry of Agriculture and the National Productivity Council; the Government of Pakistan, in particular, the Pakistan Agricultural Research Council and the National Productivity Organization; and the Government of Sri Lanka, particularly the Ministry of Agricultural Development and Agrarian Services and the National Productivity Secretariat, for hosting and implementing the respective APO projects.

ABBREVIATIONS AND ACRONYMS

APEDA	Agricultural and Processed Food Products Export Development Authority
ATC	Alter Trade Corporation
CAC	Codex Alimentarius Commission
CB	Certification body
CLA	Conjugated linoleic acid (a fatty acid that is vital for good health)
COA	Council of Agriculture
DEA	Department of Export Agriculture
EAC	Export Agriculture Crops
EC	European Community
EEC	European Economic Community
EF	Environment-friendly
EFA	Environment-friendly agriculture
EFAP	Environment-friendly agricultural policy
EU	European Union [formerly known as European Community (EC) or European Economic Community (EEC)]
FAO	Food and Agriculture Organization of the United Nations
GAIN	Global Agriculture Information Network
GAP	Good Agricultural Practices
GMO	Genetically modified organism, or genetically engineered organism (GEO)
HACCP	Hazard Analysis and Critical Control Points
ICCOA	International Competence Centre for Organic Agriculture
IFAD	International Fund for Agricultural Development
IFOAM	International Federation of Organic Agriculture Movements
JAS	Japanese Agricultural Standards

LISA	Low-input sustainable agriculture
MASIPAG	Farmer–Scientist Partnership for Development, Incorporated (a Filipino farmer-led network of people's organizations, NGOs, and scientists)
NAQS	National Agricultural Products Quality Management Service
NCOF	National Centre for Organic Farming
NGO	Nongovernment organization
NOP	National Organic Program
OCCP	Organic Certification Center of the Philippines
OPTA	Organic Producers Trade Association of the Philippines
PNOAB	Philippines National Organic Agriculture Board
PPP	Public–Private Partnerships
ROC	Republic of China
ROK	Republic of Korea
SAC	Sustainable Agriculture Center
SARDI	Sustainable Agriculture and Rural Development Initiative
SMEs	Small and medium-sized enterprises
SOM	Soil organic matter
SRI	System of rice intensification
SWOT	Strengths, weaknesses, opportunities, and threats (analysis)
TOAIC	Taiwan Organic Agriculture Information Center
TOPA	Taiwan Organic Production Association
TRIPS	Trade-Related Aspects of Intellectual Property Rights
UR	Uruguay Round
USDA	United States Department of Agriculture
WTO	World Trade Organization

PART I

ORGANIC AGRICULTURE, AGRIBUSINESS, AND SMALL FARMERS OF ASIA: A SUMMARY OF ISSUES AND OPTIONS

ORGANIC AGRICULTURE, AGRIBUSINESS, AND SMALL FARMERS OF ASIA: A SUMMARY OF ISSUES AND OPTIONS

Organic agriculture is expanding fast. The share of agricultural land and farms continues to grow in many countries. According to 2007 statistics, organic agriculture is practiced on more than 32 million hectares (ha) of agricultural land by more than 1 million producers, including smallholders (The World of Organic Agriculture 2009). About one third of the world's organically managed land is located in developing countries. Most of this land is in Latin American countries, with Asia and Africa in second and third place, respectively. Countries with the largest area under organic management are Argentina, Brazil, Republic of China (ROC), India, and Uruguay.

According to *The World of Organic Agriculture 2009*, in 2007, the total organic area in Asia was nearly 2.9 million ha. This constitutes 9% of the world's organic agricultural land. The leading countries are ROC (1.6 million ha) and India (1 million ha). Production of final processed products is growing, although a majority of production is still fresh produce and field crops with low value-added processing, such as dry or processed raw ingredients. Aquaculture (shrimp and fish), on the other hand, is emerging in ROC, Indonesia, Vietnam, Thailand, Malaysia, and Myanmar. Asia, Latin America, and Australasia are important producers and exporters of organic food. Sector growth is now also driven by imports, and local markets have taken off in many of the large Asian cities in the southern and eastern parts of the region besides Japan, Republic of Korea (ROK), ROC, and Singapore.

Global demand for organic products remains robust and is expected to continually grow in the foreseeable future. Keeping in view the fact that organic agriculture is assuming an increasingly important role in the socioeconomic development of agricultural producers especially the small and medium-sized, promoting green productivity in the agriculture sector, providing healthier food, and conserving the natural resource base in the Asia–Pacific region, the Asian Productivity Organization (APO) organized three projects on the subject in Pakistan (2008), India (2007), and Sri Lanka (2006).

This volume contains selected papers from the three APO projects, namely, i) Seminar on Organic Farming for Sustainable Development, held in Colombo, Sri Lanka, 11–15 September 2006; ii) Study Meeting on Organic Agriculture for Promoting Green Productivity and Agribusiness Exports, held in New Delhi, India, 23–27 July 2007; and iii) Training Course on Organic Farming: Organic Production and Inspection, held in Islamabad, Pakistan, 21–25 April 2008.

A synthesis summary of the observations, issues, options, and recommendations made by the participants of these three programs is given below:

Organic Farming in Asia: The Continental Scene

1. Organic awareness and national strategies exist only in half of the countries in Asia and the Pacific.
2. In most of the countries, the key concentration in promoting organic agriculture and enterprises is on export of agrifood products.

3. Only a few countries consider organic farming as an option for small farmers' food and income security and that, too, is mostly supported by nongovernment organizations (NGOs).
4. Only a few countries, such as ROK, have given place to environmental concerns, such as clean water, in the National Organic Strategy.
5. For effective growth and promotion of the organic sector, the required institutional capacities do not exist in most Asian countries. All areas of the organic sector—whether research and development (R&D), marketing mechanisms, or policy planning—reflect the scarcity of expert human resources in almost all countries.
6. Skilled human resources, thus, have not been created/developed in adequate numbers in most countries.
7. Many countries need urgent help to establish quality assurance mechanisms, i.e., certification and accreditation, and for that they seek assistance to establish their human resources and institutions.

Why Should Asian Countries Promote Organic Farming?

1. To promote environment-friendly and safe agriculture in the region
2. To conserve the natural resource base, especially soil and water
3. Rising prices of chemical fertilizers that are beyond reach of small farmers
4. Favorable climate for compost making
5. Improving subsistent livelihoods on marginal lands
6. Increasing global trade in organic–export opportunities
7. Emerging pesticide-in-food-based human health problems (cancer, kidney failure due to heavy application of pesticides, etc.)
8. To revitalize sustainable traditional farming practices that were de facto organic
9. To meet increasing domestic consumers demand
10. To promote organic food self-sufficiency (import substitution)
11. To uplift the socioeconomic conditions of marginal farming communities (e.g., mountain people)

Concerns of Asian Countries

1. Organic is an emerging opportunity for farmers and enterprises.
2. Asian countries have different reasons to promote organic, and in different scales (presently – 5 years' horizons). If countries do not do so, we understand that countries may face larger problems/crisis of food insecurity, unsafe food supplies, health problems, unsustainable rural and agricultural development, environmental degradation, etc.
3. Except Japan, ROK, and ROC, efforts to adopt organic in Asia are scattered/individual, and many of the countries are in the process of framing national policies and strategies.
4. Asian countries are at different levels of organic development and promotion and, therefore, there is much scope to learn from experiences of Japan, ROK, ROC, Sri Lanka, etc.

5. Institutional capacities (regulations, research, extension, human resources, and physical infrastructure, etc.) for organics are still poor.
6. There is a general lack of knowledge and information about organic farming, which is an impediment to promoting better understanding of organic farming in the region.
7. Governments of many developing countries are not providing minimum incentives to farmers, NGOs, small and medium-sized enterprises, etc. involved in organic agriculture of the region.
8. We understand that there is a general lack of harmonization of standards for organics across Asian nations, which will limit trade and sharing of experiences on regulations and standards.

Recommendations

1. The APO should put organic farming and enterprise development on its priority program list in order to enable the APO member nations to facilitate building of knowledge and information, facilitate human resources development, and facilitate studies in countries to help them frame their organic strategies.
2. Relevant agencies in Asian countries should take initiatives to form an Asian Organic Platform to facilitate regular exchange of knowledge and experiences.
3. Countries should recognize this emerging opportunity for socioeconomic development of small farmers in marginal rainfed areas, sustainable rural development, as well as for safe food supplies to the citizens, and environmental issues.
4. Countries need to take steps to allocate resources and expertise to strengthen existing institutions/agencies or even create new organic R&D institutions/agencies.
5. Organic farmers and NGOs have been the pioneers of the organic movement in Asia so far. Therefore, they should be accorded due respect and place in building partnership while planning strategies to promote organic.
6. Organic farmers/growers/enterprises will remain disadvantaged unless systems are set in place to provide them equivalent and even more incentives.
7. Governments should consider providing direct incentives, rather than subsidies, to organic farmers, such as that being done by ROK. The scheme can be modified to suit a country.
8. Organic marketing in Asia is in its infancy. There is need to continue steps to build Asian domestic markets, as well as help build international trade channels.
9. Methods and resources should be found for cheaper certification systems that countries can apply.

Model National Action Plan: The Framework

The Framework is a list of actions from which respective countries can draw relevant suggestions for preparing their own action plan.

1. Each country needs to formulate its national organic vision and national strategy to explain why it needs to promote organic agriculture and enterprises.

2. Most countries, which have their National Strategic focus on promoting organic for building export trade/organic agribusiness, also need to focus on making the available food safe for its own citizens, i.e., human health concerns of its own citizens should also be included in organic promotion. Adding safe food dimension will further help mainstream the organic movement in each country.
3. The national strategy of a country should also include focus on improving environmental quality and ecological services being rendered by the organic farmers, and add it to economic account of benefits of organic farming.
4. The guiding principles for formulating the national strategy are as follows:
   a) Offering green and clean technologies to farmers;
   b) Producing and making safe food available to its citizens;
   c) Developing export opportunities of the countries in organic commodities. Organic farming should be seen as the tool for overcoming the World Trade Organization barriers; and
   d) Maintaining quality of environment of the rural landscapes and maintaining ecological services in good condition.
5. Countries will need to launch efforts to prepare national strategies involving a wide range of stakeholders.
6. Countries urgently need to take steps for building human resources/experts in all areas of organic field, whether in research, technology, extension, marketing, planning, policies, etc.
7. Countries should find ways to collaborate and help build institutional capacities and share expertise. In this regard, countries, which have considerable organic expertise and institutions (such as India), as well as funds, should come forward to help other countries.
8. There is inadequate research funding available to organic agriculture; national programs need to be launched with adequate provision of resources in order to encourage institutions seeking to undertake research, education, and training in organic agriculture.
9. There is inadequate technical know-how and virtual absence of package of organic cropping practices. R&D institutions have a prime responsibility to develop package of practices for organic agriculture systems/cropping systems and for individual crops.
10. Since farmers believe farmers more than anyone else, organic farming technologies should be evolved, refined, and demonstrated on farmers' fields, in partnership with organic farmers, i.e., making organic farmers active partners in technology development, refinement, and dissemination. However, organic research institutions need to be created and/or strengthened for development and refinement of technologies because without the involvement of scientists, organic will remain a folk exercise and further growth will be hampered.
11. Adequate number of model organic farms need to be established across the country to facilitate wider dissemination of technologies.
12. In certification, there is need for record keeping, which farmers find difficult. An alternative system developed for addressing this problem should be promoted, e.g.,

information technology (IT)-based Internal Control System (ICS) and Participatory Guarantee System (PGS) being used by some agencies (e.g., Morarka Organic, India).

13. Efforts to identify the right organic niches and products of the country should be made so that the organic movements in the countries are valued for complementing sustainable development efforts rather than appear competing for resources.
14. Presently, there is lack of coordination between R&D organizations of Asian countries; platform and mechanism for sharing knowledge and experience about mainstreaming organic agriculture among countries of Asia is needed.

PART II

ORGANIC AGRICULTURE PROMOTION: INNOVATIVE WAYS

1. EMERGING ORGANIC FARMING SECTOR IN ASIA: A SYNTHESIS OF CHALLENGES AND OPPORTUNITIES

Dr. Tej Partap

"In the Asian region, attention to organic is new"

Growing Perceptions

After half a century of intensive input agriculture, the yield gap between best practices and farmers' fields remains large; agricultural lands continue to shrink; and global environmental threats, such as erosion of biodiversity, desertification, climate change, and other transboundary pollution, are a reality. Although agriculture remains the world's single largest employer, rural economies in large parts of Asia and Africa continue to suffer. The conventional food production model ties farmers into conditions of dependence to buy agricultural inputs, such as seeds, fertilizers, and pesticides, and to sell their produce in the open market. Alternatively, organic agriculture offers a means to address food self-reliance, rural development, and nature conservation. The common thread in this ambitious goal is the sustainable use of biodiversity; in terms of both agriculture's contribution to biodiversity and biodiversity's contribution to agriculture. *Organic agriculture is a Production Management System that aims to promote and enhance ecosystem health, including biological cycles and soil biological activity.* Keeping in view these increasing problems, there is now a growing understanding that the food systems should be viewed as an integral part of the ecosystem.

On the demand side, promotion and marketing strategies of retailers and supermarkets, in particular of major food-retailing chains, have created new market opportunities for organic products in industrial countries. Concerns about growth-stimulating substances, genetically modified foods, and livestock epidemics have given further impetus to organic food demand as consumers increasingly question the safety of conventional foods. Many consumers perceive organic products as safer and of higher quality than conventional ones. These perceptions, rather than "science", drive the market.

The market opportunities arising from these concerns have also opened **possible niche markets** for many Asian countries. Europe, the United States, and Japan offer good prospects for suppliers of organic products.

The future growth of organic agriculture will depend more on supply constraints than on developments in demand, at least over the medium term. The tendency, so far, has been for the rate of demand growth to outstrip the rate of growth in available supplies. Many Asian countries are just starting to benefit from organic market opportunities.

Organic food trade might be discouraged by difficulties in complying with stringent standards and costly control systems of the importing countries, especially if international equivalency is not established. Access to inspection and certification, as well as the need to develop new methods of processing organic food, are major challenges that are likely to be taken up by large and established food companies.

It is hard to make estimates on future expansion of area under organic management in Asian countries. Expansion will depend on acceptability by farmers, technological innovations, and unforeseen factors that challenge agricultural development as a whole. It took 30 years for organic agriculture to occupy 1% of agricultural land and food markets, but food safety concerns resulted in its recent spectacular and unforeseen increase.

Overview of Organic Farming Movement in Asia

For the past few years, organic agriculture continues to enjoy steady expansion (Table 1-1). The expansion reflects the uneven stage of development between countries, and is unevenly distributed. The region's geographical spread hosts a spectrum of sector development stages which, in general, may be placed into four categories (Table 1-2). Countries with a strong economy or highly developed agriculture sector exhibit higher expansion than those with a weak economy or less developed agriculture sector. Foreign market access or export remains the key contributing factor to the growth of Asia's organic agriculture sector. Japan remains the largest organic consumer market in the region. The Asian region is expected to display interesting growth and development in organic agriculture for many years to come as long as regional political and economic conditions continue to improve or, at least, remain stable.

Asia has a large number of traditional farming cultures that find it easy to adopt organic agriculture. The export earnings, cheap labor available and, in some countries, organic enterprises are receiving support from their governments, aid agencies, and nongovernment organizations (NGOs). The indigenous systems themselves have enormous value in their own right and, wherever appropriate, have the potential of being recognized, supported, and maintained as organic farming. Where the choices for farmers are changing and becoming more market oriented, there a hybrid of local farming methods and organic agriculture is offering a viable alternative.

Table 1-1 Organic farming scenario of Asia and the Pacific region

Country	Organic Hectares	% of Agricultural Area	Number of Organic Farms	Export/ Import	Level of Organic Development	Government Regulation/ Local Certification*
Bangladesh	177,700	1.97	100	E	Pioneer	-
India	76,326	0.04	5,147	E	Local sector	Y, X
Indonesia	40,000	0.09	45,000	E	Export oriented	-, X
Iran, Islamic Rep. of	200	-	1	-	Pioneer	-
Japan	29,151	0.56	4,539	I	Mainstreaming	Y, X
Korea, Rep. of	18,936	0.98	1,451	I	Mainstreaming	Y, X
Lao PDR	35	-	55	-	Pioneer	-

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Malaysia	600	0.01	-	I	Local sector	Y, X
Nepal	45	-	26	E	Pioneer	-, X
Pakistan	2,009	0.01	405	E	Export oriented	-, X
Philippines	3,500	0.03	500	E	Local sector	-, X
Sri Lanka	15,215	0. 65	3,301	E	Local sector	-, X
Thailand	13,900	0.07	2,498	E	Local sector	Y, X
China, Rep. of	-	-	-	I	Mainstreaming	-, X
Vietnam	13,900	0.07	1,022	-	-	-
TOTAL	394,517	4.48	64,045	-	-	-

* Y = Government regulations exist, X = Regulations for certification exist.
Source: IFOAM (2005) World of Organic Agriculture.

Table 1-2 Organic agriculture development stages in Asia

Organic Development Stage and Countries	**Features of Organic Development Processes**
Pioneer (Cambodia, Nepal, Lao PDR, Islamic Republic of Iran, Pakistan, Fiji)	• Emphasis on sustainable agriculture and rural development instead of organic market development • Nongovernment organization (NGO) extension of organic principles to small family producers as a tool to reduce expenditure and health impact from use of chemical inputs • Informal, non-certified production and marketing • Insignificant government involvement • Few companies engaged in organic export business
Conversion for Export (Bangladesh, Sri Lanka, Philippines, Vietnam, Malaysia)	• Harvesting export opportunities as a business option and not necessarily included as agenda for change in the larger agricultural development context • Conversion of organized grower groups, large commercial farms and plantations linked to foreign market partners (buyers) • Presence of foreign certifiers (no local certifiers) and few certified products in the local market • Government involvement minor to major • Local organic movement not well organized

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Organic sector growing as rural development and agribusiness opportunity Farmers, NGOs, and Government support. Markets and institutional support developing. (India, Sri Lanka)	• Government policy and investment strategies in place • Institutional capacity-building programs and incentives to farmers for converting to organic • Organic market development plans and support • Organic extension, research, and training programs • Organized local organic movement • Government involved in framing regulation and accreditation
Domestic consumer-dominated organic markets and organic farming, the pull factor working (Japan, Republic of China, Republic of Korea)	• Strong organic consumer base acting as pull factor for promoting organic farming • Farmers engaged in organic production, including contract farming • Strict market regulations to ensure quality and food safety

Source: Compiled by the author of this chapter from several papers presented in the two meetings of the Asian Productivity Organization (2006, 2007).

Two Streams of Organic Growth in Asia

The progress about organic farming in Asia is going in two directions. The ***first direction*** comprises organic farming approaches that are being promoted for sustainable agriculture and rural development largely by NGOs, such as MASIPAG (*Magsasaka at Siyentipiko para sa Pag-Unlad ng Agrikultura* [Farmer–Scientist Partnership for Development, Incorporated]) in the Philippines. For them, organic agriculture is a development tool for poverty reduction and self-reliant production. The ***second direction*** leads to organic agribusiness focus for domestic and export markets, with the aim of capturing benefits of markets, such as in Thailand, Sri Lanka, Republic of China (ROC), and India. In the early development stages, the two streams hardly show any mutual goals. As the organic movement within a country grows and becomes more mature, the mutual stake between the two streams emerges. An emerging trend in Asia is the involvement of small and medium-sized organic enterprises. A large amount of organic production in Asia is organized as grower groups, e.g., Sri Lanka, either by the producers themselves or through contracts with export companies. Organic production in Asia comprises both fresh produce and field crops. Wild collected products also exist in some countries. Organic shrimp farming is emerging, particularly in Thailand, Vietnam, Indonesia, India, and the People's Republic of China.

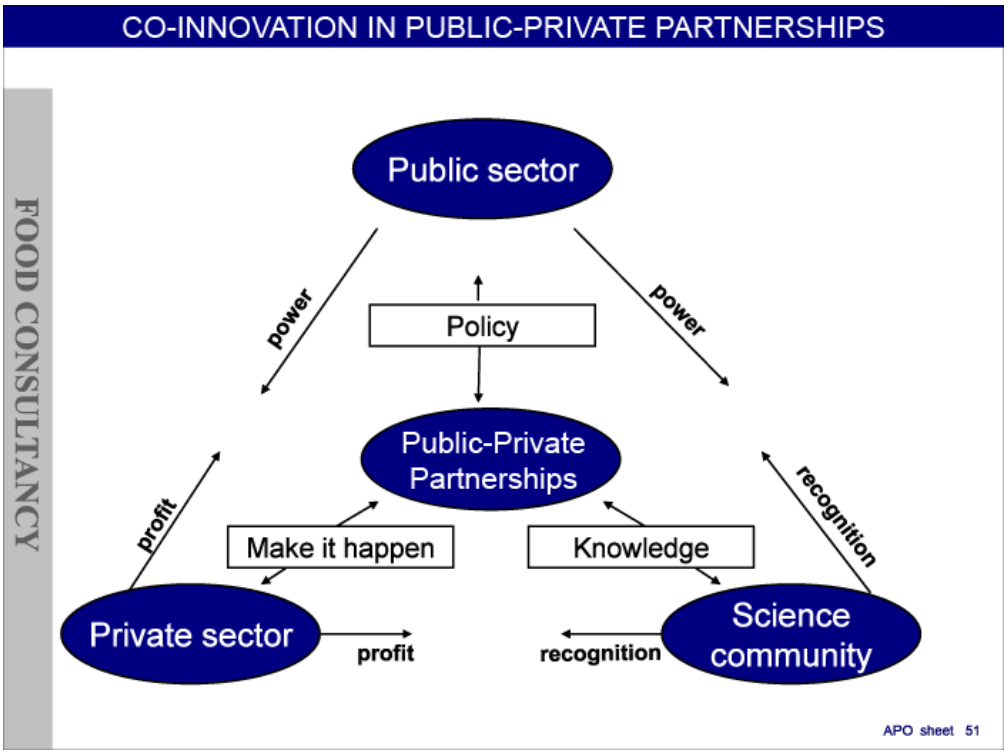
Interest in the export of organic products continues to serve as the impetus for organic expansion across several countries of Asia. Apart from the more affluent market countries, such as the Republic of Korea (ROK), Japan, Singapore, and ROC, domestic organic markets are also emerging in Malaysia, India, the Philippines, and Thailand. Premium prices for certified organic products in domestic markets are beginning to level off as more producers convert and competition from other suppliers increases, either from safe food or

from self-acclaimed organic. Market channels are moving away from specialized channels, such as organic fairs, farmers markets, and small retail shops, toward supermarkets and discount stores.

Common Challenges Facing the Organic Sector

Many developing Asian countries, such as Sri Lanka, Thailand, and India, seem bullish about organic market prospects, but those governments take keen interest only on developing national regulations instead of building institutional capacities for strengthening organic farming development. Government support, in general, is for setting regulations and ensuring quality standards. Organic rules are already in place in a number of countries, including India, Japan, ROK, ROC, and Thailand. Organic standards tend to be mandatory in importing countries and voluntary in exporting countries.

Figure 1-1 Building public–private partnership for building strong national organic sector



A critical challenge for Asian organic agriculture is how to sustain its expansion. While more public and private organizations are becoming interested in organic agriculture, the infrastructure and competencies to support organic conversion are still generally lacking and, so far, more attention is on setting certification systems. **The driving force behind the organic agriculture development worldwide has always been the farmers, consumers, and the private sector.** Setting regulations, aligning existing government technical and financial support systems, to supplement the competencies of NGOs, farmer organizations, and the private sector, have been in support of these key drivers, facilitating more effective public–private partnership in developing the organic sector.

To have a strong pull factor, Asia does not have a strong consumer base for organic commodities, so far. Except in a few countries, such as Japan, ROK, and ROC, consumer education is as yet to take center stage. It will be essential to build domestic markets. Building national associations of organic operators, such as the Organic Producers and Trade Association of the Philippines (OPTA), or organic chambers of commerce, would serve as steps toward effecting private sector collaboration.

Finally, governments need to consider the full implication to market development when setting organic regulations, particularly with respect to facilitating exports and recognition of imports. Domestic regulations in the Asian region today offer little or no help to facilitate organic exports from the region. No government-to-government agreements and recognition of organic standards equivalence exists between Asian countries. Product flow out and within the region is facilitated largely through private certification bodies.

As an example of fast-growing organic farming, India is experiencing a real boom when considering the number of farmers turning to organic practices, or the popularity of the topic among political leaders and the media. A large number of farmer groups, companies, NGOs, development agencies, and government bodies promote organic farming in one way or another. States have declared their intentions to adopt organic farming. For many Indian farmers, the approach seems to offer a new option for ensuring better livelihood (Partap 2006). Studies on organic farmers of India confirm the better economic returns from organic farming (Frank 2005, Partap and Vaidya 2009).

The Government of India recognizes the opportunities offered by organic agriculture to its small and marginal farmers, as well as to export market. Several institutional support programs to promote organic agriculture production, processing, certification, and export are in place. Supermarket chains and food brands and a number of companies and cooperatives are now exploring the organic food retail marketing. India's share in the global organic exports is only about 0.02%, and efforts are on to increase it to 2.5% by 2012. Should India become able to set up a reliable and efficient organic agribusiness supply chains linking organic farmers with consumers, it can expect to become an important player in the global organic sector in the near future.

India-based International Competence Centre for Organic Agriculture (ICCOA), founded in 1993 to build competency of India, has been active in providing platform to organic stakeholders to have a common voice and strengthen the Indian organic movement. Its initiative in organizing the annual India Organic Trade Fair is benefiting a growing number of organic producers by helping them access domestic and international organic markets. After Japan and ROC, India is the next to have a BioFach event from 2009.

Developing Institutions for Organic Farming

In almost all APO member countries, the early development of organic farming has been initiated by either NGOs or by private companies, sometimes both. In many of the APO member countries, organic agriculture is being promoted by NGOs as an appropriate technology for small-scale farmers. The first organic markets were developed by farmers' cooperatives and small pioneer companies. The private companies getting involved in organic markets in some countries of Asia represent a mix of small and large pioneer organic companies. In many markets, multinational retail chains are the first ones to sell organic on a large scale. *All over Asia, women are taking a leading role in the development of organic as farmers, as consumers, or in the organization of the organic sector, e.g., in Thailand and Malaysia, where many of the pioneer traders are women. In India, the*

organic movement receives much support and leadership from women self-help groups, NGOs, and individual entrepreneurs.

Long-Term Issues in Organic Agriculture Growth

After some years of prolific growth, organic agriculture will impact areas of agriculture and food production. Starting in niche markets, such as 'direct from producer to consumer', it will have been adapted to local conditions, both social and agronomic, to produce viable sustainable farming opportunities. It will possibly result in a multitude of sustainable and profitable organic enterprises emerging in each country, showing that organic agriculture can have a central role in ensuring that agriculture becomes fully sustainable.

The emphasis on enabling biological and ecological processes using existing resources and trading locally is well suited to organic agriculture. With a large agricultural base, diverse environments, good labor supplies, and enabled access to global organic markets, many Asian nations may become successful in the organic export trade. However, it seems that socioeconomic constraints, such as small farm holdings, land tenure, and priorities of household food security, will actually play a more significant role in deciding the adoption and adaptation of organic agriculture in Asian countries, either as a tool for ensuring household food security or as an export opportunity.

In order to guarantee a fair share of the international organic trade to those contributing most to food production, organic trade is being made to include social regulations. For these reasons, numerous organic products in Asian countries can also embrace social standards according to fair trade labels. However, **the fact remains that organic is still a small part of the agribusiness world and its capacities to influence international trade and agrochemical policy, so far, appear limited. Although the organic movement internally aims for certain ideals, its development will inevitably be shaped by global markets and politics.** Looking at the progress of international organic movement and apparent enormous growth since the 1990s, organic agriculture will certainly grow to take a proportion of global agriculture production and trade.

A number of reasons why Asian countries will encourage growth of the domestic organic sector have been identified as follows:

- Improved health or reduced health risks for farmers, farm workers, and consumers
- Protection of natural resources (e.g., water) and biodiversity
- Improved quality of soils and thereby a long-term high productivity
- Improved market access
- Improved profitability in farming
- Increased rural employment opportunities.

Time for Framing Comprehensive National Organic Strategies

The overarching policy and strategic issues and challenges being faced, or likely to be faced, by Asian countries are explained below. All or part of them may be relevant to a given country situation, depending on at what stage a country is in the process of developing its organic movement.

Most countries have approached organic as a market niche and may not have considered that it can also play a role in other aspects of agricultural and rural development. However, if the purpose is to mainstream organic agriculture, then the general agricultural

policies need to be assessed as to what extent they are encouraging, are neutral, or are biased against organic agriculture. Governments often subsidize input distribution systems and grant tax exemptions for conventional inputs, which actually indicate a bias against organic farming.

Organic is influenced by issues, such as land tenure. Organic farming represents a major investment in a piece of land, and it is not likely to be of interest for farmers that have less secure tenure, something reported, for example, from Malaysia, Thailand, North East Indian Himalayas, Bangladesh, etc. In this context, the situation for women farmers also needs to be considered. The national implementation of the Trade-Related Aspects of Intellectual Property Rights (TRIPS), the biosafety protocol, and the recognition of the value of traditional knowledge and other policies also have implications for organic, positively or negatively.

There is hardly any country in Asia where there has been systematic adaptation of the overall agricultural policies to cater to the development of the organic sector. On the contrary, except ROK, most Asian countries have farm policies that are not fully supportive of the organic sector. **When organic is not clearly linked to the national strategic goals, it becomes difficult to find institutional investment support from Governments.**

Some Asian countries have wider schemes supporting organic farmers alike. For example, in ROK, under environment-friendly agriculture, organic is one of several other options of farming for which farmers receive incentives. In Thailand, it is pesticide-free farming. While there are good intentions behind these efforts, in reality they often work against organic in the marketplace, as well as in the competition for government resource allocations. Therefore, it is necessary to clarify what an organic policy process is supposed to achieve both for the private sector and for the government itself. Is it to boost export markets? Is it to protect the environment? Or is it to develop the local market? Obviously, the appropriate policy measures will vary across different goals.

It is important to link organic development to the general objectives of agricultural development in a country. These can be issues, such as increased income from the agriculture sector; protection of the environment, e.g., water; protection of biodiversity; strengthening the competitiveness of small holders; protection of human health; increase exports, reduce imports; and promote quality over quantity as a market strategy. An organic action plan must be based on a proper assessment of the existing state of the sector, as well as identified bottlenecks.

Not all countries have a unified organic sector or movement and, in some countries, there are apparent conflicts between organic groups. This reduces the sector's own ability to work toward joint objectives, and it also makes it difficult for the government to consult with the private sector. Lastly, governments can play a big role in raising awareness of organic farming at all levels. Apart from regulations, plans, and programs, government and especially its highest representatives play a big role in forming public opinion. When the Minister of Agriculture, Environment, or Trade speaks up in favor of organic farming, this sends strong messages. Government should actively contribute to awareness-raising for organic at all levels.

Organic Standards and Certification

International standards for organic agriculture are guided by the Codex Alimentarius Guidelines for the production, processing, labeling, and marketing of organically produced foods. Some countries, such as Japan, India, and ROC, clearly reference the international standards (IFOAM Basic Standards of 2002). There is no indication that the voluntary official standards are in much use. Whether through mandatory regulation, voluntary public program, or by the private sector, one organic standard that is applied by all organic producers, whether certified or not, helps to build energy and joint activities in the sector. In order to ensure that standards are actively used, the full participation of the organic sector is needed. Also, there is a need to be clear about the scope of the standards and its intended use: Is it for the domestic market, for the export market, or is it for both? Perceptions of most of the Asian countries seem unclear in this regard.

Further, for organic production in the Asian context, local conditions, among and within the countries, vary too much. The use of foreign organic standards may be convenient for trade, but not for small farmers producing for themselves and for the local markets. Governments may find it relevant to support domestic organic standards, if export and import is not a priority. It is recommended that the initial standards may be developed with the local market development in mind. They can be reasonably accessible, not too demanding, relatively easy to apply by producers, and easy to verify by the certification bodies. If the national standards are supposed to also apply for imports, then these should necessarily reference the Codex and IFOAM standards as a basis for import acceptance.

Organic Certification Scenario in Asia

Certification is a private sector service in many countries. However, in Malaysia, Thailand, and ROC, there are government certification services. The experiences and success of such government service seem to differ, and it is hard to make any generalized statement about whether this service should be private or governmental. In a country with a weak private sector, there are some arguments in favor of letting the government take up this role, which would allow the private sector to focus on market development and other pressing issues.

There is actually no direct evidence that third-party certification is what the market really asks for, and other quality assurance mechanisms might also be useful and are working in Asian countries. For international markets, certification can be considered a must as all major markets require certification for products marketed as organic. There are several countries that have a domestic organic certification organization. Many Asian countries, however, still lack such local service providers. It is often quoted as an obstacle, especially for small producers. Government can support capacity development for local certification bodies. This has been done, for example, in India, where the responsible authority, the Agricultural and Processed Food Products Export Development Authority (APEDA), organizes training for certification bodies. However, many countries with government certification chose to also establish accreditation mechanisms, e.g., Thailand and ROC.

Group Certification Option

Participatory certification and other non-third party quality assurance system is a system for certification that emphasizes the participation of stakeholders, including producers, in

contrast with the "objective and independent" approach favored under international norms (IFOAM 2004). These and other non-third party quality assurances are now spreading quite rapidly. These systems often address not only the quality assurance of the product, but are linked to alternative marketing approaches (home deliveries, community-supported agriculture groups, farmers markets, popular fairs) and help educate consumers about products grown or processed with ecological methods.

Domestic Organic Markets

Domestic markets are developing in all countries where organic production is established, often with a similar divide regarding products and producers as in conventional production, e.g., larger farms with specialized production are for exports, and small farmers with diverse production grow for the local markets. In most Asian countries, one should have realistic expectations about the domestic market for organic foods, seeking premium price. It may be a myth that organic consumers in these countries are optimizing their food expenditure. **ICCOA's market study in India (Rao 2006) highlights the fact that there are a sufficient number of people now who will be ready to spend extra on safe food supplies from organic market.** Non-certified organic production is not necessarily much more expensive than conventional products, which is the first organic arrival, fresh foods, in almost all local markets of Asian countries.

People have sometimes unrealistic expectations on the organic market. In some cases, the supply can increase rapidly and the demand does not keep pace. However, after a while, prices for a commodity might go down, or new or bigger actors join the market and a new balance is reached. As yet organic markets in Asian countries need not be taken for granted. They require sufficient study about their capacities, like the study conducted in India by ICCOA (Rao et al. 2006), before marketing or before any major initiatives are made to increase supply.

Supply Chain Management

Organic food processors of Asia are facing many problems. Some are technological, e.g., organic processing may need other technological solutions than conventional processing. It is very common that there is a domestic production of fruits, but there is no organic sugar available for making preserves, such as marmalade. Trade channels are not at all developed to import organic substitutes.

Producer organizations in the organic sector of Asia, so far, could be underresourced and, therefore, the lack of proper distribution infrastructure can be fatal both for export marketing and local markets. As a 'new' sector, one can assume that there will be more obstacles for organic producers than for their conventional colleagues, especially as organic standards are picky on the proper separation of organic products and that organic markets are generally more demanding. Direct government support by the countries for joint efforts by the producers, such as the establishment of proper packing facilities, labeling, purchasing of certain machinery for sorting and grading, is necessary under the present scenario.

Imports of organic products can play a significant role for the development of domestic organic markets, as shown in Malaysia, and also in other countries, developed and developing alike. In the Philippines, the domestic organic industry is about US dollar (USD)2.5 million, and imports of processed organic food products are estimated at another

USD3 million (USDA 2002). In the initial stages, the domestic supply will be often small, qualities doubtful, and the level of processing very low. In that scenario, the whole organic sector can get a boost from imported products—more products will make both retailers and consumers more interested. As consumers become used to year-round availability of most products, imports of off-season products can also stimulate the market. This opportunity is often lost, when the early organic market is moved by producer organizations and NGOs, who rarely have imports on their priority list and who sometimes outrightly reject imports as being competitive to local producers.

Support to Organic Producers

The most important drawback to organic farming is that there is rarely any incentive for farmers, like the one under the Environment-Friendly Agricultural Policy (EFAP) of ROK. It can be that distorting subsidies for chemical fertilizers are taken away. Credit and investment support often are not easily available for small organic farmers. It de facto amounts to discrimination toward the already disadvantaged organic producers. Few Asian governments have, so far, designed special support measures for the small farmers.

Organic Research and Technology Support

As organic agriculture is knowledge intensive, one could believe that research would have played a major role in the establishment of organic agriculture. So far, there is a strong inertia within research establishments against organic research. Therefore, liberal investment of funds for organic research will be necessary to ensure that sufficient attention is given to the nascent organic sector. In addition, there is a need for research that is attuned to the needs of the producers. Research priorities, therefore, need to be developed in close consultation with the stakeholders. Of late, public funding of organic research programs is increasing, although institutions are finding it hard to have skilled human resources for this purpose. Innovations in organic production techniques, food processing, food marketing, and food retailing are needed for balanced growth of the sector.

Policy Recommendations for Mainstreaming Organic Farming

a. The countries should perform in-depth assessment of their general agricultural policies, programs, and plans to understand how these affect the conditions of the organic sector.
b. Governments should define priority areas of the organic sector before planning any organic investment strategy. Objectives for government involvement for the development of the organic sector need to be clarified.
c. The goals behind the support to the organic sector should link to general agricultural policies as much as possible, especially if organic agriculture is being promoted as a mainstream solution.
d. Focus on creating adequate human resources in research and extension should be one of the priority areas. Therefore, investment strategies for institutional strengthening in these areas will be necessary for each Asian nation wanting to promote organic agriculture.
e. Governments should facilitate access to certification services, either by stimulating foreign certification bodies to establish offices in Asia or, even better, to support the development of local service providers. In some countries, especially where the private

sector is weak, the government could consider establishing a government certification service.

f. Mandatory regulations should only be considered when the need is clearly established and other simpler options have been ruled out. In the early stage of development, a mandatory organic regulation may not likely be considered as priority.

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2. ORGANIC FARMING POTENTIALS FOR GREEN PRODUCTIVITY, ECOLOGICAL SERVICES, AND SUSTAINABLE RURAL DEVELOPMENT

Dr. Tej Partap

Introduction

Over the last 50–60 years, the focus of agricultural development and research has mainly been on maximizing yields, coupled with increasing specialization of production and ever larger farm sizes. Although yields have increased substantially, contributing to raising total production, farmers and the environment have had to pay the price for keeping up with this development. During the last two decades, in several countries of Asia, many farmers have chosen to make transition to practices that are environmentally sound and have the potential to contribute to the long-term sustainability of agriculture. Organic agriculture is an integral part of these practices. Across the world, the factors that encourage individual farmers to adopt organic agriculture so as to be part of this transition process share some similarities. The continuing drop in prices of farm produce and the rising costs of agricultural inputs have made farming increasingly unprofitable, prompting farmers to seek new ways to increase the farm returns and incomes in order to continue farming. While income considerations are predominant, environmental benefits, health aspects, and farmer empowerment are other important factors influencing this shift toward organic agriculture.

Under this background, this chapter examines the potentials of organic agriculture as a tool for promoting green productivity, ecologically sound agriculture, and sustainable rural development.

Ecological Origins of Organic Concept

The term 'organic' was first used in relation to farming by Northbourne (1940) in his book, *Look to the Land:* He stated, "The farm itself should have a biological completeness; it must be a living entity, it must be a unit which has within itself a balanced organic life." Clearly, Northbourne was not simply referring to organic inputs, such as compost, but rather to the concept of managing a farm as an integrated, whole system (Lotter 2003). The use of organic in reference to agricultural production and food is legally constrained in many countries. Many small farmers of Asia continue to practice organic agriculture based on their traditional methods of production.

A general definition of organic agriculture indicates what the production systems are designed to achieve. The international food standards Codex Alimentarius, in association with the International Federation of Organic Agriculture Movements (IFOAM) and the Food and Agriculture Organization of the United Nations (FAO), state, "*Organic agriculture is a holistic production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems. This is accomplished by using, where possible, agronomic, biological, and mechanical methods, as opposed to using synthetic materials, to fulfill any specific function within the system.*" (FAO 1999). This holism dates back to the origin of organic agriculture in

that the farm was not viewed as a collection of separate parts but a single, self-managing organism. This view of the farm as an organism is the origin of the term organic.

The perspective advocated here is based on the codex definition stated and further includes the full organic and biodynamic supply chain from inputs to final manufactured goods, as well as the cultural and social aspects of the movement, not just the on-farm production aspects. The continued existence of a social and political role for organic agriculture makes it more than just an organic industry. Without recourse to new technologies that we promote under the Green Revolution, in the past, farmers had no option but to work within biological and ecological systems. Failing to rotate crops caused a buildup of pests, as there were no pesticides to control them. From this perspective, organic agriculture is the original and mainstream agriculture, and "conventional agriculture" is the one that departs from the practices that agriculture has been following since its inception. The term "conventional" masks the great diversity of management strategies used; for example, a conventional farmer may use mineral fertilizers but also use herbicides to control weeds. Usually, conventional agriculture imposes no restrictions on management other than those required by law.

Transforming Thoughts on Organic

After almost a century of development, organic agriculture has been embraced by the mainstream and shows great promise commercially, socially, and environmentally. While there is continuum of thought from the earliest days to the present, the modern organic movement is radically different from its original forms. It now has environmental sustainability at its core, in addition to other concerns of healthy soil, healthy food, and healthy people.

Since the 1970s, when organic agriculture reemerged as an eco-agriculture, institutional strengthening and diversity became a part of the movement. The formation of IFOAM in 1972 indicated that the movement has come of age and that it is going to grow and make a place for itself. Explosive growth of organic agriculture has occurred only since the 1990s. The initial years of the 21st century have seen the mainstreaming and institutionalization of organic agriculture globally. While institutions, such as IFOAM and FAO, have played their role in giving shape to defining perspectives, principles, and desired standards, individual countries were busy strengthening their policies, support services, regulatory frameworks, supply chain infrastructure, and marketing.

Principles of Organic Agriculture

To understand the motivation of organic farmers, the practices they use, and what they want to achieve, the four guiding principles present a framework of organic agriculture. These principles encompass the fundamental goals and caveats that are considered important for producing high-quality food, fiber, and other goods in an environmentally sustainable way. The principles of organic agriculture have changed with the evolution of the movement and are now codified (Box 2-1). The principles apply to agriculture in the broadest sense, including the way people tend soils, water plants and animals in order to produce, and prepare and distribute food and other goods. They concern the way people interact with living landscapes, relate to one another, and shape the legacy of future generations. Therefore, the principles of organic agriculture serve to inspire the organic movement in its full diversity.

Science is necessary to ensure that organic agriculture is healthy, safe, and ecologically sound. However, scientific knowledge alone is not sufficient for this, and the practical experience, accumulated wisdom, and traditional and indigenous knowledge of farmers offer valid and time-tested solutions.

Box 2-1 Principles of Organic Agriculture

1. Principle of Health
   Organic agriculture is intended to sustain and enhance the health of soil, plant, animal, and human beings as one and indivisible. In view of this, it constrains the use of fertilizers, pesticides, animal drugs, and food additives that may have adverse health effects.

2. Principle of Ecology
   Organic agriculture should be based on living ecological systems and cycles, work with them, emulate them, and help sustain them. Organic agriculture should attain ecological balance through the design of such farming systems which serve to achieve the above objectives.

3. Principle of Fairness
   Organic agriculture should build on the relationships that ensure fairness with regard to the common environment and life opportunities. Fairness is characterized by equity, respect, justice, and stewardship of the shared world, both among people and their relations to other beings. Ensure fairness to all levels and to all parties: farmers, workers, processors, distributors, traders, and consumers. The aim is to help provide everyone involved with a good quality of life, and contribute to food sovereignty and reduction of poverty.

4. Principle of Care
   Organic agriculture should be managed in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment. Practitioners of organic agriculture can enhance efficiency and increase productivity, but this should not be at the cost/risk of jeopardizing health and well-being.

Source: IFOAM Principles of Organic Agriculture (2005); www.ifoam.org

Organic Agriculture as a Tool for Green Productivity

The organic agriculture and the philosophy on which it is founded are fundamentally different from industrial/conventional agriculture and the philosophy that underlies it. This difference between them, however, is getting obscured since the 1990s by the rapid emergence of market-driven organic agriculture. While organic agriculture aims to be environmentally sustainable, it is yet to reach its goals, and there are issues that still need to be addressed. One such issue is about the comparable yields. The often asked question

is, "*Can organic agriculture feed the world?*". The appropriate answer may be, "*Has conventional agriculture succeeded in feeding the world?*". High-input, high-yielding systems are currently failing to feed the world, not because of problems with productivity, but because of problems with food distribution and social organization, and serious concerns, such as poverty, racism, and gender imbalance.

Researchers have been busy working out the comparisons between the two systems for yield, economics, resource use efficiency, environmental impacts, and social factors on a diverse range of farm types, such as dairies, orchards, and mixed farming systems (Kristiansen and Merfield 2006) and their studies have confirmed that organic agriculture is productive and sustainable (Mader et al. 2002, Reganold et al. 1993, Drinkwater et al. 1998). Some key findings from research on yields (Wynen 1994, Mendoza 2002, Stonehouse et al. 2001) suggest that

- Yields equivalent to or better than conventional agriculture can be achieved under organic systems, although often they are not;
- Yields decrease during conversion period but then improve afterwards;
- Organic farms have higher soil biological activity and biodiversity;
- Weeds can have major impact on yields, and pests on specific crops are problematic;
- Some nutrients may have negative budgets for certain organic crops, depleting soil reserves of that nutrient;
- Organic agriculture causes less pesticide contamination in food, people, and the environment; and
- The beneficial effects of organic agriculture about assuring safe food are confirmed.

Organic agriculture aims at promoting sustainable production based on natural processes. Key characteristics are that organic agriculture

- relies primarily on local, renewable resources;
- makes efficient use of solar energy and the production potential of biological systems;
- maintains the fertility of the soil;
- maximizes recycling of plant nutrients and organic matter;
- does not use organisms or substances foreign to nature (e.g., genetically modified organism (GMO), chemical fertilizers or pesticides);
- maintains diversity in the production system, as well as the agricultural landscape; and
- gives farm animals living conditions that correspond to their ecological role and allow them a natural behavior.

It is for these reasons that organic agriculture is regarded as a sustainable and environmentally friendly production method. Available evidence indicates appropriateness of organic agriculture for small farmers in developing countries, notably Asia, Africa, and Latin America. The evaluations by the International Fund for Agricultural Development (IFAD) (Giovannucci 2005) and Partap and Vaidya (2009) reported that the income of participating farmers can increase substantially. Certified production gives access to a premium market, or simply just better market access. Organic agriculture can substantially contribute to poverty alleviation and food security of the small farmers living in these continents by the combination of many features, such as

- increasing yields in low-input areas;
- conserving biodiversity, natural resources on-farm and in surrounding areas;
- increasing income and/or reducing costs;

- producing safe and varied food; and
- being sustainable in the long term.

Organic agriculture is generally perceived as a form of agriculture that is more favorable for the environment than conventional agriculture. It is so because organic agriculture helps preserve biodiversity, landscape, soil, quality of water, climate, air, and energy.

Box 2-2 The Wider Meaning of Organic Farming

Organic farming is an approach to agriculture where the aim is to create integrated human, environmentally and economically sustainable agricultural production systems. In organic, maximum reliance is placed on locally or farm-derived renewable resources and the management of self-regulating ecological and biological processes and interactions in order to provide acceptable levels of crop, livestock, and human nutrition; protection from pests and diseases; and an appropriate return to the human and other resources employed. Reliance on external inputs, whether chemical or organic, is reduced as far as possible. Organic agriculture is also known as ecological agriculture, reflecting the reliance on ecosystem management rather than on external inputs.

The term 'organic' is best thought of as referring to the concept of the farm as an organism, in which all the component parts—the soil minerals, organic matter, microorganisms, insects, plants, animals, and humans—interact to create a coherent and stable whole. The key characteristics of organic farming include protecting the long-term fertility of soils, providing crop nutrients indirectly and using the action of soil microorganisms; effective recycling of organic materials, including crop residues and livestock manures; controlling weed, disease, and pest by relying primarily on crop rotations, natural predators, diversity, organic manuring, resistant varieties, and use of limited thermal, biological, and chemical interventions; and the extensive management of livestock.

Ecological Services of Organic Agriculture

Soil and Soil Organic Matter

Soil care is a main principle in organic farming. It is, therefore, not surprising that the impacts of organic farming on soil properties are researched comprehensively. Studies show that organic farming conserves soil fertility and improves system stability better than conventional farming (Stolze et al. 2000, Shepherd et al. 2003). As organic farmers are banned from using synthetic substances (fertilizers, pesticides, pharmaceuticals), special attention is given to operating a sound rotational system to nourish the soils. Organic management focuses on nutrient cycling, with the aim of maximizing agroecosystem stability. To restore the natural ecological balance is essential for organic farmers because ecosystem functions are considered as productive 'input' (Shepherd et al. 2003). The

environmental relevance of organic matter content is based on its capacity to improve nutrient availability, as well as biological activity, and to reduce the vulnerability to physical damage. Soil organic matter strongly influences many soil properties, including bulk density, water-holding capacity, infiltration rate, hydraulic conductivity, and aggregate stability (Alfoldi et al. 2000, Shepherd et al. 2003).

Soil organic matter and humus are important components in the organic farming philosophy. Fertilization is based on organic substances, such as farmyard manure from animal husbandry, compost, green manure, plant residues, and commercial organic nitrogen fertilizers. Consequently, there is an extensive supply of organic matter passing through aerobic decomposition processes. The research shows that soil organic carbon content is higher in organic systems than in conventional farming (Goldstein and Young 1987, Stolze et al. 2000). Studies have shown that organic and agroecological systems do not provide panaceas for areas with depleted and declining nutrient status (Parrot and Marsden 2002). However, studies do reveal that organic and agroecological systems can significantly help address problems of declining soil fertility by building up local productive capacity (both ecological and social) rather than relying upon external inputs.

The level of soil pH affects the plant's ability to take up nutrients and the microbial activity in the soil that influences the processes required for plant nutrition and is, therefore, an important parameter. Chemical fertilizers cause extreme pH fluctuations in localized areas, such as those near the fertilizer band (Cooke 1967). In contrast, organic manure can increase the buffering capacity of soils, preventing swings in pH, because of additional organic matter. Utilization of composted manure, common in organic systems, has a positive effect on organic matter content and helps prevent soil acidification.

Abundance of saprophytic soil fungi with a higher potential to decompose organic material is a key feature of organic farmlands (Elmholt 1996). Higher biological activity within the soil promotes metabolism between soil and plants and is an essential part of sustainable plant production management. The role of soil organisms, found abundantly in organic systems, is central to soil processes and fertility since they render available the elements in plant residues and organic debris entering the soil (Alfoldi et al. 2002).

Since organic farming techniques have the potential to improve soil fertility, soil structure, and soil moisture retention capacity, organic management provides solutions to the problems associated with degradation of drylands and desertification. Partap (2006) viewed that organic farming may be a more potential option for rainfed dryland agriculture. The research findings have shown the potential of organic farming to those countries where small and marginal farmers depend on rainfed dryland agriculture for their livelihoods.

Climate, Air, and Carbon Sequestration

Global climate change (greenhouse effect) is considered one of the most urgent environmental problems. Globally, agriculture is responsible for more than 15% of the trace gas emissions (Stolze et al. 2000). On a per hectare scale, carbon dioxide (CO_2) emissions from organic systems are 40–60% lower than CO_2 emissions from conventional agriculture (Burdick 1994). The main reason for these positive effects is the absence of chemical fertilizers and pesticides in organic agriculture. Soil carbon levels reportedly decline under conventional agriculture and organic farming helps build it. Organic agriculture also enables ecosystems to better adjust to the effects of climate change (Burdick 1994) and helps reduce emission of greenhouse gases from agriculture. The diversity of organic

crop rotations protects the fragile soil surface and may even counteract climate change by restoring the organic matter content (Haas and Kopke 1994).

Biodiversity

Organic farming depends upon stabilizing agroecosystems, maintaining ecological balances, developing biological processes to their optimum, and linking agricultural activities with the conservation of biodiversity (Alfoldi et al. 1992). Increased biodiversity improves and buffers ecological services, such as pollination, pest control, and maintenance of soil fertility, thus strengthening farming systems and practices. There is need to build on that. Some organic certification agencies have already incorporated biodiversity requirements into their standards. The Swiss organic standards, for example, require farmers to use 7% of their farmland as seminatural habitats (Bio Suisse 2001). Studies comparing the effects of organic farming on biodiversity, relative to conventional agriculture, indicated that organic farming systems are an appropriate tool for planners to balance conservation and production (Hole et al. 2005). These studies highlighted three broad management practices that are largely intrinsic to organic farming: a ban or reduced use of chemical pesticides and inorganic fertilizers, sympathetic management of non-cropped habitats, and application of mixed farming.

Most studies clearly demonstrated that species abundance and richness across a wide range of taxa was higher on organic farms than on conventional farms in the same locality. More details on the effects on biodiversity are discussed below for the following three aspects: genetic diversity, species diversity, and habitat diversity. Today, the adoption of high-yielding, uniform breeds and varieties has led to a considerable reduction in the number of species and varieties/breeds within species used in agriculture (Alfoldi et al. 2002). There are many schemes and projects worldwide working to conserve seed banks and indigenous varieties, which are linked to organic agriculture projects (Stolton 2002). A typical example is the Sustainable Agriculture and Rural Development Initiative (SARDI) where a community-based indigenous seed conservation program is being implemented. Indigenous seeds have been shown to perform better under drought conditions. Scientists have also used indigenous crop varieties that possess high degree of natural resistance to insects, diseases, and drought stress as a valuable source of genetic materials for improving commercial varieties. Since 1995, the world over organic farming has been indirectly instrumental in establishing a rescue process for threatened species, varieties, and breeds. Organic agriculture more likely or very often promotes the use of rare native or traditional breeds, contributing to the in situ conservation, restoration, and maintenance of agricultural biodiversity. Thus, organic farming areas are potential reservoirs of genetic diversity.

Organically managed fields very often are pools of a variety of weed flora, rare, and declining species. A richer floral diversity has positive impacts on faunal diversity because it offers overwintering sites, refuges, and areas with network of links to other habitats (Shepherd et al. 2003). In the context of pollinators, which greatly benefit from a diversity of flowers, flowering weeds are more diverse and abundant on organic farms (Frieben and Kopke 1996). In organic grasslands, the number of species is also more than that in conventional grasslands, leading to plant communities richer in species and structure (Frieben 1997). The importance of flowers to attract beneficial insects for adult feeding, as well as grass banks as overwintering sites for predatory beetles, is now fully recognized (Van

Emden 1996). Uncultivated land, hedgerows inside crops, allied crops, and neighboring areas serve as refuge to beneficial insects (Verkerk et al. 1998).

Concerning domesticated species, organic farming aims to increase plant diversity through crop rotation. Wide crop rotations are essential as a means of disease and pest prevention. They also contribute to maintaining soil fertility, particularly if nitrogen-fixing legumes are a part of the rotation. While organic farming standards recommend cultivation of site-adapted crop varieties, farmers are free to use high-yielding varieties and breeds. Nevertheless, the preservation of old land varieties and breeds is an important function of organic agriculture (Stolze et al. 2000).

Earthworms and Other Faunal Diversity

Most information available on faunal diversity under organic farming is about soil fauna and birds. In most cases, organic farming displays more faunal diversity than conventional agriculture. The key factors are greater fauna-friendly crop protection management, organic fertilization regimes, more diversified crop rotations, and more structured landscapes with seminatural habitats and field margins (Stolze et al. 2000). Landscape structures are essential for the survival of many invertebrates, especially due to favorable food and overwintering conditions. They also function as habitat cross-links between meadows, fallows, and field margins.

Earthworms, the key players of vermicomposting, have many positive and indirect effects on soil quality, both in terms of the effects on soil physical properties and nutrient cycling. They are vital to soil organic matter turnover (Shepherd et al. 2003). Earthworm populations can indicate the structural, microclimatic, nutritive, and toxic situations in soils. They are highly suitable bioindicators of soil fertility, and they are known for their sensitivity to synthetic pesticides and to many agricultural practices (Mader et al. 1996). Earthworms help improve soil structure and provide a high concentration of nutrients in a form accessible to plants. Studies have shown that organically managed soils have greater number of earthworms compared to conventional farmlands. A possible reason for the abundance of earthworms in organic farming could be that organic production depends more on a sustained supply of organic substances from plant residues and manure than conventional farming.

Pesticides can adversely affect beneficial arthropods either directly via contamination or through alteration of the microhabitat and a reduction of their prey. In Europe, researchers have found greater diversity and abundance of soil and surface-living arthropods, such as spiders, beetles, parasitic flies, and wasps, as well as non-pest butterflies and many other invertebrate species, in organic farming systems compared to conventional farming systems (Feber et al. 1997, 1998; Stolze et al. 2000; Tybrik et al. 2004).

Birds and Mammals

The decline in farmland bird populations is a serious concern today. The birds are well-suited indicators that show the environmental status and landscape infrastructure, including agricultural land. Studies have shown higher bird densities on organic farm landscapes than on conventional agriculture areas (Rhone-Poulenc 1997, Alger 1998). Brown (1999) found that activity levels of small mammals were greater in organic than in conventional agriculture fields, and the reasons assigned for were increased food and prey availability.

Habitat Diversity

Landscapes are territorial or spatial units produced through the interactions between human societies and cultures with the natural environment. They integrate various functions demanded by the society and are, in fact, multifunctional. Farms exert a joint, but uncoordinated, impact on landscape (Baudry et al. 2003). Organic farming generally provides a good potential for landscape diversity, including criteria related to perception and sensory qualities. Stockdale et al. (2001) indicated that seminatural habitats are intrinsic in organic regimes/landscapes where their management is central to the philosophy. They are also of great functional importance for nutrient cycling and processes of succession, e.g., colonization (Tybrik et al. 2004). Organic farming has a positive influence on habitat diversity, within parameters of limitations.

Organic agriculture is not exempt from the trend of intensification. Therefore, sometimes, the increasing economic pressures may endanger the positive aspect of organic farming. Clearly, organic farming has the potential to develop sustainable land-use systems, but the motivation of farmers and financial support are the main factors required in order to achieve this goal. Organic management could also be a key to bringing degraded land back into production and, therefore, significantly contribute to the advancement of sustainable development in Asia.

Is Organic Really Green Agriculture?

The evidence presented in the preceding section indicates that there is a wide agreement that organic farming comes closest to an environmentally friendly agriculture. **First**, in organic farming, there is no application of pesticides, contrary to conventional agriculture, where it is a major application as well as concern. **Second**, a major area where organic farming is more environmentally friendly is soil conservation. Soil care is a guiding principle in organic agriculture. It is expressed in higher levels of soil organic matter, the active promotion of soil biological activity, more balanced nutrient cycles, and lower soil erosion risks. The **third** benefit is the expressed goal to enhance biodiversity: organic farming depends upon intact ecological balances and favorable biological processes expressed in ecological services, such as pollination or pest control by natural predators. Organic farming creates more favorable conditions at the species and ecosystem levels of floral and faunal diversity than conventional farming systems.

Facilitating Factors for Green Agriculture in the Asian Context

Organic agriculture provides economic opportunities for different stakeholders. Some of the drivers that can facilitate growth of green agriculture through organic farming in Asia and the Pacific are

- Growing export market for organically produced crops;
- Price premium for organic food products;
- Diverse agro-climatic regions across the country, which provide environment for a wide range of crops that can cater to different market demands;
- Increasing awareness and health consciousness especially among certain sectors of domestic consumers;
- Cheap labor for labor-intensive organic farming;

- Huge number of small farmers engaged in traditional farming, with limited capacity to depend on costly external inputs;
- Organic service providers, such as nongovernment organizations;
- Thrust on organic enterprises and building a strong domestic organic market;
- Supportive organic policy environment to facilitate faster expansion of organic farming; and
- Production and distribution of biofertilizers, and developing standards for different biofertilizers and quality control.

Organic Agriculture as a Tool for Sustainable Development

The organic movement represents a positive moral force in a world that is rapidly sliding into crisis because of market fundamentalism, technocratic thinking, and opportunism by the powerful at the expense of the poor. The research on resource dilemmas, the role of neoliberal economic thought in agricultural research, and the implications of the fact that humans have become a major force of nature may now be convincing evidence to show that the organic agriculture movement is an important ally in the battle for a sustainable future.

We have focused, in the industrial era in particular, on production of food, fuel, and fiber as the main commodity outputs of land use. In so doing, we have ignored the increasing need to cultivate and nourish the ecological services on which we and other higher life forms depend. These ecological services include the provision of food, fuel, and fiber; a stable climate; protection against cosmic rays; the provision of clean and safe drinking water through healthy hydrological systems; an effective carbon cycle, including carbon sequestration; biodiversity, including insect pollination and keeping in check pathogens; purification of the air; etc.

The perceptions of many about the so-called inefficiency of organic agriculture lead us to think that it will require more land and, therefore, destroy more nature than 'efficient' conventional agriculture. This thinking undervalues farming as a constituent of healthy ecological services. We can no longer afford to ignore the need to actively manage ecological services. From the perspective of ecological services management, organic agriculture has advantages over conventional agriculture.

A study conducted by the Rodale Institute over 22 years of three systems (a conventional grain-based farming system, an animal-based organic system, and a legume-based organic system) highlighted the following points relevant to ecological services:

- Because of the greater organic matter content in the soil and, hence, greater water retention capacity, both maize and soybean in the organic systems did much better during drought years than that in the conventional system.
- Water volumes percolating through each system were 15% and 20% higher in the organic legume and animal systems, respectively, than in the conventional system.
- Although the input of organic material was roughly the same for all three systems, the organic animal and legume systems retained more carbon in the soil, resulting in an annual soil carbon increase of 981 kg and 574 kg per hectare, respectively, compared to only 293 kg per hectare in the conventional system.
- In 2004, soil organic carbon content was 2.5% and 2.4% in the animal and legume-based organic systems, respectively, versus 2.0% in the conventional system. Soil nitrogen content was also higher for the organic systems.

- Nitrate leaching did not differ a great deal between the three systems. However, soils farmed with the two organic systems had greater populations of arbuscular mycorrhizal fungi than did conventional system soils, and greater biodiversity in terms of earthworms, etc.
- Abundant biomass above and below ground in the organic systems helped enhance biological controls and increase crop pollination.
- In maize production, the inputs of energy (in terms of fossil fuels for machinery), fertilizers, seeds, and herbicides were 28% and 32% less for the organic animal and legume systems, respectively, than for the conventional system. Crop rotations and cover cropping, typical of organic agriculture, reduced soil erosion.

An aspect not mentioned in the Rodale study is the fact that the local marketing associated with organic agriculture greatly reduces the energy use in 'food miles'. There is now not only enough evidence to show the adverse impact of conventional farming on health and environment, but also national-level calculations of the cost of environmental externalities from conventional agriculture.

Being driven by principles that internalize sustainability, organic farming is an important leader in the search for alternatives to a world that has been largely driven by a ruthless search for profit under intense cost–price pressures. It is incomprehensible, therefore, to reject organic agriculture out of hand as being ideological.

Efficiency Factor of Organic Agriculture

It is often argued that low productive organic agriculture cannot secure global food security and, thus, jeopardizes circumstances for sustainable development. This argument is flawed on two grounds:

- *Food availability is not the most important determinant of global food security;*
- *Productivity per hectare for organic agriculture cannot automatically be assumed to be so much lower than for conventional agriculture that it could not feed the global population.*

The first argument is supported by the global consensus that it is not the availability of food, but its distribution that matters for food security. Food availability is not directly or simply related to alleviation of hunger or poverty. Even without further technological breakthrough, we could continue to produce more than enough food to feed every person in the world. Obesity-related diseases—now a major threat to public health in industrial countries—are increasingly becoming a concern among the middle class in the developing countries of Asia.

The experience in poor countries of Asia, Africa, and Latin America leads us to agree with those scholars who demonstrate that it is not total availability of food, but market entitlement and share that are in the minimum. In Ghana, for example, small farmers could produce a great deal more, given existing technologies. The problem lies in the fact that the increasing share in demand of urban food markets is usurped by imports from industrial countries, often with the unfair advantage of an export subsidy. Today, Africa imports 25% of its food grains, putting most of its small farmers to great disadvantage.

Roling (2006), while arguing about organic agriculture and world food security, strongly advocated that it is misleading, and damaging, to continue to frame the world on the basis of our collective understanding of the 1970s. To explain agricultural development

as technology-limited is a typical argument *pars pro toto.* Crop ecology is not the all-encompassing agricultural science. When combined with the market fundamentalism of agricultural economics, a focus on productivity per hectare leads to intellectual marginalization of agricultural research from wider research challenges to agriculture posed by ecosystem and poverty management.

Productivity Factor of Organic Agriculture

- *Organic yields.* There is evidence that organic agriculture can be productive. The 22-year study by the Rodale Institute, comparing conventional with organic animal-based cropping and organic legume-based cropping, has shown that, after an adjustment period of a few years, maize and soybean yields for all three systems were more or less similar. What is more, in dry years, maize yields in the organic systems were considerably better than that in the conventional system because of higher water retention and percolation in organic as compared to conventional soils.
- A large proportion of the world's agricultural land is dependent on erratic rainfall. As a result of global warming, this proportion is likely to increase a great deal and encompass southern Europe and the Corn Belt of the United States. Therefore, organic farming, with its attention to soil organic matter content, could well be a more resilient and safe form of agriculture with respect to global food security than conventional farming, with its reliance on chemical fertilizers and soil life-killing biocides.
- The Rodale study also indicates that in the organic systems studied, maize (the cash crop) could only be grown on one third of the land, as opposed to two thirds of the land for the conventional system. However, the rotation crops are not without value in themselves, and especially animal production on land used for restoring soil fertility can be profitable.
- Instead of treating organic agriculture as an inconsequential niche market of products produced by ideologues for ideologues, agricultural research institutions should consider it as a rich opportunity for innovative research. Organic agriculture is far behind in terms of the time and money that have been invested in research. It would seem that the opportunities for its development are much greater.

Institutional Aspects of Organic for Rural Development

It is one thing to develop technologies that fit within the very small windows of opportunity that farmers face, quite another to stretch those windows of opportunity in terms of services, markets, credit, and so on, so that they could drive the development of a more sustainable agriculture sector. In other words, the development of technologies that fit into the small possibilities farmers presently have does not lead to great improvements in livelihoods. What is required is improving the possibilities, and that requires institutional changes. The nature of institutional factors is demonstrated by an analysis of the Asian markets for food staples. Analysis of findings in this regard shows that there are no major domestic marketing outlets for surpluses in countries where up to 70% of the population is into farming. Urban demand is relatively small, and domestic opportunity typically is preempted by cheap imports of agricultural commodities and food.

For example, maize can be imported into Kenya at a price that is 20% lower than the cost price of the best local farmers. In Ghana, imported American rice—subsidized to almost 70% of the production cost—has not only replaced locally produced rice but is

also beginning to have substitution effects on other local food crops. The Government of Ghana is responsive to urban electorates that appreciate low food prices and has replaced a minister of agriculture who wanted to champion the cause of Ghana's rice farmers. Many Asian and African countries today import food grains not because food cannot be produced but because it is not economic for its own farmers to do so. Lack of access to markets may be disqualifying many Asian farmers from making a contribution to food security.

The importance of institutional factors in the development of agriculture in developing nations (e.g., government policies that support farming instead of considering it as a source of revenue) is further underlined by a careful analysis of Cuba's adaptation to the collapse of the Soviet Union (Wright 2005). The virtual total cutoff of food imports, petroleum, and inputs, coupled with the trade sanctions imposed by the United States, forced Cuba to make a rapid transition to food self-provisioning largely based on low-input—if not organic—methods that included urban horticulture, animal traction, production and reliance on biofertilizers and pesticides, and a host of other measures. This approach helped turn around the crisis and double the food production between 1994 and 1999.

It is, therefore, necessary to acknowledge that the organic movement, so far, has focused too much on technology and has neglected the importance of institutions. Thus, raising issues, such as the integrity of the organism, is alright, but also needs to say about the marketing of organic products and ecological services.

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3. ORGANIC PROMOTION IN RESPONSE TO CONSUMER DEMAND AND IMPORT SUBSTITUTION: STRATEGIES AND EXPERIENCES OF THE REPUBLIC OF CHINA

Dr. Ming–teh Huang

Introduction

Agriculture remains the basic sector in the Republic of China's (ROC) economy. The agricultural development policy in ROC not only concerns the agricultural production but also the farmers' living and natural ecology. Therefore, the Government has a policy for promoting organic farming in the country since 1995.

Most organic farms are concentrated in the eastern part of the country—in Hualien County and Taitung County. Hualien County has the largest organic area of 289 hectares (ha), followed by Taitung County with 217 ha. The third largest is Yunlin County, with organic area occupying 118 ha, followed by Chiayi County with 82 ha. Hualien and Taitung have been recognized as **"the cleanest areas where no air and water pollution occurs due to agriculture"**. The area under organic of other 17 counties and cities is less than 100 ha each. Since **import of organic food products has increased**, the Government is, therefore, encouraging all counties to extend the organic farm size and to produce more organic products. For example, organic rice farmers make more profits (USD731.8/ha) than non-organic rice farmers. Although yield of organic rice is 17.96% lower than that of non-organic, the sale price of grain is 42.42% higher than that of non-organic one. The increase in profit in organic rice is mainly due to lower production cost and higher sale price.

The Food and Agriculture Agency of the Council of Agriculture (COA) of ROC, through District Agricultural Stations, launched a large-scale organic farming program in 1995 (Wu 2005). Under the program, agricultural research institutions were involved in extensive research and demonstrations on organic farming, especially on crops, such as rice, fruits, vegetable, and tea. Organic farmers were grouped together for scaling up production and easy marketing. By 1998, the Agricultural Research and Extension Stations not only provided organic technology transfer and guidance to farmers, but also served as certification and accreditation agencies for their organic products. In 1999, organic product certification was transferred from public research and extension agencies to private certifying organizations.

By 2006, 1,335 ha were under organic farming. Organic rice is grown on about 697 ha (52.2% of total organic area; 503 households); vegetables on 343 ha (25.7% of total; 229 households); tree fruit on 152 ha (11.4% of total; 94 households); tea on 72 ha (5.4% of total; 56 households); and various other products are grown on additional 71 ha (70 households) (TOAIC 2006, COA 2006). **Products grown on these farms are all consumed domestically.**

Organic rice is a popular item with consumers in ROC. Estimated annual organic rice production is 4,500 metric tons (mt), on a brown rice basis. Organic rice is priced at about NTD90/kilogram (kg) (USD1.36/pound [lb]) which, on average, is about 2.5 times as expensive as conventional rice. Organic rice is usually sold in 1.8-kg bags in the form of brown rice and 1.5–2.0 kg in the form of pure rice. The price of organic rice also varies in different markets. In Taitung—ROC's famous high quality rice-producing region—

price of organic rice is about USD3.79/kg (+43.6%) while price of conventional rice is about USD2.64/kg. **Organic rice is widely distributed: it is available in all 86 farmers' association supermarkets island-wide** and in all 18 Taipei Agricultural Marketing Corporative supermarkets. In addition, all 30 Sung-Ching supermarket stores and several other supermarket outlets carry organic rice. Organic rice is an indispensable item in all organic/health food specialty stores. Some traditional dry goods stores also carry organic rice (Chen 2004).

Certified organic vegetable production area accounts for 0.14% of total vegetable area. The most popular organic vegetables are leaf and root vegetables, such as carrot and sweet potato. On average, **organic vegetables cost twice as much as conventional vegetables**, e.g., at NTD40 per 300-gram bag (USD1.30 per 10-ounce bag) for leaf vegetables; at NTD37 (USD1.23) for one 550-gram carrot root; and at NTD19 (USD0.63) for one 460-gram sweet potato. These organic vegetables are sold in specialty stores and in supermarkets located in department stores in upscale high-income communities. In northern ROC, more than 58 supermarket outlets sell organic vegetables. Prices for organic vegetables also vary with the distribution channel. Organic tea production is estimated at 72 mt from 72 ha of certified organic tea land, accounting for 0.4% of total tea production. Because each farm's tea is considered to be a unique product, market prices fluctuate considerably.

ROC's climate makes it difficult to grow fruits organically. The only organic fruits grown in the country are guava, orange, loquat, Indian jujube, pineapple, and papaya. According to the COA findings, production of organic tea and fruits has not been as successful as production of organic rice and vegetables.

Institutional Support to Organic Farming

Promoting organic farming is one of the important agriculture thrust policies in ROC. Organic farming is being promoted in ROC for two purposes: for providing safe agricultural products to consumers and for protecting the natural environment. The **"Safe Agriculture"** and **"Ecological Agriculture"** are the pillars of organic farming policy. To encourage farmers to go organic, there is subsidy support on organic fertilizers in the early stages. To increase production efficiency, the government policy encourages farmers to join together to form the **organic "Production and Marketing Teams"**. In order to expand the scale of organic farming, the COA has the policy of providing long-term and low interest rate loans to farmers, Production and Marketing Teams, cooperatives, and Farmers' Associations.

The Government also helps farmers and Farmers' Associations by expanding the marketing channel. The establishment of Farmers' Association supermarket has been financially supported by the COA. Promotional activities, such as "Organic Products Exhibition" on the sale of organic products, are also supported by the Government. Local sales promotion on organic and/or Good Agricultural Practices (GAP) products held by Farmers' Associations is also assisted by the Government.

Quality Assurance Mechanisms

The administrative regulations for organic farming, published in 1999, have been found not totally suitable for managing organic farming system and have no legal base to support further development of organic farming. The COA then implemented four revised

regulations for managing organic farming: "Operational Guidelines for Management of Organic Agricultural Products", "Production Standards for Organic Agricultural Products – Crops", "Production Standards for Organic Agricultural Products – Animal Products", and "Review Operating Procedure for Qualifications of Certifying Organizations for Organic Agricultural Products".

The "Operating Guidelines for Management of Organic Agricultural Products", published in 2003, sets the production standards for organic agricultural products, to regulate and assist production, reprocessing, and marketing of organic agricultural products in order to maintain the interest of consumers, protect ecology and environment, and ensure sustained use of natural resources. In this regulation, all organic agricultural products must be grown and produced under the guidelines for organic farming system. Organic farm and product must be inspected and certified by the COA-authorized certifying organization.

The COA has created the Certification Assistance Committee (CAC) to perform the accreditation role to the certifying organizations. Other functions performed by the CAC include studying and arranging categories and items of organic agricultural products; establishing production standards, including management methods during the production process, applicable materials and technologies, for each and every organic agricultural product; reviewing certification cases that the certifying organization has applied with the COA for authorization; studying the measures to assist and guide the certifying organizations; supervising the certification business, and reviewing and checking the work record and the annual report on business review of the certifying organizations; conducting spot checks of the production, reprocessing, storage, sales environment, marketing record, and related organic agricultural products of the certifying organizations; investigating and handling cases that are found to have violated these Operating Guidelines; and assisting other matters related to the organic agricultural industry.

Certification of Organic Products

Currently, the methods used to distinguish between organic and non-organic products rely only on pesticide residue determination. According to the regulation, the end products of organic farming should not contain any pesticide residues. But being pesticide residue free may not necessarily mean that the product is organically produced. Consumers cannot distinguish the difference between organic and Good Agricultural Practices products, which are also pesticide residue free. Again, consumers may not be willing to pay premium price for organic products. The organic certificate not only ensures that the produce is pesticide residue free, but also ensures that it is grown on land dedicated to organic production.

In ROC, qualified organic products will have a Certified Agricultural Standards (CAS)-certified organic product logo on it. Each sticker has its own serial number and name of certifying organization. The producer of that organic product can be traced back based on the serial number on the sticker. The certifying organization issues the correct number of CAS organic stickers to organic farmers for labeling their organic products. The number of organic stickers is under strict control to prevent unauthorized use on other non-organic products.

Figure 3-1 Logos of CAS issued by the Centre for Organic Agriculture, Ministry of Agriculture (COA–MOA) for certified organic products.

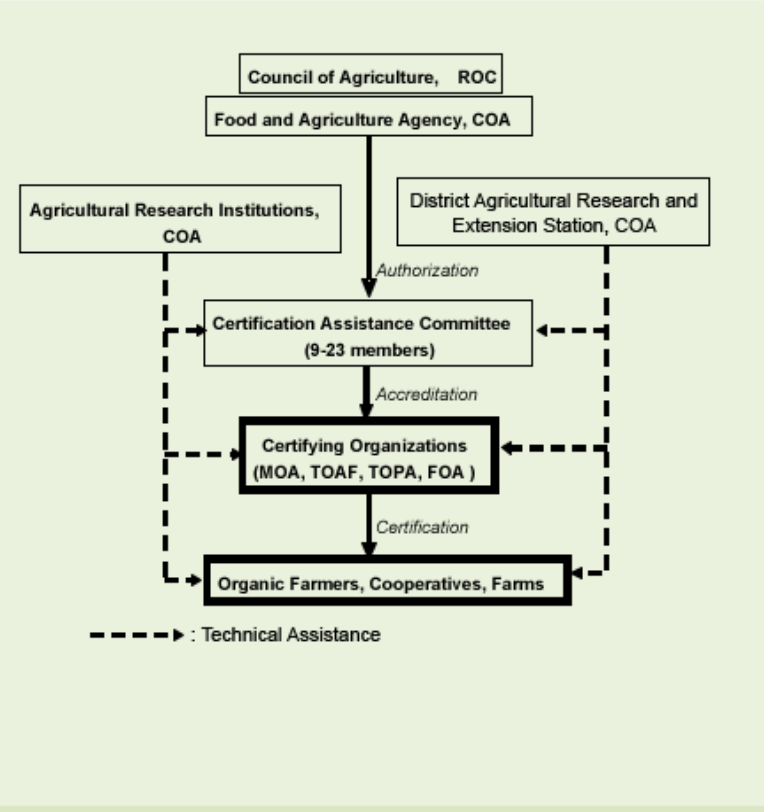
Plate 1. MOA logos for certified organic products

Plate 2. TOAF logo for certified organic products

Plate 3. TOPA logo for certified organic products

Plate 4. FOA logo for certified organic products

Figure 3-2 Institutional mechanisms for organic agriculture governance and program implementation in the Republic of China



Research and Marketing Support Issues

Research and Extension

Crops cultivated under hot and humid weather conditions usually are vulnerable to insect pests and diseases. Therefore, the success or failure of organic farming is mainly dependent on the success or failure in insect pest and disease control. Agricultural laboratories, research and development agencies, civil bodies, or juridical persons engaged in certification of organic agricultural products may apply with the COA for accreditation. The validity of the COA accreditation to certifying organization is 3 years, and subject to a yearly appraisal by the COA. The accreditation is terminated if the applicant fails to pass the appraisal. Currently, there are four qualified certifying organizations: Mokich Okada Association (MOA), Tse-xin Organic Agriculture Foundation (TOAF), Taiwan Organic Production Association (TOPA), and Formosa Organic Association (FOA). The Government decided to develop organic agriculture to serve the interest of both producers and consumers way back in 1986. Systematic organic farming research trials were started at several research stations. In 1989, every government research and extension institute was mandated to provide training and extension services in organic farming. Two long-term studies on the changes brought about by organic farming were set up in 1988 at Chishan Township in Kaohsiung County and Lutsao Township in Chiayi County.

Government research institutions, such as the Taiwan Agricultural Research Institute, the Taiwan Agricultural Chemicals and Toxic Substances Research Institute, and seven District Agricultural Research and Extension Stations of the COA, play a major role in providing technical assistances to the CAC, certification organizations, and organic farmers.

Experiments at long-term organic research location showed that the yield of spring sweet corn increased by 10% while the yield of vegetable soybean decreased by 7% during the first 6 years under organic farming conditions. Organic rice yield decreased for 4 years before increasing in the sixth year. For the fall season, the yield of cabbage, sweet corn, and carrot decreased from 6% to 23% and yield of soybean increased 17% after 6 years of organic farming. **After 12 years of organic farming under experimental conditions, yield of most crops was stable, and the yield difference between organic and non-organic was not so significant.**

Under slight environmental stress conditions, organic crops may perform better than non-organic ones and yield of organic crops may be higher than that of conventional ones. However, under large-scale commercialized production conditions, the yield of organic crops is usually lower than that of conventional crops. Therefore, increasing and stabilizing the yield and/or quality of organic crops remain a technological challenge.

Under the open market conditions, small-scale farmers and/or organizations in ROC may acquire more competence and profits from production of organic crops compared with production of traditional crops. ROC has at least 10 years' experience in organic farming. The organic farmland area has expanded from 160 ha to 1,246 ha. This expansion is considered relatively low.

Marketing and Trade of Organic Products

Consumers in ROC are now buying imported organic foods mostly from Japan and the United States. The biggest organic chain store company, **Green Little Town Co.,** is based in Kaohsiung and has 29 chain stores across ROC. The company is **selling more than 800 kinds of organic foods,** including 40 kinds of locally produced ones. Most organic products sold by the company are imported. Consumers seem to have more confidence with "USDA organic" or "JAS organic" labeled products. Consumers also seem to prefer "internationally certified organic products" over "locally certified organic products". This trend about consumer preference for imported organic foods is certainly affecting the alternative choice for locally grown organic foods.

Organic products are marketed through the following channels (Chen 2004):

- Direct sales by the farmers
- Supermarkets, hypermarkets, and organic food stores
- Membership clubs
- Contract department stores with organic product counters
- Occasional promotion by restaurants/events
- Promotion in schools, institutions, offices, and private companies
- Farmers' Association supermarkets (83 outlets)
- Taipei Agricultural Marketing Corporative supermarkets (20 outlets)
- Direct sale of organic products through e-commerce is now very popular. Products are sent to the consumers through the logistics system (Chiou 2000).

Even though there are several kinds of supply and marketing channels for organic products, yet their popularity is limited, as reflected by the quantum of sales of organic products through these channels.

Lo-San and Wan-An Organic Villages

A Model of Organic Farming Combined with Agro-tourism

There are some best-case examples of organic trade by small and medium-sized enterprises (SMEs) in ROC. The first example is the "Organic Village". Small parcels of organic land within the same village were joined together to form a bigger organic farm. Within this organic community, every cultural practice and operation is organic. Their organic products were mainly marketed and traded by the local Farmers' Association. The beautiful scenic view of this organic village and the living culture of inhabitants at the Lo-San Village of Fu-Lee Township, Hualien County, attract many tourists to visit. The **organic production combined with agro-tourism** brings better profit for farmers at this village. It is the first successful SME model combining organic farming with marketing of products, as well as making value addition through converting products into organic services.

Another example is the Wan-An Village of Chi-Shang Township, Taitung County. About 70 ha of rice farms are owned by this organic community. The Taitung District Agricultural Research and Extension Station provides the community guidance on organic rice production and marketing. **The quality of organic rice is guaranteed by the organic community of the village,** Farmers' Association, and the certifying organization. The marketing of organic rice produced by this community is handled by private rice retailers and the Chi-shang Farmers' Association. The organic rice of Wan-An Village has won its first national award on organic rice. The Wan-An community has now become a **famous organic rice and agro-tourism location,** and the income of organic farmers has substantially improved.

How-Chia-Jai Organic Farm: A Private SME

The How-Chia-Jai (HCJ) Organic Farm is located at Lu-Yeh Township, Taitung County, and has a 50-ha farm that produces organic rice, wheat, corn, sweet potato, sugarcane, peanut, pineapple, avocado, plum, pearl, lemon, star fruit, carrot, pumpkin, sweet pepper, watermelon, and leafy vegetables. Here, **farmers are hired to cultivate organic crops and to process organic products.** Products are sold through direct marketing (e-commerce) and through its own nine retail stores. Because of its multi-crop production system, bigger farm size, and effective management, the organic farm's average total income was USD107,455/month and net income was +USD4,424/month.

Future Prospects

Organic farming brings small-scale farmers of ROC a hope to increase their farm income. ROC's organic farming promotion policy is helping farmers since 1985. However, production and marketing of organic products is yet to overcome some bottlenecks. Technology improvement will be the key for future development of organic farming. Appropriate production technology, particularly the control of insect pests and pathogenic diseases, is highly important to organic farming especially in areas with humid, high

temperature weather conditions, such as that in ROC. If insect pests and diseases can be controlled without using any agrochemicals, then size of organic farms will expand dramatically.

For the future development of organic farming, current regulations will need to be revised and amended. In the promotion of organic farming, the Government may encourage farmers and/or Farmers' Associations to form a special zone for organic production. The COA is now encouraging farmers to expand their farm size or to form group cultivation. Technical and financial support from the Government is available. Providing correct information and concept in organic farming and certify organic through education for producers and consumers will be useful for pushing fake products out of the market. More funding support—either from the Government, organic producer organization, and/or Farmers' Association—to promote the production and marketing of organic products will help boost the development of organic farming in ROC.

The future of organic farming is bright in ROC, where there is a strong consumer base. Much of organic production will be focused on substitution of import. The only thing that producers need to do is to make quality produce easily available to consumers.

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4. ORGANIC AS PART OF ENVIRONMENT-FRIENDLY AGRICULTURE: POLICY EXPERIENCES OF THE REPUBLIC OF KOREA

Eun-Mee Jeong

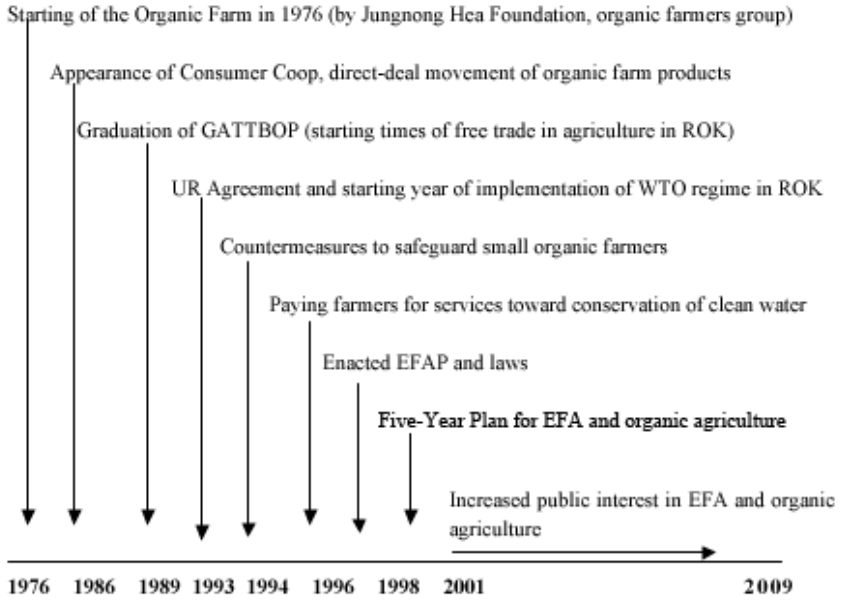
Environment-Friendly Agricultural Policy and Integration of Organic Farming

Organic farming was started in the Republic of Korea (ROK) as follow-up to consequences of the Green Revolution in the 1970s. It was first started by those farmers who suffered serious soil health and water pollution problems from excessive use of agrochemical products, particularly chemical fertilizers. The environment-friendly agricultural policy (EFAP) was formulated and promoted by the ROK Government in recognition of the need to address the widening crisis of farm economy and the imperatives to improve the competitive power of Korean farmers after the Uruguay Round (UR) Agreement.

The EFAP was formulated in 1994 by the Ministry of Agriculture. The thrust of EFAP was fortunately revised from enforcing regulations to promotional strategy for EFAP through providing incentives to farmers, as per their contributions. The Government introduced, and has been faithfully maintaining, the system of direct payments to farmers practicing various forms of environment-friendly agricultural practices since 1998. In 2001, a special 5-year program based on the EFAP was launched. The main reason behind formulating the EFAP was pressure from farmers and other organic stakeholders who demanded government efforts to help prepare them for the new challenges and opportunities emerging from opening of markets and free trade in agricultural products. Korean farmers were demanding alternative forms of agricultural practices that would enable them to benefit from opening of the global markets to agricultural commodities. Meeting the food safety norms and organic farming was one priority option. The EFAP was implemented through a separate section on environment-friendly agriculture (EFA) established in the Ministry of Agriculture and Forestry in 1994. This EFA section developed policies, made provisions, and provided direct incentive support to those farmers practicing EFA.

Before the policy was enacted, farmers and producers of organic commodities were making direct deals among themselves for several years. It is because of this long experience that farmers and consumers had felt the necessity of having a law governing EFA. They were constantly demanding government intervention to frame a policy on EFA.

Figure 4-1 Evolution of Environment-Friendly Agricultural Policy (EFAP) during 25 years (1976–2001)



Five Stages of EFAP Development

i. Life Movement and Organic Farm Movement

Farmers started organic farming in ROK in the late 1970s. To build a direct supply chain between producers and consumers, vibrant consumer cooperatives were in place by the 1980s. Koreans called it "life movement with consumer cooperative movement". In the process of building cooperative movement of producers and consumers, organic farming helped build a unique bond between the rural producers and urban consumers. Before the 1980s, producer-to-consumer supply chain was simple, short, and direct among farmers and consumers. However, since the 1980s, with the increase in number of organic producers, the supply chain and market for organic commodities had to be expanded. Thus, organic farmers started supplying to distant markets and simultaneously, consumer awareness initiatives were taken, supported by the farmers, about the value of consuming organic products. Therefore, the organic farming movement in ROK was started by farmers, in contrast to Europe and Japan, where the consumer movement led the growth of the organic farming movement.

ii. Consumer Cooperatives and Direct-Deal System

Until 1980, the organic supply chain in ROK was short and informal. Called **"direct deal of organic farm products"** in ROK, it was farmer led. After the 1987 democratization movement in ROK, there was upsurge of consumer cooperative movement, which took the leadership role for launching various other movements, such as spiritual cooperation, citizen groups' movement, women's movement, etc., including the direct-deal movement of organic farm products. Direct-deal system

for organic farm products, which was started by the consumer cooperative through developing a secure price system and sales network, was aimed at ensuring fair price to organic farmers and minimizing the difficulties and price risks faced by organic farmers in marketing.

iii. Environment-Friendly Agriculture-Led Income Enhancement

Agriculture growth in ROK suffered for sometime because of the sudden growth in economy. Rapid industrialization during the 1970s led to out-migration of farm labor from the rural areas into the industrial belts. This resulted in the decline in rural population, from 44.7% in 1970 to 15.5% in 1990 and 8.5% in 2000. Members of the younger generation were no longer interested in agriculture and were migrating to cities. Youth per farm household declined severely, with only old members left to do farming operations. It became a key factor in declining agricultural growth and the breakup of the traditional extended family system, as well as aging of rural population. The most remarkable aspect of the dynamics of rural population of ROK is that the aging population is rising constantly, e.g., from 10.5% in the 1980s to 17.8% in the 1990s to 33% in 2000. The ratio of full-time inhabited households to the total households was still 67.1% in 2000 as compared to that of Japan's 18.2%. By 2006, farmers' total income came from different sources, namely, farm business income, non-farm business income, and money transferred by the migrated family members from cities.

Since 1980, ROK's agricultural imports have been continuously increasing and have exceeded export figures. As a result, in 2003, the ratio of self-sufficiency-based value came down to 44.9%. It is under these circumstances that the Government; civic society, through the various movements, such as the coop movement; and farmers started paying more attention to organic farming. The idea was to produce, as much as possible, safe food commodities for the citizens. The innovations of institutional support, the likes of EFAP, are part of this goal, and the strategy is not only to contain the declining percentage of farmers but to inculcate interest among the new generation about agribusiness opportunities leading to clean environment and water conservation.

iv. Changes in the Agricultural Policy Favoring EFAP

In order to make its agribusiness compatible with the World Trade Organization (WTO) conditions, ROK reformulated its agricultural policy after holding wider consultations among stakeholders. The new EFAP was aimed at strengthening the competitive power of the country in agricultural commodities trade and to provide protection to small farmers. The EFAP included promotion of organic farming so as to produce safe and quality farm produce, maintain environment quality, and help increase farm household income. In the late 1990s, further adjustments were made in agricultural policy for ensuring food safety. Standards are followed for producing market-oriented agricultural products. In other words, the Government enhanced its commitment to EFA and organic agriculture by way of setting up a system of incentives for EFA and organic agriculture, called direct payment for promoting EFA among the Korean farmers.

v. Contribution of Local Self-Governance System and Reformed Agricultural Cooperative

The EFAP contributed to other important changes in the social governance system, such as revitalizing the local self-governing body and agricultural cooperative system. Agricultural cooperative system was democratized, and more thrust on educating farmers for EFA was given. Since 1992, local self-governing bodies have been accepting the demands of the local societies concerning agricultural development. The Five-Year Plans for EFA specify the obligation of local self-governing bodies to implement the plans.

Agricultural cooperative receives support for production and marketing produce from EFA. Local self-governing bodies, through local nongovernment organizations and other stakeholders, also promote and support developing channels of the direct-deal system between consumers and EFA farmers for safe food products.

Environment-Friendly Agricultural Policy – Objectives Revisited

The EFA in ROK was started by the farmers by way of organic farming and producers' organization in the 1970s. By 1989, more than 1,400 farm households were practicing organic farming. Organic farming products were then called **'chemical-free vegetables'** and were sold at 20% premium price. But both the concept of organic farming and certification system were unclear to many. In 1994, the Ministry of Agriculture set up a separate administrative system for EFA, which also included organic farming. Even though the terms EFA and organic farming were already in use during 1994, the concept of EFA and organic farming included the organic farming movement, low-input sustainable agriculture (LISA), and no-pesticide and low-pesticide farming. Because the concept of EFA was not clear, the meaning of EFA was defined as (i) to produce safe and healthy food, through organic farming, in order to maintain healthy life of people, and (ii) to conduct farming activities without degrading the environment.

The understanding and policy on EFA underwent a sea change during the past decades. There was

- First, a **'quickening period'** from 1991 to 1994. At that time, the objective of the EFAP was to strengthen the competitive power of the farmers and the nation in agribusiness by focusing on the production of farm produce that met the WTO quality standards. Organic farming and certified products were much in focus.

- Second, a **'formative period'** from 1995 to 1997. During this period, the objective of the EFAP was to balance income from small farms, along with taking care of preservation of environment. The implementation approach included direct incentives to farmers falling in the agriculture regulation zone.

- Third, a **'propulsive period'** from 1997 to present. The third phase of the EFAP puts priority on promoting EFA for the sake of preserving the environment and clean water in larger national interest and to make safe food available to its citizens. As a result, there have been shifts in the implementation approach as well.

Figure 4-2 Background circumstances instrumental in evolving Environment-Friendly Agricultural Policy

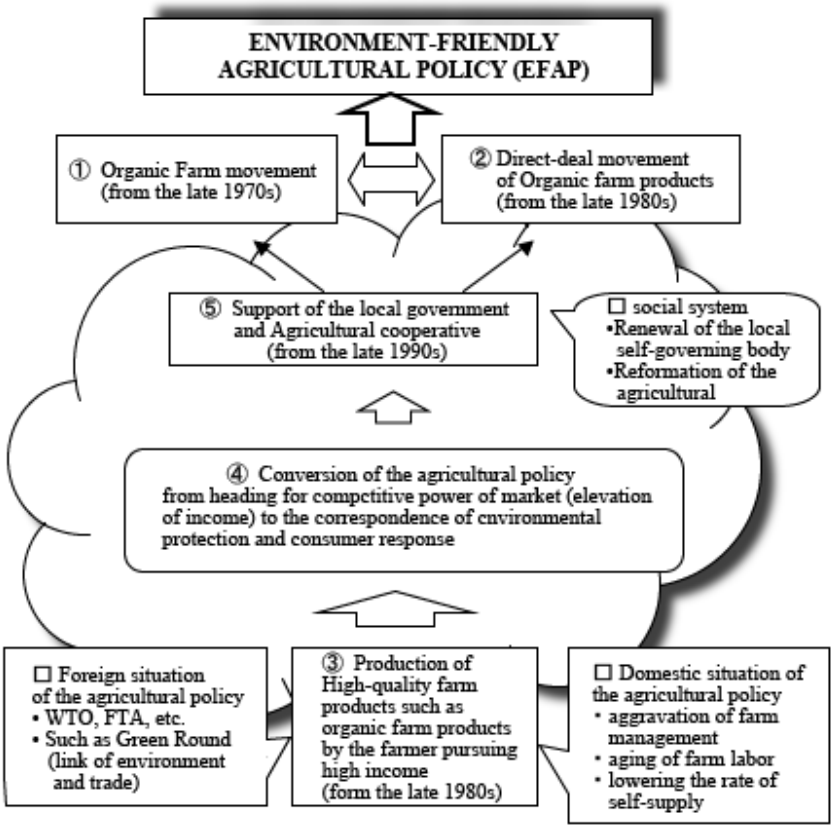


Table 4-1 Changing meaning, objectives, and implementation of Environment-Friendly Agricultural Policy (EFAP)

	Contents	**Objectives of Policy**	**Means of Policy**
Quickening Period	1991, Foundation meeting, and creating a unit on organic farming planning in the Ministry of Agriculture 1993, Certification System 1994, Foundation Conference, Group of farmers and consumers in EFA and 'A section of EFA' in the Ministry of Agriculture	Strengthening the competitive power by the high-quality farm products, such as organic farm products (indistinctness of term and concept)	• Certification system

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Formative Period	1995, Supporting small farms for organic farming as part of preservation of clean water services 1996, environment policy in agriculture and forest	• Bringing Equilibrium between income for the small farms and (sustainable farm management) and preservation of environment	Incentives to farmers in agriculture regulation zone and support for organic farming
Propulsive Period	1997, Law on Fostering EFAP enacted 1999, direct payment of incentives for adopting EFAP-based schemes 2001, Five-Year Plan for EFAP promotion, • direct payments for rice farmers • Reforming Law on further Fostering EFAP	• Promotion of agriculture for the preservation of environment and public interest • Production of safe farm produce	• Classifying organic farming zones • The order on direct payment

Source: Five-Year Plan for Environment-Friendly Agriculture, Ministry of Agriculture and Forestry (2001).

Table 4-2 Objectives and means regarding Environment-Friendly Agricultural Policy (EFAP)

	Objectives	**Means**
Production Policy	1) Reducing environmental pollution from agriculture, promoting use of on-farm inputs	• Reducing the use of chemical inputs • Promoting the use of farmyard manure • Skills development in EFA and dissemination
	2) Supporting the farmer for organic farming	• Forming the zone for organic farming • Implementing the order about direct payment

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Distribution Policy	1) Setting up a certification system	• 1993, Certification system • 1998, Reforming certification system by the Law of Fostering the EFA • 2001, Reforming certification system (organic, conversion-to-organic, no-pesticide and low-pesticide use)
	2) Strengthening marketing supply chain for EFA products	• Supporting supply chain development and financing distribution of EFA products
Consumption Policy	Farmer and consumer awareness and partnerships	• Awareness activities about the certification system • Interactions between farmers and consumers • Consumer awareness campaigns about EFA products

Source: Five-Year Plan for Environment-Friendly Agriculture, Ministry of Agriculture and Forestry (2001).

Impact of Environment-Friendly Agricultural Policy

Production of Environment-friendly and Organic Agricultural Products

In 2005, ROK farmers produced **'certified environment-friendly agricultural (EFA) products'** weighing 806,247 tons, which accounted for 3% of the total agricultural production. The system that evolved for certifying EFA is unique and is used for determining the direct-payment incentives to farmers. By the end of 2005, an area of 50,000 ha belonging to a large number of small farmers was certified under the EFA system.

Table 4-3 Growth of certified environment-friendly agriculture systems

Year	Organic[a]		No-pesticide		Low-pesticide		Total	
	Farms	Area (ha)	Farms	Area (ha)	Farms	Area (ha)	Farms	Area (ha)
1999	355	230	449	262	502	383	1,306	875
2000	353	296	1,060	876	1,035	867	2,448	2,039
2001	442	450	1,645	1,293	2,591	2,711	4,678	4,554
2002	1,505	1,601	4,084	3,727	6,303	5,911	11,892	11,239
2003	2,748	3,327	7,426	6,756	13,127	12,155	23,301	22,238
2004	3,283	4,622	9,776	8,440	15,892	15,154	28,951	28,216
2005	5,403	6,095	15,278	13,803	32,797	29,909	53,478	49,807

Note: [a] Data on organic farming area includes both certified and under conversion areas.
Source: National Agricultural Products Quality Management Service (NAQS 2006).

Table 4-4 Growth of production under environment-friendly agriculture systems (in tons)

Year		Total	Organic[a]	No-pesticide	Low-pesticide
1999	Food crops	818	264	457	96
	Orchards	3,034	428	218	2,388
	Vegetables	21,611	6,216	10,202	5,192
	Potatoes	822	81	569	172
	Special crops	359	7	352	
	Others	-	-	-	
	Total	26,643	6,996	11,798	7,849
2002	Food crops	12,243	1,795	6,540	3,908
	Orchards	57,956	850	1,722	55,383
	Vegetables	104,205	17,165	46,749	40,291
	Potatoes	5,183	1,171	1,550	2,463
	Special crops	17,306	127	17,111	68
	Others	3,481	5	3,157	319
	Total	200,374	21,114	76,828	102,432
2005	Food crops	93,954	16,805	34,050	42,799
	Orchards	288,518	4,055	12,417	272,046
	Vegetables	326,020	42,902	115,876	167,242
	Potatoes	15,651	3,326	7,226	5,099
	Special crops	73,562	906	72,254	402
	Others	342	97	245	0
	Total	797,747	68,091	242,068	487,588

[a] Data on organic farming area includes both certified and under conversion areas.

Source: National Agricultural Products Quality Management Service (NAQS 2006).

Trading of Environment-Friendly Agricultural Products

EFA products, unlike general agricultural goods are, in general, traded by companies through direct transactions and not through auction. It helps in supporting smaller quantities of production of a variety of goods and in maintaining price differentiation with general produce.

Certification System for EFA Products: Concepts and Implementation

This system has been developed to certify safety and quality of EFA products. On the analogy of organic certification system, EFA farmers have to undergo comprehensive inspection process before being certified by an accredited certifying agency. EFA follows

rigid standards, including those set for third-party international certification of organic farms, in order to promote EFA and protect consumers.

Types of certification: There are two types of EFA certification. One is for agricultural products and another for livestock products. The certification for agricultural products is subdivided into four categories: i) certified organic agriculture, ii) under conversion-to-organic agriculture, iii) non-chemical agricultural production, and iv) low chemical agricultural production. The certification for livestock products is subdivided into two categories: i) organic livestock product and ii) in transition-to-organic livestock product.

Figure 4-3 Certification Marks for different categories of environment-friendly agricultural products

Policy Shift in Environment-Friendly Agriculture

The objective of redefining the EFAPs in 2005 was to develop competitive EFA. The major policies included i) policy on institutional restructuring, such as reforms in the support services for EFA; expansion of direct-payment system for EFA; support for farmers engaged in EFA; facilitating trade and marketing in EFA; awareness and promotion of EFA products as safe food for consumption; and improvements in the EFA certification system; ii) promoting healthy soils of farmlands; iii) reducing environmental pollution by promoting the use of on-farm inputs; and iv) promoting the principles of "Ecological Recycling in Agriculture" by promoting wider use of farmyard manure and recycling other farm waste.

Conclusion

Major shifts in ROK's agricultural policy were felt necessary as part of the adjustment to cushion the impact of externalities, such as the Uruguay Round Agreement and the World Trade Organization. The agricultural policy was molded toward environment-friendly agriculture (EFA). The Environment-Friendly Agricultural Policy (EFAP) was aimed at raising the income of small farm households and the revival of public interest in EFA. The objective of the EFAP was changed to promote agriculture for the preservation of environment and production of safe food. As environmental problems became a social issue and consumers started demanding safe food, the EFAP improved safe food supplies and consumption. The policy's key elements can be classified as follows: i) the EFAP is considered as a bottom-up approach for the organic farming movement and direct-deal movement between farmers and consumers; ii) the local self-governing body and the people of the district have become key stakeholders of programs implemented under the EFAP; and iii) the EFAP recognizes that not only farmers, but also the consumers, are stakeholders of the agricultural policy. As mentioned earlier, EFA is seen as an alternative solution to farmers' problems related to trade liberalization under the World Trade Organization and deteriorating environmental conditions, such as polluted waters. So far, the EFAP is fully focused on revitalizing the multifunctional roles of agriculture in ROK.

5. ORGANIC FARMING FOR REDUCING IMPORT OF INORGANIC AGROCHEMICALS AND PROMOTING ORGANIC COMMODITY EXPORT

Dr. Udomporn Pangnakorn

"Thai organic policy aims to reduce import of agrochemicals by 50% and boost organic exports by 100%"

State of Organic Agriculture in Thailand

Organic farmland area is about 13,900 hectares (ha), or 0.07% of the total agricultural area in Thailand. Promotion of organic farming is initiated by local nongovernment organizations (NGOs) and the private sector. Commodities cover rice, vegetables, herbs, tropical fruits, shrimp, palm oils, etc. Organically produced local vegetables are also available in the community markets.

A much larger agricultural area in the country is under uncertified traditional organic farming. The Alternative Agriculture Network (AAN) alone works with up to 3,470 farming families at different stages of conversion toward sustainable farming practices. There is a growing domestic market for healthy food and a rapid development of new outlets and companies offering chemical-free products to Thai consumers.

Increasing interest in organic agriculture and organic commodities in Thailand is a combination of three major trends.

First trend: increasing public awareness about healthy life requiring the consumption of safe food as preventive and curative health care especially among the middle class.

Second trend: the development of sustainable agriculture in response to the crisis faced in the farm sector. Depressed farm prices and declining productivity of high-input, cash-crop monoculture systems have helped drive the establishment of many grassroots community development organizations and NGOs to promote environmentally sustainable agricultural system. AAN, established in 1989 with the cooperation of NGOs and farmer leaders, was from the outset a major driving force of the organic movement. AAN's activities focused mainly on creating a system for transferring knowledge and experience to grassroots NGOs and farmer leaders. In 1992, a conference on sustainable agriculture issued a declaration calling for the promotion of organic agriculture as a part of national sustainable development strategies.

Third trend: promoting environmental awareness, starting from a concern for environmental protection and conservation, but later transforming into a broader agenda covering the impact of conventional agriculture on environment, ecology, and biodiversity, including land use, landscape, biodiversity, and pollution caused by use and misuse of agrochemicals (Ellis et al. 2006).

Thai Comparative Advantage for Organic Farming

Organic agriculture is not a recent phenomenon. Local Thai farmers have practiced traditional farming for hundreds of years. Such practices have been developed and enriched through farmers' knowledge of local agroecology and environmentally sustainable way of farming. Despite the imposition of modern agriculture, traditional farms continue to exist while local indigenous knowledge of sustainable farming persists. The survival of these farms is the source of the revitalization of modern organic agriculture in Thailand today (Panyakul 2001).

As organic agriculture gains more and more momentum in recent years, several organizations specializing in organic agriculture have also emerged. Many organic production projects have been initiated by producer organizations, private companies, exporters, and even NGOs. Also, a national private certification body, the Organic Agriculture Certification Thailand (or ACT), founded in 1995, was also set up to provide professional organic certification services for all farm production, as well as processing and handling operations. An estimated 8,958 ha of farmland area, representing about 0.04% of the total farmlands, is presently under organic management. Thai organic agriculture is at an early stage, and production is dominated by primary food products, e.g., rice and fresh vegetables. Several initiatives, either by the private sector or by NGOs, have focused on diversification to new organic products, such as medicinal herb, tropical fruits, shrimp, and even palm oils.

Despite this rapid progress on both production and regulatory fronts, **Thailand's organic sector is still at a relatively early stage of development.** Most production systems are still simple and without sophisticated technologies. Most organic products are basic, unprocessed commodities, such as fresh fruits and vegetables, and rice. Processed organic produce are relatively few, as the raw material is usually insufficient to supply processing plants, and the supply is often not continuous (Ellis et al. 2006).

Table 5-1 Categories of organic produce in Thailand, 2004

Category	Organic Produce
Rice	White and brown rice (Hom Mali, Lueang-On, red Hom Mali)
Beans	Soybean and peanut
Processed vegetables	Frozen or bottled baby corn
Fresh vegetables	Fresh baby corn, okra, salads, tomato, Chinese vegetables
Fruit	Banana, papaya, pineapple, jackfruit, mango, longan
Herbal teas	Tea (*Thunbergia laurifolia* L.), dried bael fruit, dried lemongrass, rose tea

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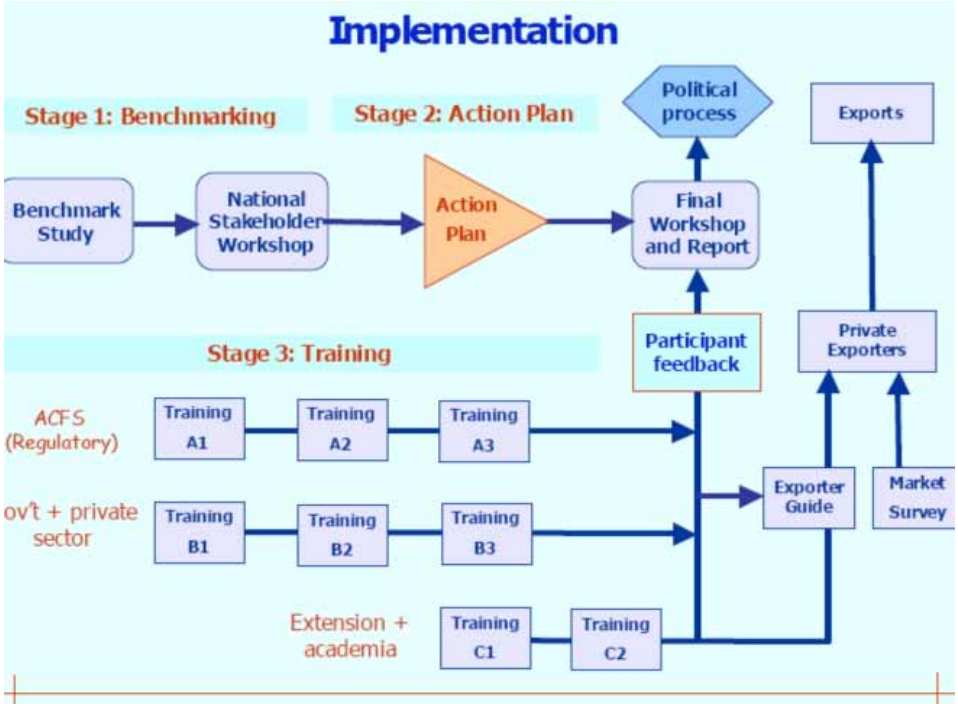
Food ingredients	Dried tom yam seasoning, coconut milk, sugar, tapioca flour
Wild products	Wild honey
Processed foods	Sesame butter, peanut butter
Medicinal herbs	Fa talai joan (*Andrographis paniculata*) Indian mulberry (*Morinda citrifolia*) *Cissus quadrangularis* L.
Aquaculture	Tiger prawns, fish

Source: Green Net/Earth Net Foundations, 2005.

Thailand has long been a major exporter of tropical fruits and vegetables to European markets and is recognized as a source of reliable and quality products. However, during the past 5 years, the value of exports has decreased mainly due to the impact of bilateral Free Trade Agreements (FTAs) and the introduction of stringent food safety and traceability legislation by the European Union (EU) and other importing countries. Compliance with these rules is essential for access by Thai exporters to the EU markets, and smallholder farmers are particularly affected.

Figure 5-1 Implementation of organic agriculture

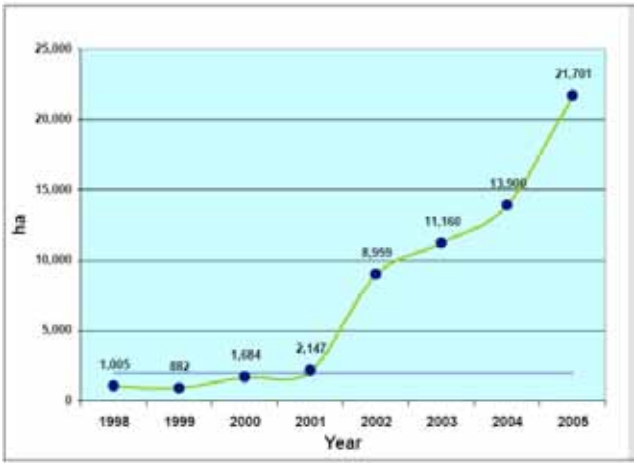


Conversion to Organic

The stages of organic agriculture implementation in Thailand are depicted in Figure 5-1.

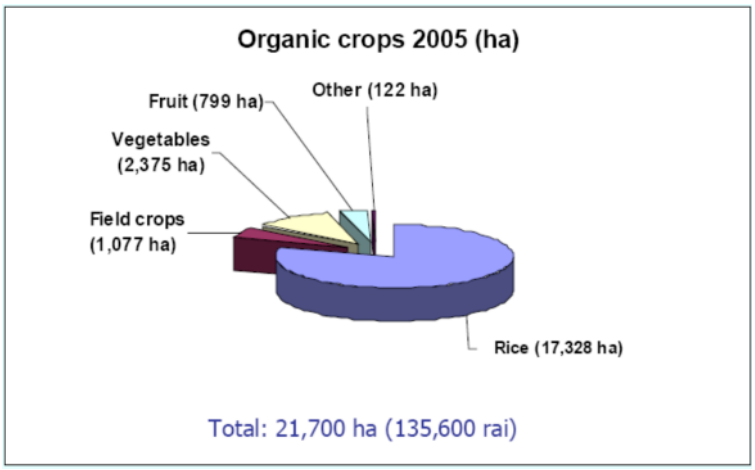
Critical factors influencing the growth of organic agriculture in Thailand include building domestic markets, developing effective extension scheme to reach small-scale farmers, inventing appropriate postharvest technology, and strengthening collaboration between the public and the private sector. Growth of organic agriculture in Thailand from 1998–2005 is shown in Figures 5-2 and 5-3. The area under organic farming increased from just over 2,100 ha in 2001 to 21,701 ha in 2005 (Figure 5-2), representing 0.10% of the total agricultural land area (21,701 ha, or 135,600 rai). The land area devoted to organic agriculture increased by more than 19,500 ha (>900%) from 2001 to 2005. The number of farms increased commensurately, with 2,498 organic farms, representing 0.049% of the total number of farms (5.1 million farms) in the country in 2004.

Figure 5-2 Area under organic agriculture in Thailand, 1998–2005



Source: Green Net/Earth Net Foundation, 2006.

Figure 5-3 Organic crops in Thailand in 2005



Source: Green Net/Earth Net Foundation, 2006.

Thai Organic Agriculture Promotion Policy

Thailand's National Agenda on Organic Agriculture was launched in October 2005. The 5-year program is aimed at supporting 4.25 million farmers (0.85 million in 2006) for using organic inputs over an area of 13.6 million ha (2.72 million ha in 2006). **The policy aims to reduce import of agrochemicals by 50% and boost organic exports by 100% annually.** These targets will be achieved through various intervention mechanisms, including research and development activities, skills development, awareness campaigns, and by setting up organic fertilizer factories. There are 26 agencies from six ministries involved in implementing this program, and it is being coordinated by the Land Development Department. The program has a budget of USD31.5 million for 2006 alone.

The Government of Thailand has repeatedly underscored its policy of support for organic farming, announcing in a Cabinet resolution, on 4 January 2005, its goal to transform Thailand's agriculture and to increase the importance of organic production systems. However, institutional capacity and coordination to support implementation does not yet match the ambitious policy goals. For Thailand to achieve its policy goals for organic trade and export, relevant government agencies will need to coordinate efforts and strengthen regulatory environment that stimulates the development of the private organic sector and builds international confidence (Ellis et al. 2006).

Table 5-2 Overview of organic agriculture policies and program

Policy Area	Government Policy and Program
General awareness of merits of organic agriculture	Publication and government websites, e.g., publications of Department of Agriculture (DOA) and Department of Agricultural Extension (DOAE)
Organic regulations, standards, and certification	Voluntary national standard guideline for organic crop, aquaculture, and livestock (ACFS) Set up public certification body (Organic Crop Institute)
Export marketing	Department of Export Promotion (DEP) conducts public seminars; assists traders and exporters to participate in overseas organic fairs (Biofach, Germany; Natural Products – Organic Asia, Singapore); and organizes buyer–seller business events and information services.
Production	At the provincial level, some governors started organic projects, e.g., Surin and Buriram organic rice projects. Several local and national agencies started organic agriculture training courses for producers. Few training programs are linked to certification.
Inputs (seeds, seedlings, pest control, and fertilizers)	No specific activities, so far, on seeds. The Department of Land Development plans to set up several hundred organic fertilizer factories in 2005–06.

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Research	Some research funding institutions offer specific funding support for organic agriculture, e.g., Thailand Research Fund, National Research Council of Thailand. No clear budget allocation or research goals.
Extension service	Many public agencies, especially DOA and DOAE, conduct seminars and 1-day courses on organic farming. These are promotional, as well as extension, activities.

Source: Strengthening the Export Capacity of Thailand's Organic Agriculture – Final Report, August 2006.

Quality Assurance

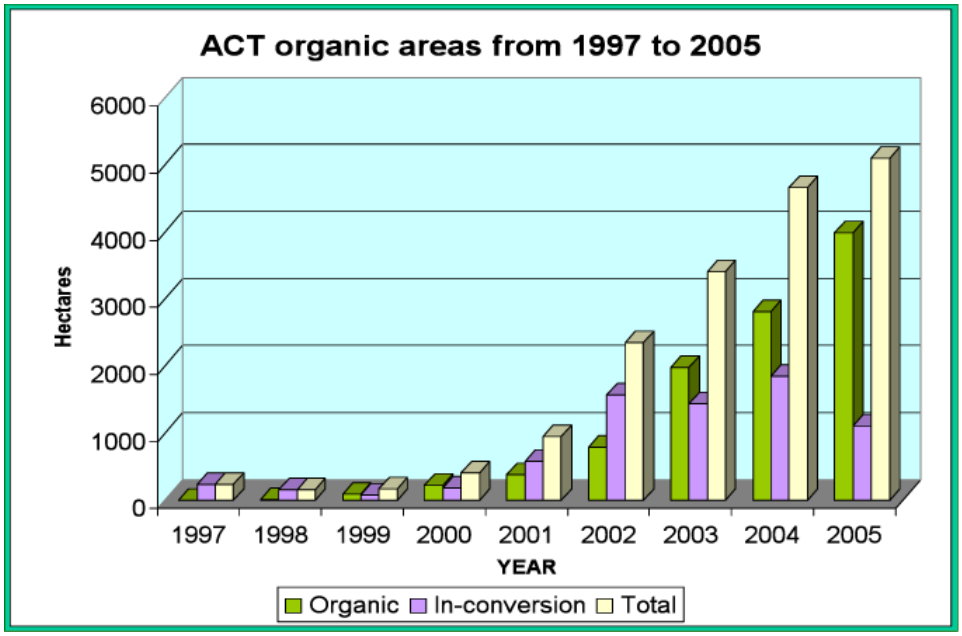
Several certification bodies offer organic certification services for producers in Thailand. These organic certifiers fall into three groups: Thai government bodies, Thai private entities, and foreign entities. According to a study conducted by Green Net/Earth Net in 2004, about 50% of organic farmlands were certified by foreign companies. The Organic Agriculture Certification Thailand (ACT) is a private certification body in Thailand offering organic inspection and certification service to operators in Thailand and in other countries in the Association of Southeast Asian Nations (ASEAN) region. ACT, originally named Alternative Agriculture Certification Thailand, was established in 1995 by AAN, a network of 85 Thai NGOs working on sustainable agriculture. In 1999, the ACT organic standards, which were originally simple and practical for Thai farmers and progressively developed to meet equivalence to the International Federation of Organic Agriculture Movements (IFOAM) Basic Standards, were officially approved by the ACT General Assembly.

Table 5-3 ACT-certified products in Thailand

Rice	White and brown Jasmine rice, Red Jasmine rice, Luang-on rice, etc.
Vegetables	Chinese kale, cabbage, lettuce, celery, onion, garlic, lemongrass, cucumber, sweet pea, shallot, holy basil, tomato, carrot, etc.
Fruits	Mango, banana, papaya, longan, lychee, guava, pineapple, dragon fruit, durian, jackfruit, pomelo, rambutan, mangosteen, etc.
Wild products	Wild honey, bel fruit
Other crops	Baby corn, asparagus, soybean, peanut, sesame, coconut, mulberry, herbs, etc.
Processed products	Tom-yam set, mulberry tea, processed and preserved baby corn, dried longan

Source: Organic Agriculture Certification Thailand (ACT) 2006.

Figure 5-4 Organic areas in Thailand from 1997 to 2005



Source: Organic Agriculture Certification Thailand (ACT) 2006.

Organic Export

Most of Thailand's organic produce is for export. Despite its growth and focus, the export sector is constrained by many challenges. The organic guarantee system is generally not fully understood by organizations promoting organic agriculture. The long conversion period stipulated by the EU acts as a barrier to participation since it generates major compliance costs for farmers who have little or no support during the transition period prior to receiving certification. There has also been relatively little progress in the areas of research on organic crop production, namely, agronomy and crop protection for organic systems. Thus, existing organic farming systems still cannot ensure consistent production and regular supplies of fresh produce of guaranteed quality—the essential prerequisites to meet the stringent requirements of export markets.

Thailand's organic exports have a strong potential, particularly in the EU member countries. Thai organic produce, especially rice, tropical fruits, and vegetables, are in high demand. With its comparative advantage in production, Thailand is well-placed as an exporter of organic commodities. However, the stringency of current requirements presents barriers to participation by the small farmers. Review of Thailand's regulatory and control systems will also be required to ensure equivalence with EU standards, as a step toward Thailand's inclusion in the EU Third countries list.

Production and Marketing Volume

In 2005, the total volume of organic products in Thailand delivered to market was estimated at 29,415 tons, valued at USD23 million—a substantial increase from just 9,756 tons in 2003 (Organic Agriculture Certification Thailand [ACT] 2006). The largest production category is organic rice, primarily Hom-mali jasmine rice from

the northeast region, followed by fresh vegetables and herbs. Organic vegetables are mainly leafy vegetables, especially the salad type and Chinese vegetables, produced mainly in central Thailand and in Chiang Mai province. Dedicated organic orchards are also becoming more important, though many organic vegetable farms also produce organic fruits. The major fruits now grown organically are mango, papaya, and longan. In value terms, the domestic market has grown and, in 2005, it was estimated at USD12.4 million, including exports amounting to USD10.6 million.

Conclusion

- Thailand has been a major exporter of tropical fruit and vegetables to European markets and is recognized as a source of reliable and quality products.
- Thailand's organic sector is small but has also grown very rapidly over the last 5 years in line with the global trend due to growing consumer consciousness, crisis in the farm sector, and environmental concerns.
- Rice is the most important crop, followed by vegetables, fruits, corn, and herbs and spices.
- Thailand exports the bulk of its organic produce to the EU, with the remainder destined mainly for Japan, United States, and Singapore.
- Thailand's organic exports have a bright future due to excess of demand over supply in international markets. Thai produce, such as rice and tropical fruits and vegetables, are in particularly high demand. With its comparative advantage in production, Thailand is well-placed to serve the world market.

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6. ORGANIC FARMING TECHNOLOGIES FOR SMALL FARMERS: INDIAN FARMERS' INNOVATIONS

Dr. Ashok K. Yadav

Innovations on Cost-Effective Organic Technologies for Small Farmers

In India, organic agriculture is viewed as a two-dimensional opportunity: first, for developing organic agribusiness, both for export and domestic market, by focusing on organic production of niche products. Second, organic is also seen as an important livelihood option for small, resource-poor farmers with low-input costs and quality food production. Organic agriculture also holds last hope to the farmers in the so-called farmer suicide zones of India. Accordingly, India has two kinds of organic farmers. The large estate owners are contract farmers associated with the corporate sector, doing organic farming as agribusiness opportunity. And then there are those with small landholdings of rainfed marginal farmlands, looking for options that would reduce their dependence on external inputs, reduce cost of cultivation, and provide food and income security using on-farm resources and family labor.

The small farmers own one or two animals but have no access to credit, irrigation facilities, and adequate quantity of biomass and composting. The only resources available for organic farming are cow dung and urine, biomass from a few trees, and 60% land area marked for growing crops for self-consumption, etc.

Folk Innovations on Cost-Effective Organic Technologies

(Developed in reference to agroecological conditions of Central India)

These include enrichment of soil, management of temperature, conservation of rainwater, maximum harvesting of sun energy, self-reliance in terms of inputs, maintenance of natural cycles and life forms, and integration of household livestock with farming. To achieve these under organic farming, the following needs to be done:

Enrichment of soil: Since the use of chemical is banned, use of organic mulch, mixed farming, multiple crops, and crop residues are tried for this purpose.

Enrichment of soil: Since the use of chemical is banned, use of organic mulch, mixed farming, multiple crops, and crop residues are tried for this purpose.

Management of temperature: Keep soil covered; plant trees or other plants on bunds.

Rainwater conservation: Dig percolation tanks and farm ponds, and develop contour farming.

Self-reliance in terms of inputs: Farmer should prepare his own seed requirements, meet compost and farmyard manure needs of his fields, and prepare his own plant protection tools.

Energy: Farmer should make maximum use of animal energy.

Essential Requirements for the Small Farmer Converting to Organic

Animals are an essential component of organic farming. For the small farmer, one cow and a pair of bullocks seem essential. Three or four tanks of 200-liter (l) capacity for liquid manure preparation, some infrastructure for compost making, and vermicompost and vermiwash preparations are also needed. Farmers should leave some space for developing utilities, such as space for cattle, vermicompost bed, vermiwash unit, and compost tank. As per space available, 3–4 trees for shade may be planted as all utility infrastructure will need shade. It is advised to dig some percolation tanks (7 × 3 × 3 meters [m]) for rainwater conservation, one pit per hectare, and develop a farm pond preferably 20- × 10-m in size.

To develop a 10-acre model farm, for example, farmers will need to plant *Gliricidia,* perennials *Sesbania, Leucaena, Cassia* spp., etc. on bunds (roughly 800 m long and 1.5 m wide) for promoting bacterial nitrogen fixation. Similarly, farmers should plant a few trees of neem, some local bushes, one tamarind tree, one *Ficus glumerata* tree, about 10 bushes of *Zizyphus* sp. (ber), one or two bushes of Emblica (aonla), and a few trees of drumstick and custard apple (fruit trees). In between *Gliricidia* rows, farmers can insert a few plants of pesticidal value, such as *Adhatoda vesica, Vitax nigundo, Calotropis, Datura alba,* and *Ipomea,* etc. Many of these plants can be replaced by other local plants having similar values, namely, for shade, pesticidal value, nitrogen fixing, and fruits, etc.

For effective biological nitrogen fixation (from the third year onwards), every 100-m length of 1.5-m wide single hedge row of Gliricidia can yield at least 245 kilograms (kg) of dry biomass, which is equivalent to 5.6 kg of nitrogen (N). A 1 ha field with 400 m of single hedgerows of Gliricidia can thus yield 22 kg N/ha from the third year and up to 77 kg N/ha/year from the seventh year onwards, under rainfed conditions. The biological nitrogen fixation values can be 100 kg/ha/year under irrigated conditions. Farmers can make 3–4 harvests of Gliricidia under irrigated conditions and two harvests under rainfed conditions. Plants should not be allowed to grow higher than 1.5 m to avoid shading, and the lopping material should be used as green manure in the same field (by harvesting and incorporating into the soil before sowing).

The plant infrastructure set up in the field creates a lot of diversity and acts as home to pest predators and parasites. Predator birds will also start visiting the farm. Plants will check soil erosion, act as barriers or buffer zone, and provide material for preparing a variety of botanical pesticides.

In the first year, farmers should simultaneously sow three different types of legumes, first of 80 days, second of 90–120 days, and third of more than 120 days of growing period in strips. One should take away only the grain and pods, and leave the entire crop residue, including the uprooted weeds, for mulching of the field. In the second season, farmers should try to apply compost at 2.5 tons/ha and sow a cereal crop with legumes as intercrop or companion crop. After harvest, crop residues of legumes and grain crop should again be used for mulching of the field. Farmers that have access to irrigation can take summer legume with some vegetables and recycle the entire residue as mulch.

Farmers need to remember some important parameters of organic soil, including increasing organic carbon above 1.2%. The field should always contain good quality dry and semi-dry decomposed organic matter for use of microflora and fauna. Total microbial load, i.e., bacteria, actinomycetes, and other fungi should be above 1 × 100000000/g of soil. There should be at least 3–5 earthworms/cubic foot of soil and also enough quantity of small life forms and insects. Fresh weight of such organisms should be about 20 g/m^2.

In the first 2 years, add 2–3 tons of compost/ha and 1.5–2 tons of vermicompost once a year. In case of poor availability of phosphorus, add 2 metric tons (t) of rock phosphate mixed with compost. Add Jivamrit (soil elixir) at 200 l/acre, 3–4 times to each crop. The entire crop biomass is to be used as mulch treated with Jivamrit. Farmers should keep the soil covered all the time with either green or dry biomass.

In the first year, farmers should take 3–4 types of legume crops in strips, such as pigeon pea, green gram, cowpea, or soybean. The layout plan of strips of crops consists of two rows of pigeon pea, two close rows of green gram on either side of pigeon pea, four rows of cowpea, or soybean, two rows of *moong* (mung bean) and two rows of pigeon pea again. When green gram is harvested (in 60 days), use biomass as mulch under the red gram. Cowpea and soybean are harvested in 120 days. Mulch the field again with the residue. After 15 days, sow green leafy vegetables, such as *Trigonella,* in place of soybean. Randomly plant some vegetables for home consumption. If irrigation is available, farmers can take another crop of green gram after harvesting pigeon pea and use it for green manuring of the field.

Farmers may need to be warned that no efforts be made to use chemicals in any form because one single application can spoil all efforts of converting to organic, which they have been trying for the whole year. Crops with high nutrient demand should not be cultivated during the first year of conversion to organic. Farmers should always take multiple crops and, in each combination, legumes should always be more than 30%. After harvest of the previous crop, incorporate the crop residues into the soil and sprinkle 200 l of Jivamrit per acre with water. Ensure that one third of the residues are from legume crops. Farmers need to maintain optimum moisture in the field. After 2 weeks, apply 0.5–1.0 ton of compost or vermicompost, 2 kg of phosphate solubilizing bacteria, and 200 l of Jivamrit. If required, up to 150 kg of rock phosphate may be applied. Acidic soils may need an additional dose of lime at 1,250 kg/ha; after that, the soil is ready for sowing again.

Alternatively, spread a thin layer of compost at 1,000–1,500 kg/ha over the soil surface and mulch the surface with 10–15 cm layer of summer (*kharif*) crop residues. Sprinkle 200–500 l of fermented cow dung and cow urine slurry, and 2 kg of phosphate solubilizing bacteria with sufficient quantity of water. Sow the seeds in rows by using bullock-drawn sowing plow without disturbing the soil mulch too much. Biomass will get decomposed by the end of the summer season if proper moisture is maintained.

In developing an organic farm, all efforts are made to develop a system that is self-generating and self-sufficient. There is no need for application of much manure after a certain period. It can be achieved by habitat diversification, soil enrichment, multiple cropping, crop rotation, and maintenance of all life forms. Plant protection does not remain an issue in such a dynamic living system.

On-Farm Resource-Based Package of Organic Practices

The package of organic practices, a collection of farmer innovations, makes maximum efforts to explain about soil preparation/land preparation, manure application, seed selection, seed treatment, sowing, combination of crops, importance of Bijamrit, importance of Jivamrit, weeding and mulching, foliar spray for growth promotion, and pest management.

From the third year onwards, *Gliricidia* lopping will be available in plenty. It can be used as green leaf manure from time to time. For crops with high nutrient demand,

application of chicken manure and crushed oil cakes is recommended, in addition to above treatments at 1,250 kg/ha.

Seed treatment: Bijamrit plus cow urine, in combination with appropriate biofertilizers, such as *Azotobacter* and *Rhizobium*, are good seed treatment agents. In case of foot/root rot disease-infested soils, *Trichoderma viridi* inoculant and *Azotobacter* inoculants can be used for seed treatment. For treatments, soak seeds in Bijamrit for 10–15 minutes and treat with *Azotobacter* at 300 g/kg of seeds. Similarly, soak the seeds of legume crop in Bijamrit for 10 minutes, followed by *Rhizobium* treatment. Dry the seeds under shade and these are then ready for sowing.

Apply Jivamrit at 500 l/ha 3–4 times during the crop period. Apply the first dose before sowing, the second dose after 20 days of sowing, and the third dose after 45 days of sowing. It can be applied along with nitrogen water or by sprinkling over the farmland during the rains. Weeding should be done manually by cutting or uprooting. Mulch the uprooted weeds on the same place, and do not throw away or burn the weed biomass. Heavy mulching with crop biomass also reduces the weed problem.

Multiple Cropping Combinations *(Examples for Central India)*

- For summer season, it can be maize / *jowar* (sorghum), *arhar* (pigeon pea), *moong* / cowpea; or cotton, *arhar, moong,* cowpea, *jowar,* maize or cotton, *arhar,* soybean. Another combination is maize, *moong,* soybean, cowpea or maize, *jowar, ragi* (finger millet), *arhar.*
- For winter season, the combinations are wheat, mustard, and rajgira or barley, gram, mustard or wheat, mustard, safflower or *moong,* tomato, and mustard. A new combination being tried by farmers with vegetables includes *moong* and/or French bean in between.

Some Innovative Organic Formulations

Foliar Spray

In cereals, millets, or vegetable crops, foliar application of 1:20 diluted cow urine or diluted vermiwash is very effective. Cow urine and vermiwash in 1:1 ratio can also be used as foliar spray. Foliar spraying can be repeated at 1-week interval.

Seed Treatment

Bijamrit—cow dung 5 kg + cow urine 5 l + cow's milk 1 l + lime 250 g + water 100 l; mix all the ingredients and let sit overnight; sprinkle this formulation on seeds to be sown. Dry the seeds under shade before sowing.

For Soil Treatment

Sanjivak—it is used for enriching the soil with microorganisms and quick residue decomposition. Mix 100–200 kg of cow dung with 100 l of cow urine and 500 g of jaggery in 300 l of water in a 500 l closed drum. Ferment this for 10 days. Then dilute the fermented material with 20 times water and sprinkle over 1 acre either as spray or supply through irrigation. Three applications are desirable: before sowing (first application), after 20 days of sowing (second application), and after 45 days of sowing (third application).

Jivamrit for Soil Enrichment

Cow dung 10 kg + cow urine 10 l + jaggery 2 kg + gram flour 2 kg + *tur/moong*/cowpea/ or urd + live soil 1 kg + water 200 l. Take 100 l of water in a barrel and add 10 kg of cow dung and 10 l of cow urine. Mix well using a wooden stick, and add 2 kg of jaggery and 2 kg of flour to the mixture. Allow the solution to ferment for a week, shaking it three times a day.

Instant Soil Enricher

Amritpani—Mix 10 kg of cow dung with 500 g of honey and mix thoroughly to form a creamy paste. Add 250 g of *desi ghee* (clarified butter) of cow and mix at high speed. Dilute with 200 l of water and sprinkle this concoction over 1 acre of land either as spray or through irrigation. After 30 days, repeat second dose in between crop rows or in irrigation water.

Panchgavya

Panchgavya (or cowpathy) is a formulation of five products obtained from cow—
Cow dung slurry 4 kg + fresh cow dung 1 kg + cow urine 3 l + cow's milk 2 l + cow's curd 2 l + cow's ghee/butter oil 1 kg. Mix the ingredients thoroughly and allow to ferment for a week. In between, stir it two times a day. Dilute 3 l of Panchgavya in 100 l of water and spray over soil. Twenty liters of Panchgavya is enough for 1 acre of land. It can be applied by spray or through irrigation water. Farmers can also use it for seed treatment, soaking seeds for 20 minutes before sowing. One can also make a formulation of enriched Panchgavya: fresh cow dung 1 kg + cow urine 3 l + cow's milk 2 l + cow's curd 2 l + cow's butter oil/*desi ghee* 1 kg + sugarcane juice 3 l + coconut water 3 l + banana paste of 12 bananas. Follow the same procedure as stated above.

Fermented Butter Milk (Khatti Laasi)

Keep butter milk in an earthen pot for 3–4 weeks and dilute it with water in a ratio of 1:20. It is ready for use as foliar spray. **One liter of fermented butter milk and 1 l of cow urine mixed and diluted with 20 l of water becomes a strong pest repellent.**

Dashparni Extract

Neem leaves 5 kg + *Vitex nigundo* 2 kg + Aristolochia leaves 2 kg + papaya leaves 2 kg + tinospora leaves 2 kg + custard apple leaves 2 kg + Pongamia leaves 2 kg + Nerium leaves 2 kg + Calotropis leaves 2 kg + green chilli paste 2 kg + garlic paste 250 g + cow dung 3 kg + cow urine 5 l + water 500 l. Crush and mix all these ingredients and ferment the concoction for 4 weeks. Place drum under the shade, cover with gunny bags, and shake three times a day regularly. Gather the extract after crushing and filtering. This extract can be stored up to 6 months and is sufficient for 1 acre of farmland.

Plant Protection – Neemastra

Crush 5 kg of neem leaves in water and add 5 l of cow urine and 2 kg of cow dung. Ferment concoction for 24 hours but keep stirring intermittently. Filter squeeze the extract and dilute to 100 l with water. Use as foliar spray over 1 acre of land. It is effective against sucking insects and mealybugs.

Brahmastra and Agneyastra

For Brahmastra: Crush 3 kg of neem leaves in 10 l cow urine. Also, separately crush 2 kg of custard apple leaves, 2 kg of papaya leaves, 2 kg of pomegranate leaves, and 2 kg of guava leaves in 5 l of water. Mix the two concoctions and boil at intervals for some time to bring it down to half. Keep for 24 hours and filter squeeze the extract. It can be stored in bottle for 6 months. Dilute before use in the ratio of 2 l extract:100 l water. It is enough for 1 acre of land. Extract is effective against sucking pests, pod borers, and fruit borers.

For *Agneyastra:* Crush 1 kg of *Ipomea* leaves with 100 g of hot chilli, 500 g of garlic, and 5 kg of neem leaves in 10 l of cow urine. Boil the suspension five times until it is reduced to half and then filter squeeze it. Store in plastic or glass bottles for use. A 5 l extract diluted with 250 l of water can be used for 1 ha of land. It is useful against leaf roller, stem borer, fruit borer, and pod borer.

There are many more such folk preparations innovated by Indian farmers for different ecological zones and farming conditions of the country. The ones mentioned here are widely promoted and used by the Maharashtra Organic Farmers Forum and have been found very effective.

Note: Compiled by the author from his several years of experience working with the Maharashtra Organic Farmers Forum, comprising about 10,000 farmers and actively working to promote organic farming among small farmers in the state of Maharashtra, India.

7. PUBLIC–PRIVATE PARTNERSHIP-BASED NATIONAL ORGANIC MOVEMENT: EXPERIENCES OF THE PHILIPPINES

Dr. Francisco B. Geromo

Introduction

In the 1980s, when the Green Revolution was a National Program, a study highlighted the negative impacts of chemical-based agriculture on rice farmers while multi-nationals gained profits. The book entitled, *"The Miracle That Never Was,"* showed rice farmers were better off before they shifted to intensive monoculture of high-yielding varieties. Nongovernment organizations (NGOs), such as MASIPAG (*Magsasaka at Siyentipiko para sa Pag-Unlad ng Agrikultura* [Farmer–Scientist Partnership for Development, Incorporated]), launched projects focused on rice breeding under conditions of zero synthetic fertilizers and zero pesticides. In the 1990s, the concept of sustainable agriculture, which was "ecologically sound, economically viable, socially just, humane and adaptable", became a popular program among NGOs. As follow-up to these efforts of NGOs, on 27 August 1997, Presidential Proclamation No. 1071, The Adoption of Balanced Fertilization Strategy (BFS), was issued to formulate and implement a program using the right combination of organic and inorganic fertilizers to specific kinds of soil in the area. Analysis of results from 76 BFS on-farm technology demonstration sites located nationwide gave an average rice yield of 5.74 tons/hectare (ha), which was 1.44 tons/ha higher than that obtained from farmers' practice.

NGO was Sowing Organic Seeds in the Country

In January 1994, Mara Pardo de Tavera, an organic food specialist and advocate, organized the first Organic Symposium at the Philippine International Convention Center in Manila. One of the problems discussed during the symposium was the lack of market or outlets for organic produce. In response to this need, Tavera's own Visual Merchandising and Display Corp. teamed up with charitable organization *Alay Kapwa Kilusang Pangkalusugan* (AKAP) in organizing the organic producers' weekend market at the Greenbelt car park in September 1994. It was said to be the first-ever organic weekend market not only in the country but also in Asia. In January 1995, a few months after the successful opening of the organic weekend market, the Organic Producers Trade Association (OPTA) was formally established. OPTA continued to strengthen its foothold in the international organic agriculture community, as well as its efforts to expand the local market for organic products.

OPTA made efforts to establish the Philippine Organic Industry Development Council and arranged Organic Certification Trainings to build the national capacities. The training kicked off the determined cooperation among stakeholders to come up with a Philippine Organic Certification program. Through the auspices of the Peace and Equity Foundation, the OPTA Cooperative's Organic Naturally Shop in Loyola Heights, Quezon City, was inaugurated on 22 January 2004. The shop, which is the Association's first permanent store, sells and displays the organic products of OPTA members from all over the country.

Box 7-1 Two-thirds of the Population

Two-thirds of the population in the Philippines depends on agriculture. They are mostly in the rural areas where high poverty incidence is found. The rice sector is an important sector in Philippine agriculture. It employs 2.5–3 million farmers and agricultural workers, comprising about 30% of the total employment in agriculture. Organic agriculture as yet receives less attention in national agriculture strategy.

As follow-up to continuous NGO efforts, the Government of the Philippines created the Philippines National Organic Agriculture Board (PNOAB), in 1999, to strengthen the country's organic agriculture industry. It was supposed to be a private sector-led agency, where stakeholders in the organic industry were empowered to participate in the policy-making and planning processes.

Government Responses to NGO Efforts

Organic farming was first introduced in the Philippines during the mid-1980s. It was an offshoot of the environmental advocacy movement rather than agricultural development (Principio 2005). Organic farming is still a marginal growing method in the Philippines since agriculture remains generally dependent on the massive use of agrochemicals for the popular belief that these could deliver increased productivity and profitability (Principio 2005). There are about 13 large agrochemical companies in the country today, nine of which are foreign companies that control 85% of the market. Five of these nine foreign companies also lead the transgenic seed business that produces the so-called high-yielding, high-quality seed varieties. These new varieties are starting to take on farmers' preferences especially given much government promotions.

Today, efforts are continuously building up to push large-scale organic farming locally. There are four bills in the House of Representatives seeking to promote organic farming in the country. House Bills 413, 959, and 1637, respectively, propose the establishment of a comprehensive bio-organic farming program in the country. The program is designed to develop and propagate bio-organic cultivation and production methods. It also aims to educate farmers and provide extension services to individuals or groups who are practicing bio-organic farming.

Meanwhile, House Bill 559 seeks to establish an organic farming training and production facility in every agricultural *barangay* (village) in the country. Grant of loans with special low rates for organic farming is under consideration of the Lower House. The Government proposes to set up a PHP50 million fund to facilitate the supply of organic fertilizers nationwide. The Department of Agriculture has already started two palliative organic programs, the *Tipid Abono* Fertilization Program and the Balanced Fertilization Program. The first one encourages the use of organic fertilizers as substitute for expensive inorganic fertilizers, while the second supports the use of combination of chemical and organic fertilizers as a transition to organic.

The private sector and NGOs, on the other hand, are more aggressive with their advocacy for organic farming. There are five Philippine-based institutions, for instance, that are actively involved in an international movement for the advancement of organic

agriculture particularly in the developing countries. These institutions—the Alter Trade Corporation, MASIPAG, Organic Certification Center of the Philippines, OPTA, and the Sustainable Agriculture Center at Xavier University—are members of Germany-based International Federation of Organic Agriculture Movements (IFOAM), which tries to unite 750 member organizations in 108 countries for such a cause.

Agri-Kalikasan Program on Organic Farming Promotion

Recognizing the importance of organic farming, Her Excellency President Gloria Macapagal Arroyo issued presidential instructions to the Department of Agriculture for massive program on compost production and to formulate and implement national program on organic-based farming.

The objectives of the *Agri-Kalikasan* Program include cost reduction for competitive production, reducing dependence of farmers on chemical fertilizers, preventing loss of soil fertility, and restoring soil quality. The Agri-Kalikasan Program supports balanced fertilization *"tipid abono"* technology (judicious use and proper mixtures of organic and oil-based fertilizers, zero chemical or pure organic farming with potential market niches, integration of production, postharvest, processing and market/credit facilities within the Greater Manila Area cluster areas). Specific government policies/measures that have been framed to encourage organic farming are the Balanced Fertilization Strategy of 1991; *"Tipid Abono"* Fertilization Program – 2004; the Federation of Private Entrepreneurs' plan for the abolition of efficacy test for registration of organic fertilizer, and licensing of manufacturers (in the pipeline); drafting of an Executive Order on National Organic Agricultural to include research, development, and extension support for the local and export market promotion; and the Administrative Order No. 25 about the guidelines on certification of good agricultural practices (GAP) for fruit and vegetable farming.

Program of the Philippine National Organic Agriculture Board

- Adoption of organic farming as an alternative ecological paradigm for the new millennium in all government programs
- Implementation of the Philippine National Organic Standards and Certification System
- Establishment of a 5-year Organic Agriculture Development Program for adoption by the respective concerned units of the Department of Agriculture, in partnership with the private sector

Agri-Kalikasan Program

- A science-based, back-to-back sustainable agricultural and rural development program that advocates the implementation of organic-based farming guided by scientific principles
- Promotion of pure organic farming on selected farm commodities in appropriate locations with market niches and with potential for global market development of bona fide certified organic food and food products
- Promotion of organic-based farming to support the balanced and judicious mixtures of organic and inorganic fertilizers to ensure cost-competitive and maximum yields in strategic production areas programmed for national food security, e.g., BFS, *Tipid Abono* Program

MASIPAG Initiatives on Organic Rice Farms

In the mid-1980s, one of the most innovative development efforts on rice farming was initiated by MASIPAG, a group comprising of development-oriented scientists and workers and farmer groups. They propagated a rice farming technology that brought a wide array of farming practices back to the farmers, thus avoiding the disastrous effects of total dependence on outside inputs and technological support. Studies showed that organic farming is equal, if not better, in profitability for the producers even with occasional lower yield. And if we consider the environmental costs in the equation, the organic approach is even better. It ushered an era of widespread promotion of organic rice farming throughout the country. By 1986, organic rice was being produced widely for self-consumption and for trading in the Philippines.

MASIPAG reported 1,897 farmers (1,754 ha) doing organic rice farming, and 11,052 farmers (15,411 ha) doing low chemical and pesticides practices (MASIPAG 2001). The organic rice industry in the Philippines has potential for large-scale production. The Philippine Development Assistance Program, Inc., an agency of the Department of Agriculture, claimed that organic rice production per hectare is now comparable to the yield of hybrid rice varieties. Marketing of organic rice is usually done on contract to specific buyers. The market outlets for organic rice are mainly trade fairs, direct selling and, to some extent, smaller stores and mainstream Metro Manila supermarkets.

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8. INDIA ORGANIC PATHWAY: STRATEGIES AND EXPERIENCES

Manoj K. Menon, Dr. Akali Sema, and Dr. Tej Partap

"India Organic Growing in Area, Farmers, Consumers, Markets, and Institutional Support"

A Decade of Organic Agriculture Growth in India

From the state of being an unknown opportunity in agriculture in the beginning to being talked about as a viable alternative tool to address some of the ills of Indian agriculture, organic agriculture has made a credible performance during the past 10 years. It is a combined effect of farmers' efforts, nongovernment organizations' (NGOs) work, government interventions, and market forces push to organic that Indian organic agriculture has reached a stage where it can swiftly move to occupy desired space in Indian agriculture. The National Commission on Farmers recommended it as a tool for the second Green Revolution in the rainfed and hilly areas of the country (Partap 2006).

The factors that spur growing interest in organic agriculture include (i) increasing prospects of organic agribusiness and demand for safe food, and (ii) as an option to sustainable development of farming-based rural livelihoods of small farmers. The first factor promotes organic as a niche area for agribusiness and better cash income to farmers while the second factor dominates organic farming priorities of small and marginal farmers in rainfed areas, who are looking for alternatives to reduce input costs in farming and how to farm their lands sustainably—for them, it is a livelihood and food security issue (Partap 2006).

As a consequence, with less than 42,000 hectares (ha) under certified organic farming during 2003–04, organic agriculture has grown almost 20-fold over the last 4 years. The following indicators of growth in area confirm it: 2003–04 organic area (42,000 ha), 2006–07 certified organic area (312,000 ha), and area under conversion (226,000 ha). In 2007–08, certified organic area increased to 401,000 ha and area under conversion increased to 464,000 ha. The first-ever survey conducted by the International Competence Centre for Organic Agriculture (ICCOA) in 2006 in the top eight metropolitan areas of the country (Rao et al. 2006) estimated the accessible market potential for organic foods at INR5,620 million (USD122 million). The overall market potential is estimated to be about INR14,520 million. A survey conducted in 2005 indicates that there is a ready market worth INR14,000 million for organic products in the country. The domestic market for food and grocery is estimated to be about INR6,750,000 million and is growing at the rate of 5%–6% per annum. Various estimates indicate that organic products can take about 5%–6% of the overall food and grocery market in the medium–long term. This could translate into a market worth about INR500,000 million–INR600,000 million (USD10 billion–USD12.5 billion).

The interest of several states in promoting organic farming indicates that organic agriculture is being viewed as a precursor to dynamic change for an otherwise stagnant agriculture sector. Another significant development is that organic farming does carry different meanings to different states in India, implying the existence of a diversity of state perspectives on organic agriculture.

- In hill states, such as North East states and Uttarakhand, the concept revolves around securing livelihoods
- To desperate farmers of Maharashtra, Madhya Pradesh, and Karnataka, it provides them a low-cost alternative
- For farmers in Kerala, Punjab, and Haryana, it ensures access to export market and ensure sustainability of the system

From the view point of commodities, India today produces a range of organic products, such as fruits, vegetables, food grains, pulses, spices, tea, coffee, milk, and organic cotton. As a commodity, cotton is the single largest crop under organic management, with an output of approximately 142,714 tons during 2006–07. Honey, the single largest organic commodity in export, is being collected from the wild. Indian produce also includes wild harvest of medicinal, aromatic, and dye plants. Emerging organic retail stores, supermarkets, and packaged deliveries in big cities and towns across the country speak for the growing sector.

The organic movement in India, however, is seriously constrained by a lack of policy support and research and technological backup, and the absence of credible extension mechanism. As of now, organic agriculture does not have a level playing field, for subsidies provided on fertilizers and other inputs upset the applecart of cost-benefit ratio. Since India has, so far, not invested in the supply chain and domestic market development as much as is needed, these factors further limit the gains farmers can have from organic farming. The support provided to organic farming under different schemes of central and state governments is in the nature of per hectare financial support for conversion to organic as an incentive. It does not take the growth of the sector far because of the absence of several other supporting factors, which need to be identified, prioritized, and put in place.

The progress in organic agriculture development and the need for further promoting it has been summed up very well by the 42nd Report of the Standing Committee on Agriculture of 14th Lok Sabha. In its recommendation (No. 12), the committee report states, "The Committee feels that R&D in Organic farming is an option that will make agriculture in India more profitable as organic farming is more environmentally sustainable. Hence, it has to be included as a priority area in agriculture. Implications of organic farming on national food security may also be analysed". Keeping in view these observations, the Committee further recommended that the national project on organic farming should be taken well beyond the 11th Plan period to cover much greater area.

Indian Strengths and Organic Scopes

Today, India is one of the six fastest-growing economies of the world and ranks among the top three global producers of milk, fruits and vegetables, poultry products, rice, wheat, tea, spices, etc. having

- Strong traditions in farming dating back several thousand years
- Sir Albert Howard and Rudolf Steiner (pioneers in organic and biodynamic techniques) were inspired by Indian agriculture
- The Ministry of Commerce established, in March 2000, the National Programme for Organic Production

- Modeled after the International Federation of Organic Agriculture Movements (IFOAM) Norms (IFOAM Basic Standards, International Association of Certifying Agencies), the European Union (EU) regulations, and the *Codex Alimentarius*
- In June 2001, the first export regulations for certified organic products were approved
- National Accreditation Policy and Programme in place
- Standards for organic production and processes in place
- National Organic Certification Mark established
- For the domestic market, no regulation has been established yet
- About 70% of the cultivated land is rainfed (non-irrigated) agriculture

Since a substantial number of the small and medium farmers in India have been, by and large, unaffected by the "NPK" culture, conversion of substantial chunks of land to organic agriculture is a much simpler task in India. But of course, for India, which has a total of 162 million ha of land under farming, even a few percentage points of this figure being converted to organic becomes substantial for the organic business and the global organic economy. By 2009, about 400,000 ha were certified and another 400,000 ha are under conversion.

Future Strategy of India

Under the backdrop of the parallel growth of organic farming approaches, (i) by the small farmers in rainfed areas as a food security and livelihood strategy, (ii) ecological backlash in Green Revolution areas, and (iii) as agribusiness and export, India needs to define a long-term vision and growth strategies for organic agriculture in India. Further, a variety of concerns making different countries promote organic agriculture for different reasons help us understand the priority concerns of Indian farmers with respect to the solutions organic agriculture can offer to Indian farmers. The international developments in organic and agricultural scenario within the country indicate that the organic vision of India should build on the following pillars (Partap 2006):

i. Organic agriculture becomes a low-cost, sustainable option of farming in the country, particularly by the small farmers in rainfed areas and helps improve their food and income security.
ii. Organic agriculture gets mainstreamed and helps achieve ecological and economic sustainability of Indian agriculture in general, i.e., clean water, environment, and to preserve biodiversity.
iii. Organic agriculture helps produce and supply adequate safe and nutritious food to the producers (farmers of India) and consumers of the nation.
iv. Organic becomes a foreign exchange earner for the country and that India is able to take at least 3% share of global organic market. It will lead to organic agriculture becoming an agribusiness/entrepreneurship opportunity that will provide employment opportunities down the supply chain.

The milestones of the organic mission of India, as incorporated in the 11th Plan (2007–2012) of the country are

- Mainstreaming organic farming to reduce cost of production and eliminate the need for subsidies on chemical fertilizers.
- More than 10 million ha of land is brought under organic agriculture by 2020. It will

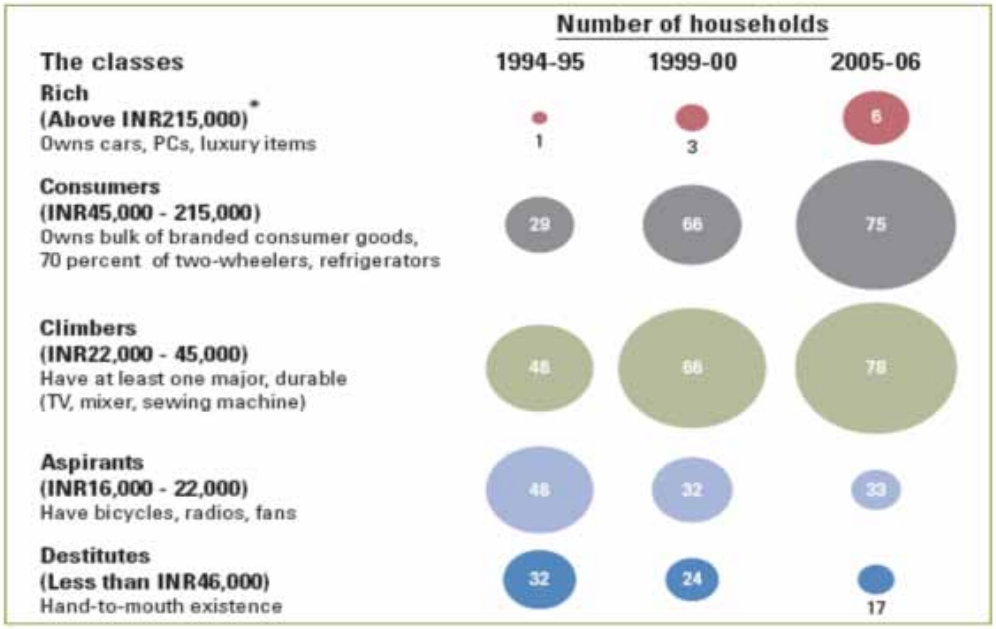
have saved more than INR1,000 billion worth of subsidies on fertilizers and other related inputs.

- Profitability increased by 40% by reducing input costs. The nation, too, benefits by saving on fertilizers.
- Produce INR300 billion worth of organic commodities by 2020 (INR30,000/ha), wherein 80% of production is for domestic consumption and 20% for export.
- Build strong institutional capacities and human resources in the country to implement appropriate organic strategies, both at the national and state levels, in order to achieve the mission targets. Weak institutional capacities are the biggest challenge India faces today in moving forward to mainstream the organic sector.
- Well aware public and well-organized organic market infrastructure in the country by 2020.
- Making India the number one organic country in the world in the next 10 years in terms of area and production. Indian organic commodities become common in the domestic sector, and niche products secure an India brand in the export sector.
- India becomes the main producer and supplier of a variety of niche organic commodities much in demand in the international market.

The limitations of the Indian organic movement are that

- There is no concise National Action Plan.
- However, with the National Project on Organic Farming and similar programs on the state level, both the central and state governments are encouraging organic agriculture actively and, in fact, the various state governments are competing among themselves to be one up on the other.
- The federal government has set up the National Centre of Organic Farming.
- Some states have announced to convert the whole states' agriculture to organic. Whether this is a thought-through approach can be questioned; still, it is interesting to see with what vigor organic is taken up (Uttarakhand, Maharashtra, Sikkim, Mizoram, and others).
- It lacks concepts and strategies for a strategic market development. Money, which is allocated for support of such strategies can, therefore, regularly not be spent.
- An estimated 250 million urban middle class population is envisaged as potential customers of organic products.
- With income levels constantly rising, the middle class is growing exponentially.
- The globe-trotting modern Indian is exposed to a healthier way of living in western countries and so does not need much initiation to start consuming organic products.
- Even those who feel that organic products are expensive would, at least, like to feed their children with organic food.

Figure 8-1 The growth potential for the Indian organic sector



Source: Marketing Whitebook 2003-04 by BusinessWorld

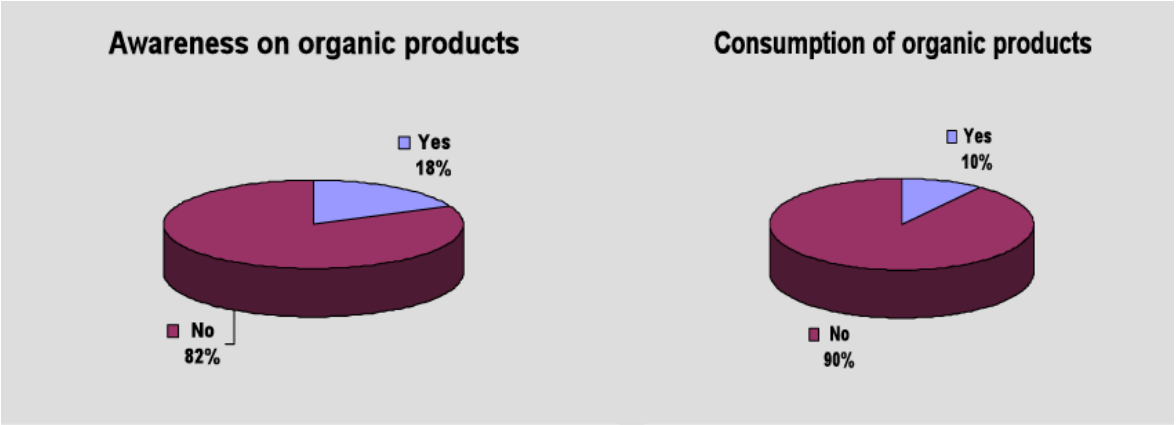
- The organic market of today is export oriented.
- For the past few years, the domestic market is growing exponentially, not seen so much in other countries.

The following characteristics can be summarized:

– Negligible-to-low consumer awareness
– No systematic branding, communication, or market development
– Small range of products and inconsistent availability

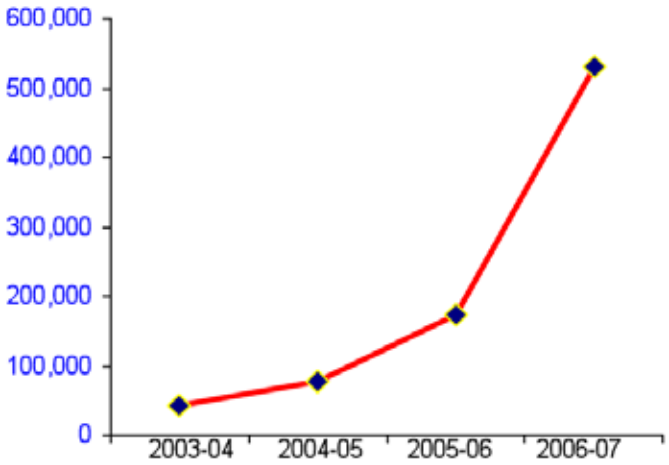
ICCOA estimates that demand for organic food ingredients alone would reach about INR20 billion (EUR350 million) by 2010; organic and natural wellness products, such as body care, to be added as yet.

Figure 8-2 Consumer awareness



Source: AC Nielsen ORG-MARG Pvt Ltd. 2002 and ICCOA 2006.

Figure 8-3 Area (in hectares) under organic



Market Potential for Organic Foods in India

In 2003, the total production was 6,792 tons, with an export value of only INR710 million (equivalent to USD15.5 million).

- Organized retailing started in 10 major cities
- Maharashtra has the largest organic outlets with at least one outlet each in its 21 cities
- India Organic Trade Fair getting roots and contributing significantly to trade
- Many restaurants and hotels offer dedicated organic food
- Growing organic food market

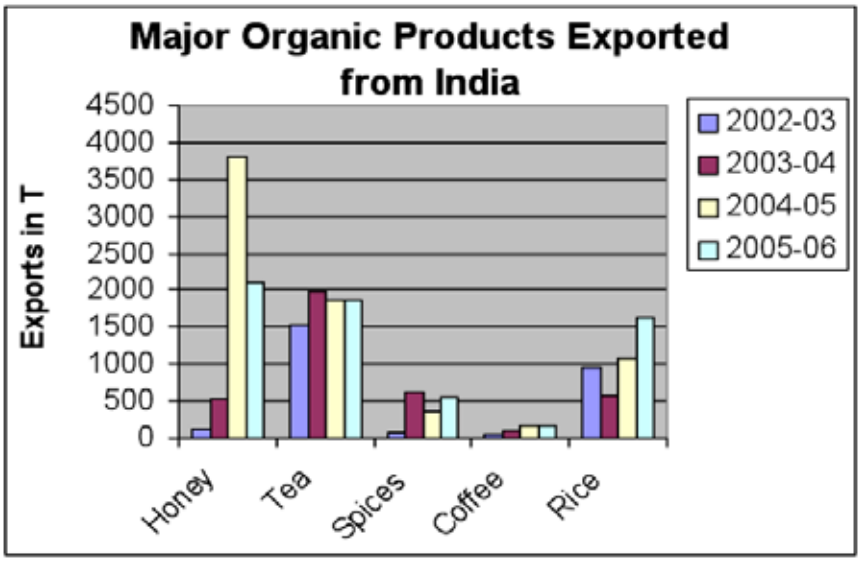
Soon after, the Ministry of Agriculture of the Government of India formulated an organic promotion program, which was aimed at supporting farmers to convert to organic farming. Under this program, farmers received several kinds of support, such as incentives to convert their farmland into organic, subsidy for certifying their organic farmlands,

subsidy for purchasing organic inputs, getting training in organic practices, for developing model organic farms, etc. Both government agencies, as well as NGOs, received support to develop their institutional capacities to offer services to farmers as Organic Services Providers. The National Centre for Organic Farming (NCOF) was set up for implementing the various schemes, in partnership with agriculture departments and agricultural universities in various states. Concurrently, the organic sector has started brimming with activities, and there are now many organizations, institutions, and agencies involved in organic agriculture development with different missions.

A number of nongovernment agencies and private sector companies are also contributing to the growth of the organic sector in India. Among them, ICCOA, established in 2003, is playing a significant role. It is mandated to build the capacities of organic stakeholders. Most important, ICCOA's contribution in developing organic markets in India is widely acknowledged, and these markets are not just export-oriented alone but are also domestic markets for organic products.

To bring the organic world together on a common platform to exchange information and to facilitate trade from India, ICCOA, in partnership with the Ministry of Agriculture (through NCOF) and the Ministry of Commerce and Industry through the Agricultural and Processed Food Products Export Development Authority [APEDA] has been organizing the annual India Organic Trade Fair since 2005. Beginning in 2009, BioFach is collaborating with ICCOA to upgrade the trade fair and also add BioFach India as part of this event.

Figure 8-4 Indian organic export



Strengths of the National Program on Organic Farming

- Recognized testing laboratories
- In harmony with international standards
- Maintenance of quality all through the supply chain
- Adequate procedures for evaluation of performance
- Professional training in inspection and certification

- Recognition by the EU and Switzerland for equivalence
- Recognition by the United States Department of Agriculture for conformity assessment systems
- Government support and interministerial synergy
- Involvement of NGOs and farmers
- Sound institutional network

Potential Organic Niche Area of India: North East Indian Himalayan Region

The North East Indian Himalayan Region of India is a different world in itself, comprising of Arunachal Pradesh—the land of the rising sun; Assam—the home of the Brahmaputra; Manipur—famous for Loktak Lake; Meghalaya—the prettiest and the youngest state; Mizoram—the most peaceful state of the North East Region (NER); Nagaland—a place of rich, colorful tradition and great hospitality; Sikkim—the heaven on earth; and Tripura—with a distinct agroclimatic zone of the country.

The farmers, by and large, are practicing organic farming naturally. The abundance of rainfall offers an opportunity to practice rainfed agriculture, while the hilly terrain prevents the application of inorganic inputs (out-of-farm resources), making farmers utilize their farm resources. NER is considered as organic, by default, due to these reasons. The Government is also encouraging the farmers to adopt organic cultivation by way of providing subsidies, such as cash components, or as organic inputs, such as vermicompost units, bioagents, biofertilizers, etc. The states of Sikkim and Mizoram have declared themselves as organic. Other states, such as Arunachal Pradesh, Nagaland, and Meghalaya, are in the process of following them soon. Besides this, the remaining states are also identifying areas and crops for organic farming. The government policy for the respective states, at the moment, is to identify areas (districts or blocks), as well as specific crops, for proper supervision and monitoring for organic farming.

Box 8-1 Traditional organic farming practices of farmers in the North East Indian Himalayas

- Jhum/Shifting cultivation of the entire North East region
- Zabo system of farming of Nagaland
- Alder-based farming system of Nagaland
- Rice-based farming system – in Apatani plateau of Arunachal
- Large cardamom-based agroforestry system of Sikkim
- Panikheti system of Sikkim, Nagaland, and Arunachal
- Nevaro-based silvi-pastoral system of Sikkim
- Agri–horti–silvi-pastoral system of the entire region
- Growing of same crops in the same area is avoided
- Contour bunding and growing of crops along contour lines
- Intercropping or mixed cropping with leguminous crops

Source: Ms. Akali Sema (APO paper)

The state governments of NER are encouraging farmers to adopt organic farming through incentive schemes and by creating related infrastructure to meet the requirement of farmers. Many institutions are engaged in trainings to build skills of farmers. Some states have also instituted organic boards, and financial institutions have started providing credit support for organic farming.

Market for Organic Commodities

To ensure that organic agriculture grows in terms of area and production and that it benefits the producer farmers, it is quintessential that good market for organic products exists. India's share in the global demand for organic products is miniscule. To improve the situation, India has plans to improve its supply chain and market infrastructure.

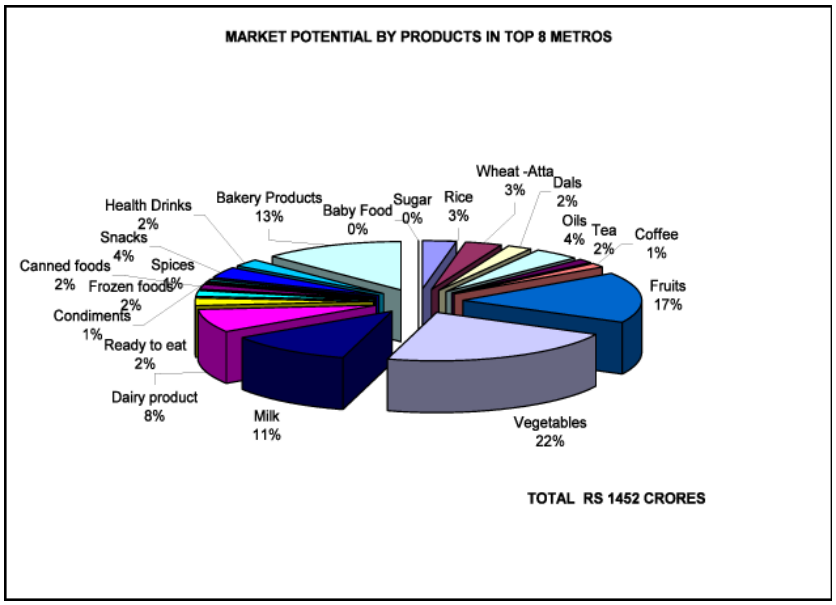
To understand the markets for organic foods in India, ICCOA commissioned a study (Rao et al. 2006). A survey of more than 3,600 consumers among the target group was concluded in four regions of the country. The market study estimated the accessible market potential for organic foods in 2006 in the top eight metropolitan areas of the country at INR5,620 million, taking into account current purchase patterns of consumer in modern retail format. The overall market potential is estimated at about INR14,520 million; the availability will, however, be a function of distribution-retail penetration and making the product available to the customer.

Another finding is the consumer's preference for different categories of organic food. Across all cities and regions, the most preferred category is fresh vegetables, followed by organic fruits. The next category is milk and dairy products.

The top eight metropolitan areas of the country are said to contribute more than 90% in sales volumes of most upmarket products in the country; thus, the coverage of these markets will take care of a large chunk of the country's market potential. Organic food is currently considered a premium product and is sold at a premium price ranging from 5% to as high as 45%–60% for some products.

The estimated market potential for all the studied categories is depicted below, and the total value would come to INR14,520 million for these categories alone (Rao et al. 2006).

Figure 8-5 Projected All-India market potential by product categories



Source: Rao et al. 2006

While these figures are for retail demand in eight cities of India, the study extrapolated the findings for estimating the demand in the Tier-II cities in the country (a total of 34 second-rung cities). Given below are projections for the entire food market in the country, after accounting for these important markets/Tier-II cities, and taking all the categories of food into account (other than the 20 categories studied).

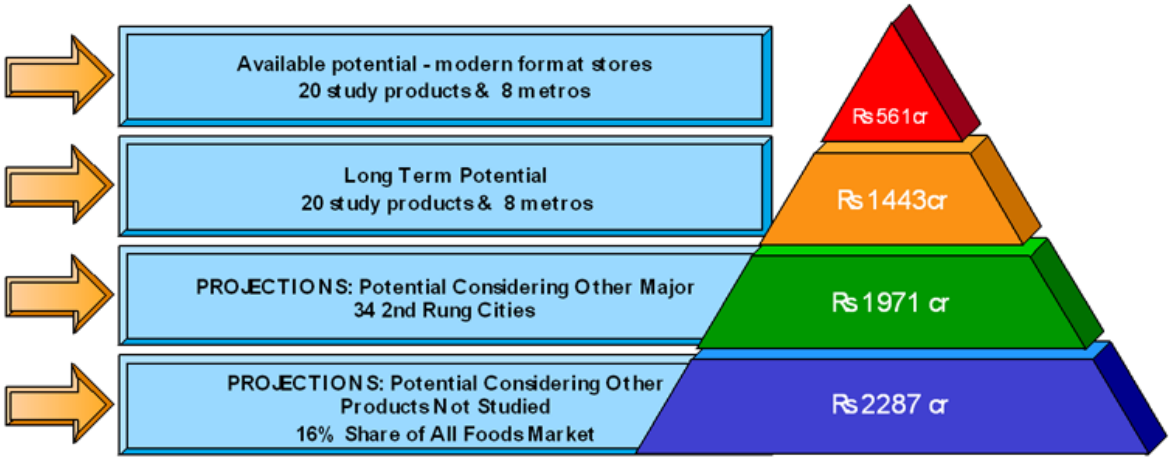
Size of India's Organic Market and Opportunities for Organic Producers and Traders

For India, this study brings good news. If the potential demand for organic foods that appeal to the consumers through proper supply chain, retailing and, therefore, value is of the size of INR22,870 million, this indicates a great opportunity for farmers to move toward organic production. The study of consumer perceptions, awareness, and usage; price sensitivity; etc. has brought out the demand-pull perspective of Indian organic market growth. Like several distributors, processors and retailers are experiencing considerable difficulty in sourcing enough certified produce to satisfy buyers. To ensure regular supplies, some of the organic retail chains are even sponsoring organic conversion, setting up Internal Control Systems and certification of producer groups. **It shows that organic agribusiness in India has just started to grow, especially the domestic market.** For small and marginal farmers, the time to form producer groups for supplying to these retail chains has come. The formation of groups or clusters contributes in terms of setting up of Internal Control Systems, allowing scale economies and, therefore, getting bargaining power in the trade sector. Another look at the market sizes will immediately indicate toward these opportunities:

1. A global market worth INR1,500,000 million, where India's share is a meager INR2,500 million (0.2%). It is an opportunity to target at least 5% of this market so that people can export organic products worth INR75,000 million.

2. A potential domestic market of INR23,000 million is available in India, which can be tapped by a planned production and supply chain management.

Figure 8-6 Market study estimates overall Indian market potential for all categories of organic foods projected at INR23,000 million for India in 2005-06 (1 Crore = 10 Million)



Source: Rao et al. 2006

India cannot afford to lose these opportunities. These opportunities are not only to be seen from the revenue perspective, but also to benefit the small farmers by adopting organic farming that is sustainable, both in terms of economy and minimizing farmer investments and risks in farming.

India has much strength in organic farming. Large tracts of lands are still—as it is referred to many times—'organic by tradition'. The Green Revolution technologies have not yet reached many hinterlands. In faraway villages, rainforests, Himalayan ranges, and in NER, the use of chemical fertilizers and pesticides is still almost nil. Taking fertilizer use as an example:

– National average is currently about 94 kg/ha;
– Average in NER, as a whole, is only 31 kg/ha; and
– Arunachal Pradesh's average is 2.7 kg/ha, and Sikkim uses 3.1 kg/ha

Another strength is the rich traditional knowledge of farming communities. There are several non-chemical, traditional organic practices known to farmers, which give good practical solutions. A structured approach to organic farming will bring these practices back in reckoning. The integration of animal husbandry as an essential component for organic farming is another strength because in India, animals are important for farming, as well as an additional source of income for small farmers. This must be encouraged in organic agriculture practices across all regions.

One strategy, therefore, is to focus institutional support for organic agriculture toward rainfed areas, areas of so-called 'default organic', and farming by small and marginal farmers.

Conclusion

Further mainstreaming organic agriculture requires strong research and development institutional capacities for effective support services and unless that happens, the Indian organic movement remains constrained. An important area also is promotion across the entire value chain. Organic agribusiness has to be promoted not only among farmers, but also with processors, traders, and even at the government level, state government departments/agencies, universities, research institutions, etc. Government institutions have an important role in facilitating organic production by providing technical, logistical, and other infrastructural support. The important role of research institutions is to conduct research on the potential problems for farmers and develop organic crop varieties that can give comparable production under organic management. In these areas, India is still weak. **Indian urban consumers have a compelling reason and also reasonable affordability to buy organic food,** if it was easily available. Thus, supply—rather than the demand—is the larger issue today, even though, on a quick note, one also hears complaints of non-availability of markets.

Such limitations will remain until enough volumes are produced to enable trade and retail marketing in organic products as a profitable business. In the domestic organic market for food, the general assumption is that most consumers are positively inclined toward organic foods, and that price and availability are perceived as the major barriers to their increased consumption of organics.

The notion that a certified organic product will draw trust of the consumer, and sell by itself, especially in the Indian market conditions will be wrong. The experience of the EU and other organic markets indicates that one of the characteristics common to many successful organic marketers is the considerable effort they put into organizing their supply chains. Solving the supply-side issues involves more than simply expanding production or putting more products on the shelf. The focus of organic shopkeepers/retailers would be on securing supplies of consistent quality and quantity across a diverse product range. Strategies to achieve this include supporting the conversion to organic production, arranging supplies from different regions of the country in order to encourage the pooling of produce from small farmers into larger consignments, and providing vital institutional support to this organic movement across India. These are very much possible, and the **future looks bright for the growth of organic production and consumption in India.**

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PART III

ORGANIC AGRIBUSINESS PROMOTION: TECHNICAL FUNDAMENTALS

9. ORGANIC FOOD QUALITY AND SAFETY

Dr. Alberta Velimirov

Organic Food Quality Perspective

The aims of maintaining and ensuring quality and safety standards for organic commodities include i) protecting consumers against deception and fraud in the marketplace; ii) protecting producers against misinterpretation of other agricultural produce as being organic; and iii) ensuring that all stages of production, preparation, storage, transport, and marketing are subject to inspection and comply with these guidelines. Further, the standards help in harmonizing provisions for the production, certification, identification, and labeling. These also act as international guidelines for organic food control systems in order to facilitate recognition of national systems as equivalent for the purpose of imports. Finally, food quality control standards also help maintain and enhance agricultural systems in each country as to contribute to local and global preservation.

The known standards and regulations of organic food are

i. Codex Alimentarius – Guidelines for the production, processing, labeling and marketing of organically produced foods (CAC/GL-32-1999, rev. 1-2001).
ii. European Union (EU) – the council regulation (EC) No. 1804/1999 of 19 July 1999 supplementing Regulation (EEC) No. 2092/91 on organic production of agricultural products and indications referring thereto on agricultural products and foodstuffs to include livestock production.
iii. National standards and regulations.

Organic production refrains from using synthetic pesticides; herbicides; fertilizers; fungicides; and veterinary drugs, e.g., antibiotics, growth hormones, preservatives, and additives. Food hazards could occur because of pesticides and other chemicals remaining in the field from previous land use; use of veterinary drugs in livestock; and microbiological contamination from natural fertilizers, such as manures, and organic waste. Research indicates that pathogenic organisms can survive up to 60 days under compost conditions. Untreated manure can lead to contamination of products and, therefore, growers need to be aware of using good agricultural practices for handling hazards from these natural fertilizers to minimize risks.

Food Quality and Safety: Role of the Government and Industry

Government needs to ensure that food quality and safety requirements are appropriate, adequately supported within the frame of national food quality and safety legislation and regulations; and that these are clearly communicated to industries and consumers. Government must also provide an efficient food control administration and adequate and reliable food inspection and food analysis services. Similarly, the industry must ensure the quality and safety of their products through the implementation of quality assurance programs, including food safety programs based on the Hazard Analysis and Critical Control Points (HACCP). The consumer must employ correct food handling practices.

European Perspective and Experiences on Food Quality and Safety Standards

The European agriculture has developed in relation to evolving marketing concepts from product-oriented to consumer-oriented production and, finally, to system-oriented agriculture, such as organic farming. At present, supermarkets prevail and increasingly impose requirements on how food is produced, thus, monitoring and controlling food production systems. The first supermarket standards were mostly concerned with reducing pesticide residues, as well as optimizing the hygiene standards and the traceability of commodities. In addition to these standards, organic products have to be certified according to organic regulations.

Thus, soon after organic foods appeared on the EU market, the question about their quality and safety advantages, as compared to conventional foods, has been an issue, primarily because these products fetched premium prices. Up to the 1980s, the most important motivation of consumers to buy organic was environmental concerns. Since then, health aspects became more important. Consumers perceived "organic" as "better for you" and, therefore, a healthier option to eat. But is there any scientific evidence to back up this notion?

Food Quality Aspect

The quality question gave rise to a number of studies comparing organic versus conventional foods. In line with the booming of nutritional sciences based on food contents, chemical analyses have been applied to detect whether the organic production methods changed food contents in such a way as to promote health and well-being. The scientific evidence obtained from these comparisons increasingly showed trends in favor of healthy contents. At first, secondary metabolites were still regarded as dangerous toxic plant contents, which should be avoided by breeding plants accordingly.

Meanwhile, it has been discovered that most secondary metabolites consumed in the small doses present in plants are actually health promoting so that the consumption of plant foods is recommended to fight nutrition-related disturbances of health. The studies comparing the contents of secondary metabolites are mostly in favor of the organic variants. These positive results have been attributed to a more balanced nutrient offer in organic soils, as well as the avoidance of synthetic pesticides. Yet there are quite a number of scientists who see foods as biological systems in themselves, as well as being part of agricultural systems. In this respect, the still controversial question emerges: whether the comparative measurement of some food compounds enough to reflect food quality?

A number of so-called holistic quality assessment methods have been developed to define food quality more comprehensively according to the thesis that the whole is more than the sum of its parts. The focus here lies on synergistic effects in organisms, vitality, and non-linear interactions, which characterize biological systems. Feeding experiments, food preference tests, biophotone measurements, bioelectrical analyses, sensory evaluation, picture forming methods, and decomposition tests belong to this group of methods. It is an often overlooked fact that, by applying holistic methods, differences resulting from cultivation methods are mostly in favor of the organic variants (Velimirov et al. 1992; Velimirov 2003a,b; Velimirov 2005; Velimirov 2006).

In recent years, a number of overviews summarizing all scientific results of comparative quality investigations have been published (e.g., Woese et al. 1995, Alföldi et al. 1998, Worthington 1998, Heaton for the Soil Association 2001, Bourn and Prescott

2002, Tauscher et al. 2003, Velimirov and Müller 2003). All of these authors agree that organic food is least contaminated with pesticide residues; however, the advantages of organic food are differently emphasized, depending on the weight and importance attributed to holistic methods. Most results are presented ignoring the fact that in cases where no differences could be found, the organic variant could achieve this degree of quality without the use of synthetic agricultural supplies, such as mineral fertilizers and, of course, pesticides, thus representing the best ecological quality obtainable at present. Furthermore, in line with the demand for sustainable systems, these studies reveal the great potential of organic agriculture. Therefore, it is deemed more valuable to concentrate on results in favor of organic production, instead of leveling their importance, since all farmers and food producers could learn from closely observing the interrelation between defined organic methods and ensuing quality effects.

Despite the often wrongly cited notion that differences between organic and conventional food are negligible, so far, in two publications, hard facts about organic quality based on scientific results have been defined (Soil Association 2006, van de Vijver and Huber 2007). Here are some examples:

United Kingdom – Soil Association

- No food has higher amounts of beneficial minerals, essential amino acids, and vitamins than organic food.
- The best method of reducing exposure to potentially harmful pesticides would be to consume organically grown food, where their use is avoided.
- Only 32 of the 290 food additives approved for use across the EU are permitted in organic food. The controversial additives aspartame, tetrazine, and hydrogenated fats are banned in organic food. Therefore, a wide range and large quantity of potentially allergic or harmful additives are avoided on a diet high in organically grown foods.
- Eating organic food allows people to avoid hydrogenated fats completely.
- Organic dairy products contain a higher amount of good fatty acids (omega 3 and conjugated linoleic acid [CLA]; van de Vijver and Huber 2007).

There are clear indications that

- organic leafy vegetables have higher Vitamin C content;
- organic fruit and vegetables contain more antioxidants;
- the protein content of organic grain products is of higher quality; and
- organic products have higher dry matter content, resulting in relatively more nutrients per portion.

Another very important issue concerns the way results are presented. For example, there is already substantial evidence that organic dairy products contain more "healthy" fatty acids (polyunsaturated fatty acids) than conventional ones. But this good result can also be obtained by suitable feed additives (certain grains, oils, etc.) in conventional farms. The big and basic difference is that this quality result is attained in the case of organic dairy products by supplying feed appropriate to cows, as well as enough outdoor grazing. Isolated results concerning the product only (without its history of production) are apt to lose sight of the high animal protection standards and the environmental quality aspects characterizing all organic production systems.

Food Safety Aspect

As mentioned, synthetic pollutants are dramatically reduced, if not even completely avoided, in organic foods (Baker et al. 2002, Mahnke-Plesker 2005). The same is true for risky additives: less than 1/10 of the approved additives may be used in organic processing (EU Regulation 2092/91).

But food safety also concerns biological risks, such as microbial contaminations (mycotoxins; *Escherichia coli,* especially the dangerous strain 0157; *Campylobacter; Salmonella; Listeria*). It has often been assumed that in organic food, the danger of mycotoxins is higher since synthetic fungicides are not applied. So far, comparative studies did not corroborate this notion. On the contrary, in a recently published comparison of 24 matched pairs of organic and conventional foods, **mycotoxins** were found 50% more often in the conventional samples and, at average level, a little over twice as high. These findings have been ascribed to the use of compost and cover crops enhancing the diversity of soil fungi, lowering the odds that one strain will dominate, as well as to the fact that high levels of nitrogen fertilizers and fungicides heighten the danger of mycotoxin contamination (Benbrook 2005).

From October 2002 to October 2003, a comparative investigation of organic and conventional meat products concerning contamination with ***Salmonella, enterohemorrhagic Escherichia coli, Listeria monocytogenes, Enterobacteriaceae,*** and coagulase-positive staphylococci has been conducted in Germany. The results show that organic meat products manufactured according to the guidelines of the approved associations, such as Demeter and Bioland, do not represent an increased health risk to the consumer as compared to conventional products (Kröckel 2005).

According to a review of scientific papers by Benbrook (2006), organic methods are able to reduce the risk of ***E. coli*** contamination. Most importantly, publications show the connection between feed and *E. coli* 0157 colonization of the bovine digestive system. When cows are fed high-energy, grain-based rations, the pH in their digestive system changes to favor *E. coli* 0157. Organic feed is based on high roughage with little grain or corn silage. Furthermore, composting of cow manure reduces the danger of spreading the pathogen, and in soils on organic farms, the decline of *E. coli* levels is accelerated, which could be due to higher microbial activity.

A recently published investigation revealed that ***Campylobacter*** species were prevalent in both conventional and organic poultry, but the antimicrobial resistance rates were significantly different: less than 2% of *Campylobacter* strains isolated from organic poultry were resistant to fluoroquinolones (antimicrobial agent), while 46% and 67% of *Campylobacter* isolates from conventional broilers and turkeys, respectively, were resistant to these antimicrobials. Multidrug resistance was observed mainly among *Campylobacter* strains isolated from the conventional turkey (81%). These findings clearly indicate the influence of conventional and organic poultry production practices on antimicrobial resistance of *Campylobacter* on poultry farms (Taradon Luangtonkum et al. 2006).

There are some advantages in organic farming concerning biological risks; but generally speaking, these dangers can be avoided by maintaining hygienic conditions. This applies to all food producers and is, therefore, not a system-inherent risk.

During the last few years, a new type of contamination poses a threat to organic foods: genetically modified organisms **(GMOs)**. Under current European genetic modification

(GM) labeling rules, conventional and organic foods need no GM labeling as long as the contamination is below 0.9% and its occurrence is accidental or technically unavoidable. It has to be remembered that the use of GM or GMOs is not accepted in organic agriculture. So far, this has been an important asset of organic food for consumers—majority of whom are in Europe—who want to avoid GMOs.

The Food Chain

Lately, it has become advisable, also regarding GMO contamination, to apply the HACCP concept for organic food chains as well. The conventional HACCP procedure—long established in conventional companies—is not concerned with quality benefits, but is concentrated on possible health risks to the consumer. By including the positive effects of organic food production methods on quality, we are introducing a new approach. Freshness and taste, for instance, represent favorable quality aspects that can be enhanced or impaired along the production chain. (For more information online, visit www.organichaccp.org/.)

Conclusion

Industrialized food production is not only causing environmental problems, but is also promoting many nutrition-related degenerative diseases (e.g., coronary heart disease, strokes, various cancers, diabetes, and obesity) in the western world while, at the same time, depriving people in developing countries of their sustenance. These emerging problems along the conventional food chain elucidate and substantiate the need for an alternative food system. At present, the organic food system is the best option. The concept of "eating organic" is not only the substitution of conventional products by organic ones, but concerns a fundamental reform of the established food system. It comprises the quality of all production steps, transport, and marketing (process quality), as well as the choice of food, diet composition, storage, and preparation (nutrition quality).

Looking at Asian countries' rural poor, where food shortage and poverty prevail, it will be almost cynical to discuss food quality. But the loss of fertile agricultural areas to produce feed for western intensive meat production (lately, also plants for biofuel) is well known, illustrating how our eating habits have a far-reaching impact. A modern diet, according to the latest recommendations of nutritionists, focusing on plant food (meat as side dish!) corresponds with the organic way of production—more area for plant foods and feed, fewer animals. "Going organic" would, therefore, be helpful since there is no intensive meat production relying on imported feed. Furthermore, the application of organic methods could offer a sustainable solution to household insecurity as opposed to the "Green Revolution" or the now recommended GM crops. Basically, organic agriculture is well suited for developing countries since no synthetic production aids or expensive seeds (especially GM seeds) have to be purchased. Adapted varieties can be used to provide the traditional food, and the producers stay independent. But regional and local needs have to be at the center of all endeavors in order to reach the goal "food for all". The export of organic foods could then be a valuable improvement of living conditions in all societies.

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10. ORGANIC CERTIFICATION

Sandeep Bhargava

Introduction

Organic certification is the procedure for verifying that the products conform to certain standards. In case of organic products, it is primarily the acknowledgement that the products have been produced according to the applicable organic crop and animal husbandry standards.

Organic certification is important because

- Organic certification helps in building trust between consumers and organic farmers;
- The certification mark 'Organic' is the only means to differentiate between certified organic and conventional foods;
- Labels and certification marks help a consumer recognize trustworthy organic products easily;
- Organic certification and the logo are important marketing tools; and
- Organic certification helps in getting comparatively better price.

International Standards

NPOP – National Programme for Organic Production, India
USDA–NOP – United States Department of Agriculture – National Organic Program
JAS – Japanese Agricultural Standards
EC 834/2007 – Council of the European Union
IFOAM Basic Standards – International Federation of Organic Agriculture Movements, Germany
Codex Organic Standards – Codex Alimentarius Commission

Requirements for Organic Crop Production and Certification

1. **Conversion Requirement** – An organic crop production operation requires a minimum of 3 years conversion period, which can be reduced or extended in light of previous status of the land. The period must equal or exceed 12 months.
   A conventional farm has to undergo a **conversion period** before products can be sold as organic. During the conversion time, all rules of organic production have to be kept according to

Table 10-1 Conversion period

	NPOP(India)/EU regulation	**NOP**
Annual crops	2 years until planting	3 years until harvest
Perennial crops	3 years until harvest	3 years until harvest
Start of conversion period	Conversion period may be calculated from date of application of certification program or from last date of application of unapproved farm inputs (provided that it can demonstrate that standard requirements have been met from date of implementation).	When the farmer decides to start producing organic
Accredited Certification body supervision	Minimum of 12 months of supervision is required before certification. Supervision starts from date of application to OneCert, or from date of first inspection. If the operator is found in compliance during inspection, date of registration will be considered from date of application to certification body, and appropriate conversion period will be awarded to operator effective from date of application to OneCert.	The farmer can record organic management himself/herself; records must be detailed and complete
Reduction in conversion period	A full conversion period is not required where de facto full standard requirements have been met for several years and where this can be verified through several means and sources. "Sufficient proofs for non-use of chemical fertilisers and pesticides during the previous years are required to reduce the conversion period". Either record of the third party or certificate from the third party, along with soil analysis report certifying the organic status of the soil, is required.	
Sale of products during conversion	From second year of conversion onwards, products can be labeled as "in conversion to organic farming".	Must be sold as conventional.

2. **Buffer Zone Requirement** – The organic or conventional production operation should have a clear separation by establishing some natural barrier or by maintaining a buffer zone.

3. **Seed and Planting Material** – The operator of organic crop production should use organically produced seeds/planting material. In case of non-availability, alternatives can be adopted; when certified organic seeds are not available, chemically untreated conventional seeds can be used. Use of genetically engineered seeds, pollen, transgenic plants, and plant material is not allowed.
4. **Diversity in Crop Production** – The operator of organic crop production should adopt measures that enhance or improve the diversity in crop production. These measures may include crop rotation, cover crops, cage crops, trap crops, green manuring, and tree lines and hedges on boundaries.
5. **Soil and Crop Fertility** – The biodegradable material of microbial, plant, or animal origin produced on organic farms should form the basis for soil and crop fertilization. The measures recommended to improve the diversity in crop production should also be a part of the fertilization policy. Soil erosion must be avoided. For annual crops, a wide crop rotation, which includes legumes to assure biological nitrogen fixation, has to be used. For perennial crops, wherever possible, legumes have to be planted in interrow spaces. Organic manures should be used to maintain soil fertility. Nitrogen fertilizers and superphosphate are not allowed. Rock phosphate, potassium sulfate, and single trace element fertilizers can be used. In case soil or leaf analyses show deficiencies of the respective nutrient, organic and inorganic fertilization must not exceed crop requirements. Lime ($CaCO_3$) can and should be applied when necessary.
6. **Pest, Disease, and Weed Management** – Pest, disease, and weed should be controlled by adopting preventive techniques or using management practices that minimize pest, disease, and weed attack. Product prepared at the farm from local plants, animals, and microorganism can be used for pest, disease, and weed control. Synthetic herbicides, insecticides, and fungicides are not allowed. Pests and plant diseases must be prevented using adapted species and resistant varieties and adequate crop rotations, and promoting natural enemies. After having taken these measures, only those natural or mineral substances, which are mentioned in the Annex II (EU Regulation) and/or the national list of allowed or prohibited substances (NOP) may be used. Some of these substances can be applied only after approval by the certifier. NOP restricts not only the active substance, but also the inert ingredients of natural pesticides. Weeds must be controlled by mechanical or thermal means, through adequate soil tillage and crop rotation.
7. **Contamination Control** – Relevant measures, such as a wall around the farmland and supply of uncontaminated irrigation water, should be adopted to minimize or avoid the contamination from outside or within the farm during each stage of production.
8. **Soil and Water Conservation** – Relevant measures, such as sprinkler or drip irrigation, should be taken to prevent soil erosion, salinization of soil, excessive or improper use of water, and the pollution of groundwater or surface water.
9. **Storage, Transportation, and Marketing** – During the storage, transportation, and marketing of the product, organic integrity of the product should be maintained by adopting appropriate measures, such as properly cleaned area and equipment/ machinery for processing, and storage and transport facilities that meet requirements of organic standards.

10. Parallel Production –

If a farm is engaged in parallel production,

- Buffer zones are maintained for demarcation;
- Crops are clearly distinguishable; and
- The crops are harvested in such a way that there are reliable methods to verify the actual harvest of the respective crop.

OneCert does not allow cultivation of same types of conventional and organic crops on the same farm.

Note: The preceding guidelines are provided for developing basic understanding only. For more details, please refer to relevant standards.

Requirements for Organic Processing/Handling

Disclaimer: *These guidelines are made for developing basic understanding only and cannot be used or referred to as standard reference. For standard reference, please refer to applicable standards.*

1. Records

The operator must maintain a record of all activities, including details of materials received and dispatched. Detailed records must also include all activities and transactions, which can be clearly understood and audited. Hence, the records must present a clear audit trail of incoming raw materials, ingredients, product run, product storage, dispatch, transportation, sales, etc.

2. Pest Management

Organic handler must implement Integrated Pest Management (IPM) strategies, including preventive practices and regular monitoring. Precautions must be taken to avoid contamination of the organic product and packaging material with any pest control materials.

(For obtaining list of approved materials and methods for pest control, please contact OneCert Asia office.)

3. Contamination and Commingling

Operators handling organic and non-organic products within the same facility must demonstrate ability to maintain the integrity of organic products. Operators must apply management practices to ensure critical control points and prevent contamination or commingling and, as such, must store and transport organic and non-organic produce separately.

4. Product Composition

Organic raw materials and ingredients must be certified as per the applicable standards. Non-agricultural ingredients or processing aids are limited to those listed in approved material list of applicable standards. Products may carry different label claims, such as '100% Organic', 'Organic', and 'Made with Organic', depending on its final composition.

(For the detailed requirements, please see USDA–NOP, NPOP–India, and EU 834/2007 regulations. The standards can be downloaded from website: www.onecertasia.in.)

Basic Requirements for Grower Group Certification

Disclaimer: *These guidelines are made for developing basic understanding only and cannot be used or referred to as standard reference. For standard reference, please refer to applicable standards.*

1. **Scope** – Grower group certification is based on the Internal Quality System (IQS). Members of the group must apply similar production system, and farms should be in the similar geographical proximity.
2. **Constitution of the Group Organization** – The group must have a legal status or constitution of the organization and shall be presented by an organization chart.
3. **Internal Quality System** – Group certification is based on the IQS, which has the following important components:
   - Implementation of the Internal Control System
   - Internal standard
   - Risk assessment
4. **Internal Standard** – Internal standard should be prepared in local language by the IQS manager. If the farmers are illiterate, internal standard should contain
   - Definition of the production unit,
   - How to deal with the part conversion,
   - Conversion period,
   - Farm production norms for the entire unit, and
   - Harvest and postharvest procedures.
5. **Conflict of Interest** – IQS personnel should not have any conflict of interest. All possible conflicts should be declared in a written statement.
6. **Scope of Certification** – The certification should be granted to the group with reference to the regulation/standard adopted by the group.
7. **Trade** – The group will market the products under a single entity. For procurements, the IQS should draw up relevant procedure.
8. **Implementation of the Internal Control System** – For maintaining the Internal Control System, the following procedures should be adopted by the grower group:
   - Registration of new members, and
   - Provision of documentation to the members of the grower group.
9. **Internal Inspection**
   - At least two inspections of the group should be carried out by the internal inspector, which will be documented.
   - The inspection will be carried out in the presence of a group member or representative.
   - In case of severe noncompliance, the result will be reported immediately to the IQS manager and all measures taken will be according to the internal sanction procedures.
10. **External Inspection** – The external inspection and certification agency will inspect the group members on the basis of sample for the evolution of the grower group for efficient Internal Control System for compliance with the NPOP Standards. The sample plan for inspection should be based on the inspector's perception of risk based on the following:

- Size of holding,
- Number of members in the group,
- Intermingling/contamination, and
- Local hazard.

11. **Noncompliance and Sanction** – In case of noncompliance, the IQS should take corrective or mitigating measures.
    - Procedure for implementation of sanction will be defined in case of noncompliance.
    - Sanction has to be documented.
    - Farmers that have to use prohibited inputs on their farms must undergo the full Conversion Period all over again.
12. **Training of IQS Personnel and Farmers**
    - Each internal inspector will be trained annually by a competent person.
    - The date of training and the list of participants will be documented.

    The IQS manager will organize regular training for farmers of the group, and each farmer will be required to participate in the training. The training should be documented.
13. **Buying Procedure** – To ensure the integrity of the product from the group, the IQS ensures about the status of the farmer. Supplied amount should be compared with harvested amount and estimated yield. All documents should indicate the status of the certified product. Bags should be labeled as "Organic" or "Conventional".

(For the detailed requirements, please consult OneCert International Standards, USDA–NOP, NPOP–India, and EU 834/2007 regulations. Above standards can be downloaded from OneCert website www.onecertasia.in.)

Organic Certification Process

The certification process of most of the certification bodies is divided into five steps:

Step 1. Registration and Application

For obtaining organic certification, the applicant must register first with certification bodies who, in turn, will provide the applicant with an application packet. The packet contains the application form; agreement; organic system plan; field history sheet (for crop indent, grower group, wild harvest); farm product and inventory list; organic product profile; and grower group questionnaire (for crop production grower group). The organic system plan requires information about record keeping; production detail; detail of input use (for fertility, and pest and disease management); preventive measures; and methods used for prevention of contamination and commingling. Upon submission, the organic system plan must also include attachments, such as the facility map, soil and water test, and product label presently in use or to be used in the future.

Step 2. Application Review

Once the complete application is received, it will be reviewed on the basis of applicable standards. In case any incomplete information/noncompliance is found, or any additional information is needed, the applicant will be contacted. Once the required information is gathered, or noncompliance is resolved, an on-site audit is planned on a mutually agreed

date and time. The review of application usually takes about a couple of days, depending upon the information provided by the applicant.

Step 3. Inspection

On the prescribed date, a trained Organic Inspector, who is familiar with the applicant's type of operation, will reach the applicant's facility. The inspector will thoroughly examine each method of production and documents of applicant's operation and facility for verification of applicant's plan in an accurate description of organic standard compliance. During exit interview, the inspector will summarize the findings and will ask for any additional information, if required. Inspection normally takes from half a day to 3 days, depending on the complexity of operations.

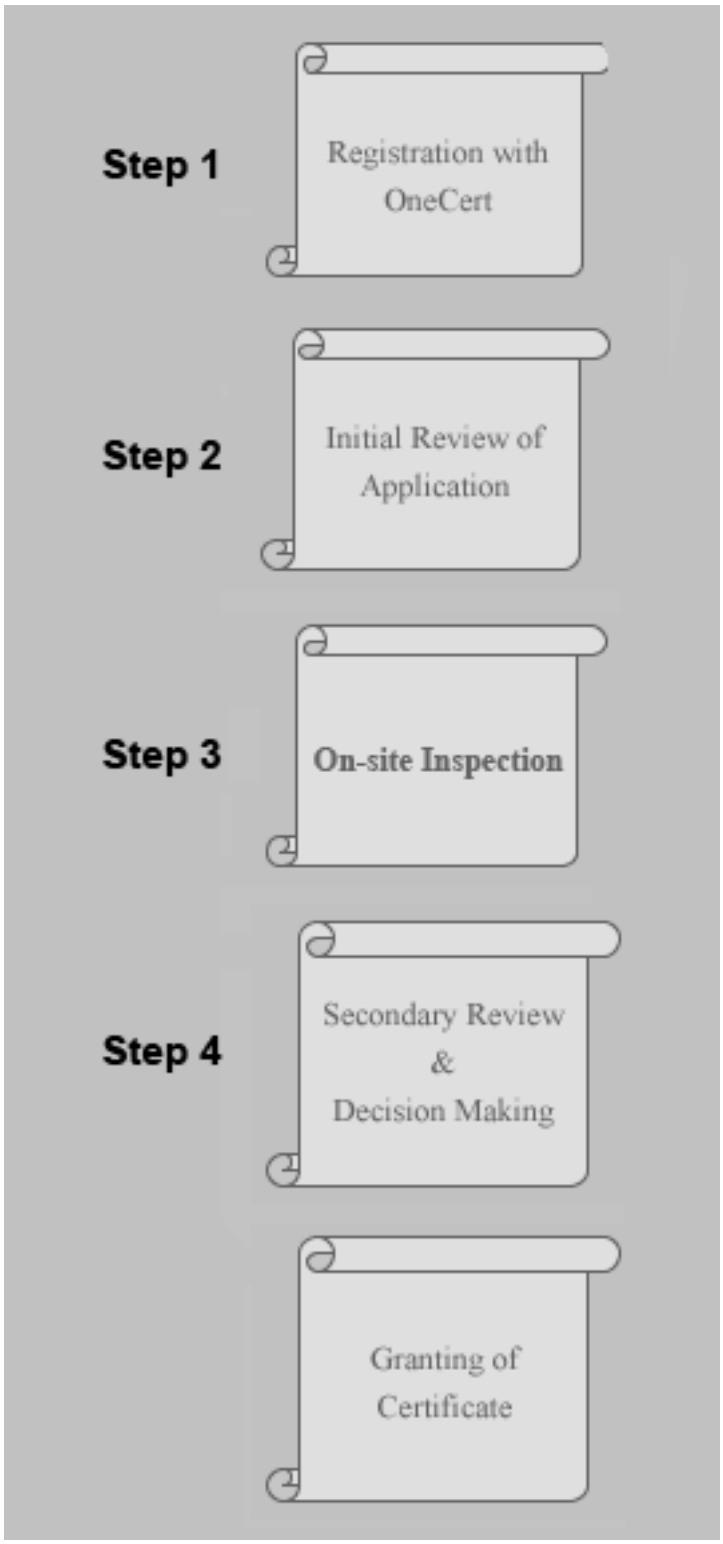
Step 4. Secondary Review

After submission of the inspector's report, it is reviewed to evaluate compliance with the applicable standards. During the secondary review, the applicant is contacted if more information is required. After receipt of the report from the inspector, the secondary review generally takes 2–4 days.

Step 5. Certification Decision

After completion of the secondary review, the file is sent to the US head office for the final decision, which takes 1–2 weeks. After receiving the final decision from the US head office, the applicant will receive the Organic Certificate, along with a cover letter citing the conditions for awarding the certificate. The Organic Certificate contains the name of the applicant's company, address, category of certification, and list of certified organic products. The entire certification process may take about 4–12 weeks, depending upon the documents and cooperation provided.

Figure 10-1 Steps to Organic Certification



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11. CERTIFICATION AND TRACEABILITY SYSTEM FOR ENSURING RELIABILITY AND COMPETITIVE VALUE OF ORGANIC COMMODITIES: LEARNING LESSONS FROM JAPAN

Yutaka Maruyama

Introduction

Organic and Traceability are two different tools necessary for ensuring reliable quality of food supply. Organic is a "farming method" while traceability is a "tool for good product control" for all products, not even necessarily limited to organic products. The chapter touches on two aspects, organic reliability and traceability, putting major emphasis on organic certification.

For ensuring food reliability, producers can choose several approaches. One of them is producing organic foods: organic foods already have clear standards and many consumers consider organic foods as more reliable. While considering ways of food reliability, there are so many issues: no chemical residues, good quality foods, farming method, immediate action for problem investigation, etc. For achieving these objectives, it is important and more effective to establish a traceability system.

System for Ensuring Quality of Organic Product

From a Japanese perspective, if marketing of the produce is the aim of the organic producer, then that producer is entering into the arena of organic business. Therefore, the producer should consider the organic farming technologies needed, as well as the organic certification required for ensuring certified quality product. Many importing countries regulate their organic certification system based on the Codex Alimentarius Guidelines, but Japan has evolved its own stringent system.

In Japan, for labeling products as organic, a producer needs to follow the Japanese Agricultural Standards (JAS) of the organic certification system. It is imperative for all producers—domestic or foreign—seeking to access Japanese organic markets to make sure that products are certified by JAS-accredited certification body and carry the JAS organic seal. Conditions apply equally to both Japanese domestic products, as well as imported products. Practicing organic farming is not enough to obtain JAS certification. In order to obtain JAS certification, producers need to establish that they have good production control management system and an acceptable quality label guarantee system in each production group.

Organic Certification

Globally, the Organic Certification movement was developed in the 1980s–90s, mainly in Europe and the United States. At that time, certification bodies were private companies or nongovernment organizations. In 1991, the European Union (EU) established the organic regulation, EEC 2092/91.

In 2000, Japan started the organic certification system under the JAS Law. In 2000, the United States also started the National Organic Program (NOP). Considering developing circumstances, it warranted that certification system is transferred from private rule

(voluntary) to government (mandatory) rule. One of the reasons has been the increasing mandatory role of the World Trade Organization regulations controlling international trade in agricultural products. In producing and exporting countries, producers and exporters need to meet the regulations of the importing countries. For example, a producer who wants to ship products to the EU must first obtain EU certification. When the same producer plans to ship to Japan, the producer will need JAS certification, additionally, until harmonization is agreed between the countries of the producer and the importer. It is a legal process, which governments of the countries need to work and agree.

So far, there is no harmonization between the EU, United States, and Japan. Many countries still do not have national programs on organic certification system. Therefore, in such countries, private importers can hire services of any organic certification agency, private or public. In a unique example, Canadian producers normally obtain NOP (American) certification and qualify for export to the United States.

Fulfilling Preconditions for Organic Certification

Organic certification is a key hurdle in the export process. Producers need to consider common issues in food business. Generally, exporting countries need to consider the following while preparing for organic export:

- Access to information about the markets in the importing country (producers need to know about possible buyers)
- Good quality and hygienic conditions of food items (if product does not have good quality, importers will not buy it)
- Demand for products (producers need to investigate about what favorite food is sold in the importing countries)
- Prices (importers usually ask for shipping product at low prices if producer is a newcomer)
- Financial issues (to maintain quality, producers need to construct new warehouses, install new machines, packaging, etc.)
- Marketing (including advertisement and promotion in importing countries)
- Technical know-how on organic production
- Source of organic materials (compost, fertilizer, natural pesticides, etc.) (in organic production, producer should always use approved inputs)
- Getting high quality seeds (use of organic seeds for organic production)
- Workers well trained in organic regulations (workers need to know organic regulations in order not to violate organic standards; record-keeping staff is needed since a producer should keep records of the farming process)
- Reduced yield during 'in conversion' period (during the initial years when producer starts organic farming from conventional, yield is not good; producer should be prepared for reduced income for this period).

In order to solve these issues, government needs to help organic producers. For example, government agencies can consider support in the following areas:

- Technical assistance and advice during the conversion period
- Support for research and development on organic agriculture
- Marketing promotion of the products

- Financial support and training for certification
- Establishing certification bodies

Regulatory System

The International Federation of Organic Agriculture Movements (IFOAM) report on harmonization and equivalence in organic agriculture (2004) revealed that 37 countries had already implemented national organic regulations while 23 countries were about to implement national organic regulations (Table 11-1). Table 11-2 provides a list of the Asian countries that have implemented or were under implementation of national regulation on organic farming.

Table 11-1 Countries that have national regulations on organic farming

Countries that have national regulation			
	Fully implemented	**Final not implemented**	**In draft**
Europe	26	2	4
Asia & Pacific	7	1	3
Americas	3	4	4
Africa	1	1	2
Middle East			2
	37	8	15

Source: IFOAM. 2008. The Organic Guarantee System.

Table 11-2 Asian countries with regulations on organic farming

In the case of Asia and Pacific Region		
Fully implemented	**Final not implemented**	**In draft**
Australia, India, Japan, Philippines, South Korea, Taiwan, Thailand	Malaysia	China, Hong Kong, Indonesia

Source: IFOAM. 2008. The Organic Guarantee System.

Management and Record Keeping at the Field Level

In order to get organic certification, it is necessary to establish a good "management system". Producers need a good organic management system, in addition to organic farming technologies, because the certification inspector would seek evidence of good record keeping of all processes and activities related to organic farming that the farmers may have undertaken, and the evidence that these were in conformity with organic standards (proof by documents and records).

In general, certification standards require the following operations:

- Establish organic management plan (by written manual)
- Record of farming activities (including postharvest handling) for 3–5 years
- Internal audit system (in the case of grower group)
- Follow label regulation
- Qualification of manager and related staff in the case of JAS certification

While considering setting up a management system, it is more appropriate and even easy to copy the ISO 9001 system. Producers should establish a system similar to ISO 9001 based on the organic standard requirements. Record keeping is most important for assuring organic standard compliance.

The following are examples of required good record keeping:

- Past 3–5 years history of farm management – includes crops and inputs; it assures that the farmer has complied with organic standards over the last 3 years and current year
- Field activity log – supports records and evidence of the above field history
- Compost-making record – to assure that farmer does not use prohibited materials and keeps standard for compost
- Seeding record – to assure the use of organic seeds
- Compost/fertilizer input record – to assure the use of approved material only
- Pest/disease/weed control record – to assure the use of approved crop protection methods
- Machine/equipment cleaning record – to assure that no contamination takes place from soil of conventional field
- Harvest record – to assure reasonable yield
- Processing and packaging records – to assure that product is not contaminated by chemicals and non-organic products
- Sanitation record of handling place – to assure that there is no chemical contamination
- Internal audit record – to help maintain the control system
- Field map with adjoining land use – to show that organic fields are not contaminated from adjoining land
- Non-Genetically Modified Organism (non-GMO) affidavit of seed (if applicable)
- Explanation of outsourcing input materials – to show that the input material is an approved product
- Past landowner's affidavit – if it is rented field, then check when it was rented
- Material Safety and Data Sheets of pest control product – to show that the material is an approved product
- Water test – when producers wash harvested products

The following are the general steps necessary for organic certification. The procedure may differ slightly, depending on the certification body (CB). (The producer may contact the organic CB and inquire about its procedure.)

- Understand organic standards
- Check current organic farming if it is complying with organic standards
- Establish organic management system; keep records for 3–5 years
- Select a CB
- Send application to CB
- Be inspected by an inspector from CB
- After the inspection, inspector's report is sent to CB; and CB will make a decision on the certification
- Receive organic certificate

Organic Food Certification System of Japan: JAS Law

The Japan Agricultural Standard (JAS) system is not only for organic products but also for assessing quality of other product specifications. This law was established in 1950. Organic certification system was included in this law in 2000. Organic JAS started from 2000, and the standards are reviewed every 5 years. Presently, the 2005 version is in effect. As per JAS, producers need one of the following certification categories, depending on the product type and operation type.

Table 11-3 JAS Certification category

	Category of Certification	Product Example
1	Production Process Management for Organic Agricultural Product	Grain, vegetable
2	Production Process Management for Organic Processed Food	Pasta, juice
3	Production Process Management for Organic Livestock Product	Egg, meat
4	Production Process Management for Organic Feed	Feed
5	Repacker of Organic Agricultural Product	Cleaning soybean
6	Repacker of Organic Processed Food	Repackaged raisin
7	Repacker of Organic Livestock Product	Repackaged egg
8	Repacker of Organic Feed	Feed

Export and Import of Organic Products

In the case of agricultural products and processed foods, the procedure is straightforward. A producer or processor, who wants to label a product as organic for the Japanese market, needs to get certified under the JAS certification system.

Figure 11-1 Export of agricultural products

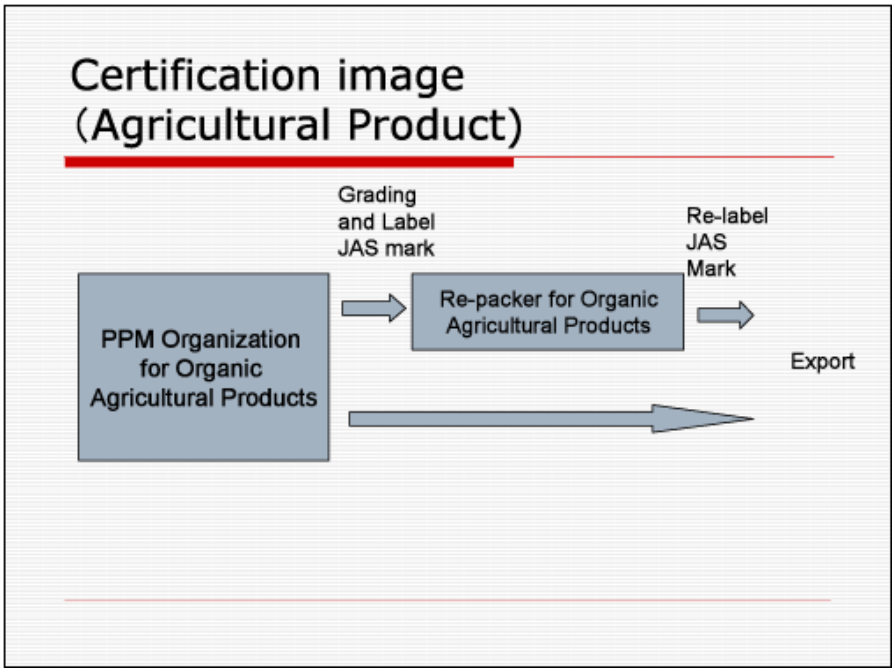
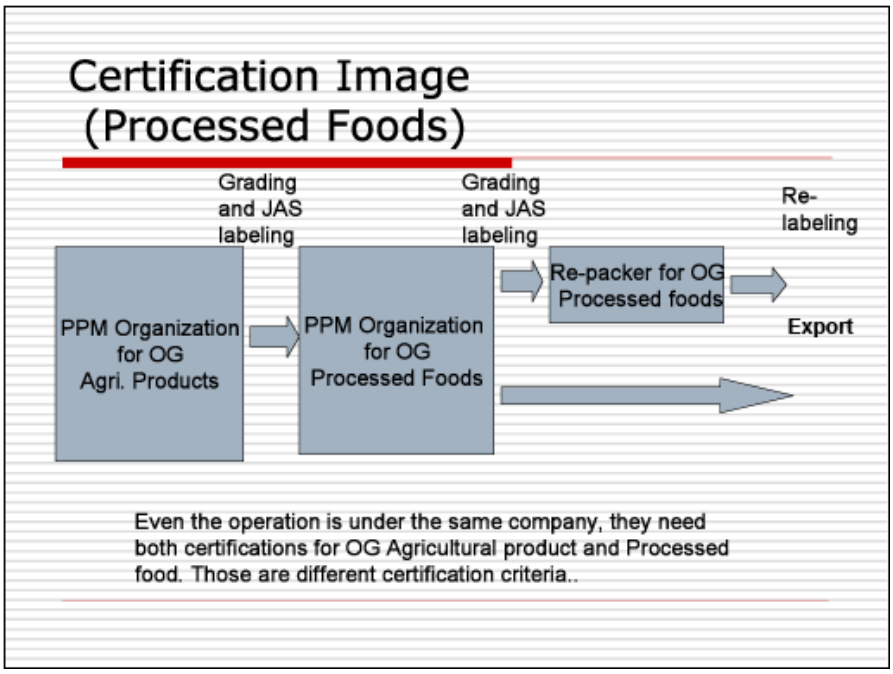
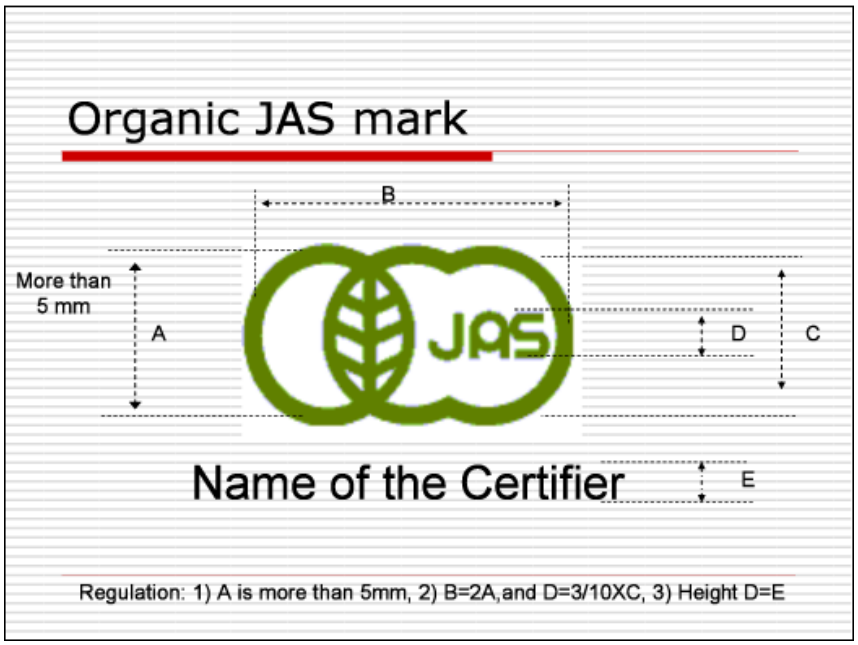


Figure 11-2 Export of processed food



For the EU, United States, Australia, and Switzerland, the Government of Japan has worked out agreements on equivalency system. Therefore, producers in these countries have an easy option for export.

Figure 11-3 The JAS mark



The JAS mark is regulated by the law; thus, certified producers need to strictly follow the JAS mark. The JAS mark on the product means that the product meets JAS standards. Each certified organization "inspects" finished products and confirms if these products meet JAS standards. Japanese people call this action, "Grading" (*Kakuzuke*). For organic commodities, the product needs to meet JAS standards of organic agricultural products in order to use the Organic JAS mark. This grading action is conducted before shipping, and the certifying agency keeps records of it.

Four JAS Organic Standards

i. JAS of organic agricultural product (2005 No. 1605)
ii. JAS of organic processed food (2005 No. 1606)
iii. JAS of organic livestock product (2005 No. 1608)
iv. JAS of organic feed (2005 No. 1607)

The most confusing point in the JAS organic system is that JAS labeling is mandatory for agricultural products but not for livestock products.

Table 11-4 shows some examples of organic products and their respective JAS enforcement status.

Table 11-4 Type of products and legal status on enforcement of JAS labeling

		Examples of Organic Products	**JAS Mark Labeling**
Organic Agricultural Products		Grain, vegetable, fruit, sugarcane, coffee	Mandatory
Organic Food Items from agriculture and livestock sources	Organic agriculture/ plant-based food products	Pasta, juice, sugar	Mandatory
	Organic agriculture livestock-based food products	Hamburger, milk chocolate	Voluntary
	Organic livestock-based food products	Milk, cheese, ham	Voluntary
Organic livestock produce		Egg, meat	Voluntary
Organic feed		Glass feed, grain feed	Voluntary

Establishing Organic Production and Management System

Technical Criteria for certification

In order to obtain JAS certification, the applicant needs to meet both standards for organic management (technical criteria) and for organic farming (Organic JAS standards, explained above).

The following points enumerate the technical criteria for certification under JAS (for producers of agricultural products only):

- State of facilities in the field and postharvest handling systems
- The way product processing is managed
- Qualification and number of Production Process Management staff
- The way grading process is managed
- Qualification and number of grading staff

According to the criteria, the applicant first needs to establish an organization for production management system and appoint responsible persons. Then, they should produce two operation manuals, i.e., instructional manuals and review manuals, having the same concept as Plan–Do–Check–Act (PDCA) cycle in quality management. The applicant also needs to create suitable facilities as follows:

- organic field(s), which complies with JAS standard;
- postharvest handling facility with standards complying with JAS standards; and
- necessary facilities to control JAS mark inventory.

Furthermore, the applicant needs to establish the following management system:

- Job description of Production Process Management Director
- Establishing Internal Operation rules
- Following Internal Operation rules and keeping records
- Checking of Internal Operation rules

Lastly, the applicant needs to establish grading and labeling procedure as follows:

- Undertake inspection of product process (check about JAS conformity)
- Undertake JAS labeling
- Activities related to handling after JAS labeling
- Grading and record keeping
- Reporting to the Registered Foreign Certification Organization (RFCO)

The applicant also needs to follow label regulation.

Organic JAS Standards (Production Method)

It is a standard for organic agricultural products of plant origin. Operators need to comply with these standards for producing the organic commodities.

- Field conditions (geographical and historical)
- Soil fertility management systems
- Seed and seedlings
- Pest/disease/weed management
- General management
- Seedling process
- Harvest and postharvest handling

Basically, JAS standards strictly follow the Codex Alimentarius Guidelines.

Organic Fields

- No drift, no contamination from adjoining land
- Field history (e.g., organic farming for 3 years in the case of perennial crop)

Seeds or Seedlings

- Using organic seed and seedlings (if it is impossible; there is an exception)
- GMO seed is not allowed
- Soil and fertilization
- Soil development using compost materials from its fields
- If there is low soil fertility, producer may use purchased fertilizers

Pest and Disease Control

- Never use agrochemicals for pest and disease control.
- If emergency situation occurs, producer may use specified material.

Products during conversion period can be labeled as “Organic in conversion” after 1 year from organic farming. In this case, producer needs certification.

Organic

- Perennial crops – Prohibited material application is 3 years before harvest
- Non-perennial crops – Prohibited inorganic applications 2 years before seeding or seedling planting
- Organic in conversion – Products, where harvest date is more than 1 year before conventional crop harvest

Processed food regulations require that more than 95% of the main ingredients should be JAS certified organic. During processing, there should not be any contamination by prohibited materials and/or commingled with non-organic ingredients. With livestock products, the standards are very complicated.

Future of JAS for Organic

The JAS organic standards were reviewed and amended in 2005 and 2006. After this, changes are not expected for the time being. Applicants may continue following the 2006 version until further revision is notified.

Traceability System

Traceability is presently an important issue being discussed by the Codex Alimentarius Commission and the International Organization for Standardization (ISO). In order to have a clearer understanding of this aspect, it is necessary to clarify that traceability is not a "purpose" but a "tool" for fulfilling some "other purpose". For example, even producers and distributors can establish a complete traceability system. But if the product is contaminated with chemical residues, it is not a reliable product. In such cases, they must first establish other food safety programs, such as Good Agricultural Practices (GAP), together with a traceability system. Then a traceability system should be used as one of the tools of GAP. Traceability has an important role to play within the organic production systems, as it is one of the requirements of organic certification. But a traceability system is not applied to organic products alone; it is also used rather widely to other products. When a producer decides to establish a traceability system, he needs to consider the purpose, scope, measure, cost, etc. For this reason, making a traceability system plan is always helpful.

Codex definition of traceability states that, "Traceability, i.e., product tracing, is the ability to follow the movement of a food through specified stage(s) of production, processing and distribution." Considering the requirement about traceability in organic certification, organic standards (JAS) make it necessary to record, at least, the past 4 years of pathways of the product movement in order to assure that they comply with organic standards. Also, almost all certification bodies require producers to establish "lot numbering system" and put lot numbers on the package/invoice for each product. By using a lot number, a producer can trace back products to the farm. A processor also needs a lot numbering system at each process. Traceability is not a "purpose" but a "tool" for achieving another purpose. A producer or processor (hereafter operator) who wants to develop a traceability system must first consider the purpose of introducing traceability. For example, producers or processors need to select among the following purposes the ones that are relevant to them:

i. as a tool for products recall system
ii. as a tool for GAP practice evidence
iii. as a tool for identification of animals (such as cows)
iv. as a tool for controlling temperature during distribution
v. as a tool for providing production information to consumers

After deciding on the purpose, they need to consider how they will achieve the purposes, such as

i. Record-keeping system by using computer
ii. Distribution flow system by using an integrated circuit (IC) tag
iii. Animal control system by using IC tag
iv. Product information disclosure system by using internet
v. The purpose of those systems is product reliability for consumers, recalling action of producers, etc.

Establishing Traceability System Plan (TSP)

It is important to establish a traceability system plan. ISO procedures explain about the requirements for establishing traceability. The framework of contents of traceability system plan includes

i. Purpose of the traceability system
ii. Organization of traceability system
iii. Scope of the product control (which chains are included in this plan, what is the input, what is the output)
iv. What kind of information they receive from input suppliers
v. What kind of records they keep, and what kind of tools (paper, computer, IC tag, etc.)
vi. What kind of information they give to customers and consumers, by which tools (paper, internet, fax, phone, etc.)
vii. Lot numbering system at product stage in this organization
viii. Record keeping
ix. Employee training
x. Daily monitoring of the record and systems
xi. Internal audit (periodical), management review

12. LABELING, BRANDING, AND PACKAGING OF ORGANIC PRODUCTS: CRITICAL SUCCESS FACTORS

Gerald A. Herrmann

Introduction

The worldwide turnover of organic products reached about EUR30 billion in 2006. Within the last 6 years, the area under organic farming had increased from 10 million hectares (ha) in 2000 to 30 million ha in 2006. Organic retail sales are expected to continuously grow annually by 10%–20% in the European Union (EU) and the United States, as well as in countries, such as Japan, Republic of China, Republic of Korea, Singapore, Australia, South Africa, Brazil, and in big cities of South America and the Middle East. Therefore, the demand for organic products in these markets is rapidly growing, opening export opportunities for supply countries, especially for India (being one of the biggest agricultural producers and having a tradition in organic farming systems).

When deciding to produce organic products for the national or export market, the following factors need to be considered:

- Analysis of individual operation
- Domestic market analysis
- Target market analysis
- Branding
- Labeling
- Packaging
- Other requirements
- Consumer expectations

Strategies for Exporters

When deciding to produce organic products for the export market, the producer/manufacturer needs to be sure what he or she wants and, for that reason, needs to know the target market. And finally, market actors must get interested in the products, for which the producer/manufacturer needs to find ways to accomplish that.

The European market for organic products is well developed. Consequently, the buying decision of consumers does not only depend on being organic or not, but also on a mixture of various factors comparable to conventional products. The complete appeal of the product (quality, credibility, recognition of brand name, personal preferences, taste); packaging (size, material); and also the price are decisive.

Figure 12-1 Definition of the target market

Source: Designed by author.

The first decision concerning the target market is whether one wants to export to one or more countries and, if so, to which one (Figure 12-1). Within these countries, who are the target consumers? There are different sales channels for which one may offer products, each with different requirements, and pros and cons. One sales channel might fit better to the producers' strategy than the other. In order to know the target market, the producer should be able to answer the following questions: What do I know about my target market? What is the structure of sales channels for organic products in my target country? What are the differences when I try to place a product in one or the other sales channel? What is the interest of my buyer (retailer, organic supermarket, etc.)?

In order to get this knowledge, the producer will have to gather own data about the market the producer is selling to or wants to sell to (internet, trade associations, journals, market statistics, different sales channels, etc.). The producer must network; be visible; travel to target markets (fairs, shops, certifiers, importers, buyers, trade, etc.); or seek advice from consultancy companies, or national agencies or associations, etc.

Although a thorough examination of the export market is important, an in-depth analysis of producer's own situation would also prove useful: Have I explored the viability of regional or local markets? Does exporting fit with my organization's or company's mission and strategy? Am I willing to make the necessary investment of time, people, and money? Are all functional areas in internal alignment? Do current economical data (exchange rates, duties, etc.) favor exporting?

One should keep in mind the general characteristics of the organic market as well, not only as an exporter:

- The market is still small (<1% of global food market)
- It has (in its majority) an underdeveloped structure
- Buyers tend to develop their 'own' supply structure
- Long-lasting and stable partnerships are sought for supply, quality, and purchase

- The market is still relatively inflexible:
  - A relatively small overproduction leads to market (selling) and price problems
  - A relatively small underproduction leads to undersupply because of few 'free' quantities

Characteristics of Different Business Models for Export

1. Raw products; commodities; fresh, unprocessed fruits and vegetables; and private label products

- Producers are easily exchangeable against other producers
- Importers/Traders/Wholesalers build relatively stable relationships with producers
  - Positive for producers
  - Negative for producers *if new to the market*
- Even if product quality and price are competitive
- Lowered prices or price dumping do not necessarily lead to successful sales if the market has no demand
- Good chances for market access
  - Growing markets are opening possibilities for new producers
  - Products with anti-seasonal production to that of the importing country
  - Minimize dependency on one market

2. Half-processed and processed products, technical ingredients

- Quality management system has to comply with buyer's (countries) requirements
- New, interesting products as alternative or as diversification of the product line of the buyer
- Steady supply, ability to grow with the market
- Dependency on other companies' brands and their success on the market

3. Processor brands for the retail

- Difficult to place an own brand on a foreign market
- Long-term strategy and investment (time, people, money)
- Knowledge about consumer characteristics (market studies, quality, packaging, design, taste, etc.)
- Own agent or sales office (representation) in the market
- First listing is crucial
- Specialties have higher probability to succeed
- Possible competition with own products (if raw and/or processed and/or branded products are sold on the same market)

4. Fair Trade

- For small farmers and their organizations (plantations or single farms restricted to certain commodities or conditions)
- Special, additional requirements (social standards, inspection, certification, and costs)
- Relatively small market (producers need to find additional markets to sell their produce)
- Stable market, but relatively slow growth rates
- Product variety restricted (but possibility for non-food products as additional source of income)
- Stable and comparably high prices

In general, one should try to reduce risks by following a multiple marketing strategy:

- Local, regional, and international markets
- Diversify reasonably in products, varieties, and grade of processing

Branding

The definitions for the different branding strategies and how they are used in this article are as follows:

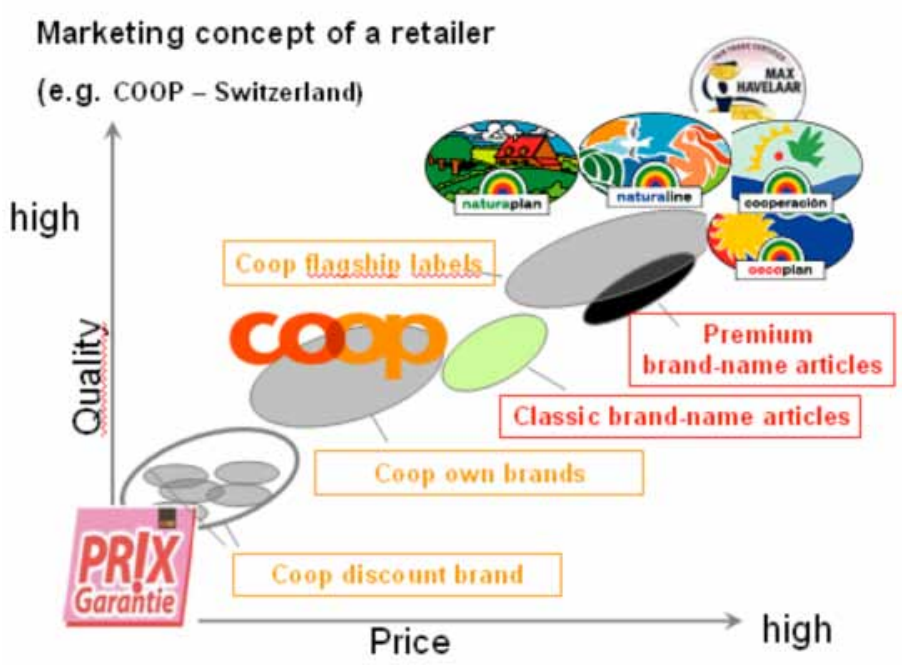
Retail brand: Sometimes also referred to as store brand, retail brand is brand that is specific to a retail store or store chain. The retailer may manufacture goods under its own label, rebrand private label goods, or outsource manufacturing of retail brand/store brand items to multiple third parties—often the same manufacturers who produce brand products.

Processor brand: A brand owned by the processor/manufacturer, which is developed and owned by the processor/producer of the product.

Private label: Private label products are typically those manufactured by one company for another company's brand (e.g., retail brand).

The approach to branding is a complex one. Figure 12-2 shows the marketing concept of a retailer (Coop – Switzerland). It is based on a combination of products of different qualities and price levels under a range of retail brands and processor brands.

Figure 12-2 Marketing concept of a retailer



For a processor, the question is which branding strategy to choose. Figure 12-3 shows examples and characteristics of retail brands versus processor brands.

Figure 12-3 Examples of German retail brands versus processor brands

	Retail brands		Processor brands	
	BIOBIO	basic Bio für alle	RAPUNZEL	ANDECHSER Bio
Sales volume	High	?	87 Million €	?
Brand owner	Brand owned by retail chain (private label)	Brand owned by retail chain (private label)	Processor brand (private label)	Processor brand
Distribution area	National	In 16 Cities of Germany, one in Austria	National and international	National
Distribution channel	Discounter (Plus)	Organic supermarket	Specialized organic shops	Specialized organic shops, convent. Retail chains, dairy shops
Price class	Low	Medium	High	Medium
Article range	Small (100 Articles)	Medium (170 Articles)	High (400 Articles)	Low (dairy products only)

Source: Compiled by author.

The characteristics of the different business models for processed products are

Processor brand

- High marketing costs to enter the market
- High customer loyalty if product performs
- Known product origin, authentic

Produce for retail brand

- Low marketing costs
- Easy to enter the market (if being accepted as supplier)
- Dependent, replaceable

Produce for other private labels

- Low marketing costs
- Dependent, replaceable
- Anonymous origin

Establishing and Introducing a Processor Brand/Registered Trade Mark

- Decision on brand name, depending on target market, target consumer, credibility, origin, expansion of product assortment, lingual perceptions, and other criteria
- Word–logo (picture) or only word mark?
- Strengths, weaknesses, opportunities, threats (SWOT) Analysis

Example from Egypt: Sekem (http://www.sekem.com/)

The SEKEM Initiative established several specialized companies to ensure production and marketing of its products. The umbrella organization for SEKEM's independent firms was established in order to supervise, evaluate, and support all subsidiary ventures,

and to enable it to act as investor and lender to them. The SEKEM Holding has closely cooperated with international institutions, such as the Deutsche Investitions-und Entwicklungsgesellschaft mbH (DEG) and the International Finance Corporation (IFC).

Example from India: Sresta (http://24lettermantra.com/)

Sresta is the first organic shop chain in India that has created its own brand: 24 letter mantra.

Example from Germany: COSMOVEDA (http://www.cosmoveda.de)

COSMOVEDA is a German company that specializes in products from India.

Labeling

Regarding labeling of organic products, general national and international food laws or regulations are applicable, as well as specific organic regulations and standards, which apply in the different export target markets.

United States – General Labeling Requirements

Food products sold in the United States must comply with the Federal Food, Drug, and Cosmetic Act, administered by the Food and Drug Administration (FDA). In order to ensure that the FDA will be notified of all the regulated products that enter the United States, the importer or its representative must present a note of entry and bond the goods to be released by the US Customs Service. The FDA and the Customs Service work together for keeping undesired products from entering the United States. The Customs Service notifies the FDA of the entry of all merchandise, and then the FDA decides if the article should be admitted or not. If the FDA does not wish to examine the product, it can enter the country. Otherwise, an FDA representative must take a sample from the shipment and have it analyzed in the FDA laboratory. If the analysis results show compliance with standards, the product enters the US market; otherwise, it is rejected.

Food products must be labeled in compliance with the Nutrition Labeling and Education Act (NLEA). Food advertising claims are regulated by the Federal Trade Commission (FTC).

Most retailers will insist that product to be sold in most channels in the United States (perhaps with the exception of gourmet shops or import shops) have a Universal Product Code (UPC) bar code on the label so that the product can be scanned at purchase. In accordance with the Public Health Security and Bioterrorism Preparedness and Response Act of 2002, any foreign facility that "manufactures, processes, packs, or holds food" must be registered with the FDA. Foreign entities must appoint a US agent to represent them. This can be an importer or customs broker as long as the agent maintains a place of business in the United States. Some states (such as California, in particular) may have other specific rules. Alcohol has additional requirements.

United States – Organic Labeling Requirements

Products using the term "Organic" on the label must comply with the National Organic Program (NOP) labeling rules. This is under the jurisdiction of the United States Department of Agriculture (USDA). The NOP requires all agricultural products sold, labeled, or represented as organic in the United States be certified by a USDA-accredited certifying agent. Imported products must fully meet NOP provisions.

EU – General Labeling Requirements

EU regulation EC 178/2002, laying down the general principles and requirements of food law, establishing the European Food Safety Authority, and laying down procedures in matters of food safety, Section 3, Article 11: "Food and feed imported into the Community for placing on the market within the Community shall comply with the relevant requirements of food law or conditions recognized by the Community to be at least equivalent thereto or, where a specific agreement exists between the Community and the exporting country, with requirements contained therein."

Ranges of nominal quantities and nominal capacities permitted for certain prepackaged products are regulated in the EU Council Directive 80/232/EEC. Of the current product range of Fazenda & Casa, the package quantity is only regulated for rice and dried fruits (in gram):

Rice: 125 – 250 – 500 – 1,000 – 2,000 – 2,500 – 5,000

Dried fruits: 125 – 250 – 500 – 1,000 – 1,500 – 2,000 – 5,000 – 7,500 – 10,000

Regarding labeling of products, the EU Council Directive 2000/13/EC applies.

Labels of foodstuffs must contain the following particulars:

- Name under which the product is sold
- List of ingredients
- Net quantity
- Date of minimum durability
- Special conditions for keeping or use
- Name or business name and address of the manufacturer, packager, or importer
- Place of origin or provenance
- Acquired alcoholic strength (if more than 1.2%)
- Instructions of use (if appropriate)
- Lot marking

The required information on the label must appear in the official language(s) of the state where the product is marketed; however, the use of foreign terms or expressions easily understood by the purchaser is allowed.

EU – Organic Labeling Requirements

Organic products being imported to the EU need to be certified according to EU Regulation 2092/91. Depending on the importer and the brand owner purchasing the product, additional private standards or quality specifications, and social standards might be required.

Japan – General Labeling Requirements

The whole system is called the Japanese Agricultural Standard (JAS) System under the Law Concerning Standardization and Proper Labeling of Agricultural and Forestry Products (Law No.175, 1950), which governs all the agricultural and forestry products except for liquors, drugs, quasi-drugs, and cosmetics.

The JAS System consists of the combination of the JAS Standard System and the Quality Labeling Standard System.

1. Quality Labeling Standard System
   The Quality Labeling Standard System requires all producers, distributors, and other parties to label in accordance with the Quality Labeling Standards established by the Ministry of Agriculture, Forestry, and Fisheries. All the Quality Labeling Standards are mandatory so that all foods sold to consumers shall be labeled in accordance with them.
2. JAS Standard System
   The JAS Standard System refers to the certification system to attach the JAS marks to the products inspected in accordance with the JAS Standards established by the Ministry of Agriculture, Forestry, and Fisheries. The JAS Standards are voluntary other than JAS Standards for Organic Foods. Only 'Certified Business Entities', such as producers and manufacturers, can attach JAS marks to the products.

Japan – Organic Labeling Requirements

The Japanese Agricultural Standard of Organic Agricultural Products came into effect in 2001. Organic agricultural products (except stock farm products; meat/dairy products; forest, marine, and textile products) must carry the JAS organic certification seal.

Packaging

There are general requirements for packaging of organic products that are valid for all packaging no matter if organic or conventional. The package of a product must assure the following:

- Quality preservation/quality requirements
- Quantity determination/availability of various quantities
- Match legal requirements regarding quality/Hazard Analysis and Critical Control Points/food laws
- Suitable packaging material (similar as for conventional products)
- Design aspects/appealing to customers
- Typical packaging according to country tradition

Each country has some specific way and tradition how products are sold; correspondingly, one's product design might be different for export country 1 (e.g., United States) and export country 2 (e.g., Germany). Differences in the design of the label, as well as in the size and shape of the package, might be necessary (Figure 12-4).

Figure 12-4 Design of packaging depending on the country of sale

The packaging style does not only differ between countries, but also between sales channels (farmers market, small specialized organic food shop, conventional retail chain). Organic ham, fish, and meat sold in conventional supermarkets "have to be" packaged similar as are conventional meat products in order to appeal to customers. Organic sausages or meat sold in specialized organic food stores or organic supermarkets can have a rather self-made-looking packaging and still is appealing to customers who shop in these sales channels.

Special Requirements on Packaging for Organic Products

The challenge of packaging organic products is that the packaging should be similar to that of conventional products regarding product quality and consumer perception, but also have as little packaging material as possible as the consumer of organic products is critical on how environmentally friendly products are. The packaging should be authentic, modern and, if possible, biodegradable.

Strategies and Recommendations for Governments and Public Institutions

On the side of government and public institutions, several activities may support the establishment of domestic or export markets for organic products:

- Develop a National Action Plan for Organic Food and Farming
- Do that in cooperation with all stakeholders
- Provide national and international market information
- Assist producers and manufacturers in market access (trade fairs, statistics, excursions, etc.)
- Provide marketing funds for organic products
- Provide funds for conversion to organic
- Provide funds for research
- Provide funds for promotion and consumer education

13. MARKETING OF ORGANIC PRODUCTS: CRITICAL SUCCESS FACTORS

Gerald A. Herrmann

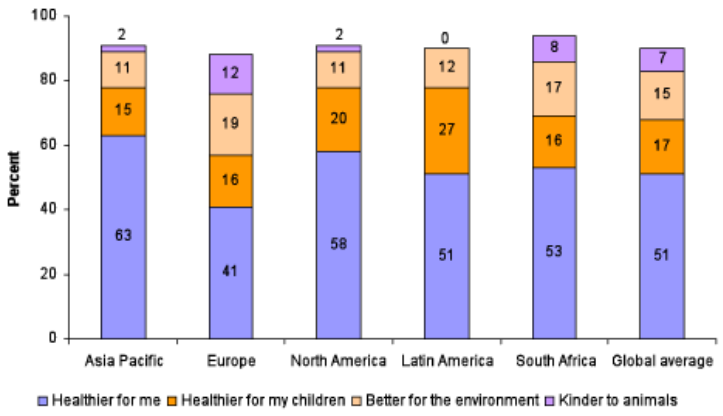
Introduction

The global organic market has grown by 130% since 2000, reaching about EUR35 billion in 2007 with annual growth rates above 10%. Globally, the European Union (EU) organic market is the biggest, worth nearly EUR17 billion, followed by North America (EUR14 billion).

Consumer Behavior

When thinking about how to market organic products successfully, the motivation of consumers for purchasing organic products should be understood. The results of a consumer survey across all continents are shown below. Animal welfare (as a reason) plays a role only in Europe and South Africa. Also, environmental protection is most important for consumers in these two regions. Safety for their children is the main reason to buy organic for 27% of the Latin Americans, which is more than in any other region. Personal health is the main reason for more than half of the consumers globally. Interesting is the difference in attitude between Japan and Europe.

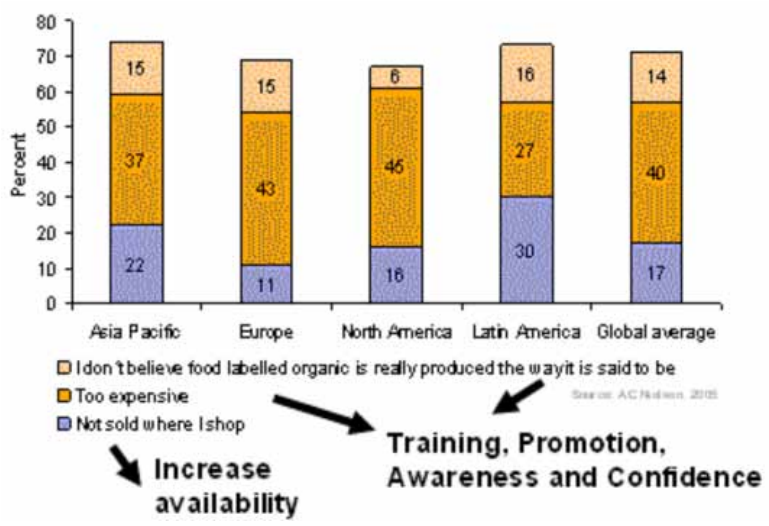
Figure 13-1 Main reasons for purchasing Organics (n = 21100)



Source: Compiled by the author.

On the other hand, the reasons for consumers not to buy organic are informative as well. These are either non-availability of organic products, high price of organic products, or lack of trust that products labeled as organic are really produced organically (and worth paying a higher price for).

Figure 13-2 Main reasons for not purchasing organics

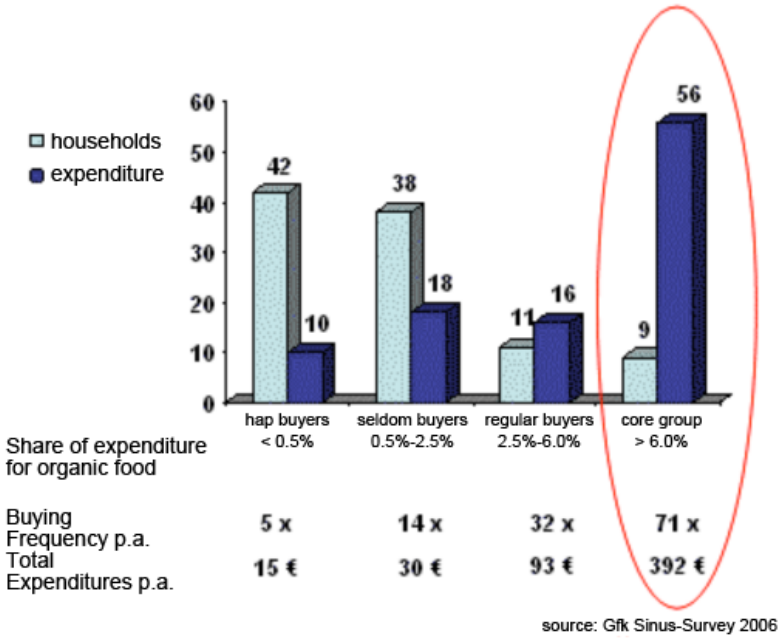


Source: Compiled by the author.

Buyers can be reached easily by increasing the availability of organic products; for example, consumers can get them in shops where they usually buy their groceries. The other two reasons why consumers refrain from buying organic products can be tackled by communication and promotion campaigns that increase consumers' awareness about and confidence in organic products.

A survey on consumers who already buy organic in Germany (GfK Sinus-Survey 2006) showed that only 20% of the buyers account for 72% of the turnover. They are called core group, as shown in Figure 13-3. The other 80% of consumers who buy organic products are only buying now and then, and spend between EUR15 and EUR93 on organic products per year. On average, the core group pays EUR5.55 for organic products per purchase, whereas the other groups pay less than EUR3.

Figure 13-3 Division of buyers and their share in organic expenditure



When looking into the different sales channels where organic products are available in Germany, the study showed that 93% of organic food shops' customers belong to the core group. These customers spend about half of what they spend for organic products (EUR215) in one quarter of their purchases (Gfk Sinus-Survey 2006).

Figure 13-4 Organic buyers and their share in organic turnover per point of sale

Source: Compiled by the author.

In discounters, about 40% of the customers are seldom or hap buyers, which means that they just buy organic products because these are available in the outlet where they shop anyway.

According to studies, impulse buying makes up to 60% of sales. Whereas discounters are generally supply-oriented, organic shops are rather experience-oriented.

Marketing Strategies

The marketing strategy for organic products should differ from sales channel to sales channel, or even from shop to shop, depending on the type of customers and local circumstances at the point of sale (prosperity of the area; size of town; other nearby organic shops; shop is located in the city center with high pedestrian traffic, in commercial zone, or in suburban shopping area; parking area for cars, etc.).

The point of sale design and the price level have to be in relation with each other. Marketing has to be customer specific as well as segment specific. Advertisement, ambience, and product arrangements should conform and shall provide the shop a distinct profile. The decision on how a shop wants to position itself is decisive: Is it sufficiently unique, and how can it be professionally promoted? Regarding product assortment: What is available, and what fits best to my customers/the customers I want to reach? Do I sell manufacturers' brands or private labels, and in which combination? Should I offer a small organic product range only or a broad assortment? What about regional, fresh from farm products, artisanal products, or local specialties?

After these more general decisions are taken, in-store management should come into focus, e.g., customer orientation (use of signage, information signs, shelf size and height) and placement of products. Organic products should be placed as 'premium products' where they get highest attention: in main corridors, on the right-hand side, and at eye level. "Group placing" is often practiced in drugstores; "product by product placing" is increasingly being applied by retailers, especially with large organic assortments.

1. Specialized Organic Shops

For organic food shops, it is challenging to attract shoppers from other retail channels due to the area-wide distribution of conventional retail and discounters. Their marketing strategy should rather focus on

- Raising the core group's expenditure per purchase
- Raising the core group's percentage of organic expenditure for food by increasing customers' loyalty
- Making "seldom" to "regular" and "regular" to "core group" buyers because the "barrier" to enter the shop has already been overcome

Customer service is a series of activities especially important in organic shops:

  - Personal service and service-oriented communication
  - Education and advice for customers, handing out giveaways, etc.
  - Food tasting and other events, such as show cooking or cosmetic seminars
  - An atmosphere appealing to consumers' senses without stimulus satiation results in an overall positive impression about the shop

Also, developing a specific market identity helps bind customers, e.g., by offering additional value; by strategically planning company culture, quality management, education of personnel, and social responsibility; and by promoting fair trade concepts.

2. Organic Wholesalers

Promotion campaigns and marketing are not only implemented by organic shops, but may be initiated by their suppliers as well. In Germany, for example, 13 regional organic wholesalers have built a network and developed a common marketing strategy and public relations under the label, *Die Regionalen,* which means "the regionals" (www.die-regionalen.de). A total of 480 shops, which source products from these regional wholesalers, take part in the activities and regularly receive advertisement materials, such as

- Special offers for customers (biweekly)
- Recipes and information cards (every 4 weeks)
- Consumers' magazine (quarterly)
- Marketing articles, internet presentations, storefront designs

3. Organic in Conventional Retail Trade

As mentioned earlier, conventional retail and especially discounters are rather supply-oriented than service-oriented:

- Private label strategy
- Discounters only sell an organic range exclusively with their own private label
- Supermarkets often sell their own private label range plus selected processor brands
- Small(er) range of organic products (basic assortment only, 80–450 products)
- High proportion of fresh products (up to 50%)
- Focus on "fast sellers" (eggs, milk, carrots, potatoes)
- In smaller chains: local and regional products and a higher number of products

Market Trends

For successful marketing, it is also important to know and shape market trends and make use of them. Below are some examples:

1. Market Trend: Local, Regional, and Social Products (United Kingdom)

- In the United Kingdom, self-sufficiency in organic primary products increased to 66%
- Scotland supports the doubling of the organic farmland (up to 30% within a year) for raising the market share of regional organic products (from 35% to 70%)
- The Soil Association launched, in 2005, the ethical-trade-standards for domestic production and discusses a ban on air-freighted products
- Value creation for farmers and the region
- Competitive advantage
- Reduction of food miles

How to use this trend?

- **Regional brands** of producers from one specific region in cooperation with regional farmers (e.g., *Upländer Bauernmolkerei,* a farmers' dairy of the region Upland, Germany, or *Unser Land* [Our Land], a marketing cooperative and brand of farmers and consumers in the Munich region, Germany)
- **Regional retailers' private labels** (e.g., *Von hier,* which means "from here")
- **Sensibilize consumers** and strengthen their preference to the region (live production tours, herbs and adventure garden, cooking studio, tasting, open day)

- **Add service value** (farm restaurants, home delivery, recipes of tasty meal)
- **Develop local and regional organic sales channels** (farmers' markets, box schemes, farm shops and catering services, community-supported agriculture (CSA), schools / canteens purchasing regionally produced food)

2. Market Trend: Products with Identity

- Naturland and the Institute for Marketecology (IMO) launch social certification scheme and logo
- Fair Trade is close to USD1 billion turnover
- Conservation of biodiversity and genetic diversity adapted to local conditions
- Sound rural development / support of local communities / self-sufficiency
- Conservation of traditional landscape, and traditional processing techniques and culture

How to use this trend?

- **"Products with a story"** – shift from commodities to food with unique characteristics
- **Trademarks/brands** connected with specific values (e.g., Kamut)
- **Fair trade labels** – fair producer prices, social security of employees, long-term trade relationships
- **Geographical indications** – Protected Designation of Origin (PDO), Protected Geographical Indication (PGI), Traditional Speciality Guaranteed (TSG), regional characteristics
  - Regional characteristics, e.g., Parmesan cheese, Nuremberg sausages, Darjeeling tea
  - Locally adapted varieties, e.g., red rice
  - Endangered species, e.g., Swabian Hall pig
  - **Transparency/traceability,** farm code, Internet, e.g., *Bio mit Gesicht* (Organic with face), leaflet about producers

Criteria for Successful Market Development (Domestic and Export)

Strong consumer demand, as well as companies with strong commitment for organic, is most important for the development of the organic market. Most consumers can be reached by a diverse structure of sales channels (direct marketing, organic food stores, restaurants, and canteens), including selling of organic products through conventional supermarkets and drugstores with moderate (<50%) price premiums. One common organic label helps build consumers' trust and helps prevent confusion. For the shop owner, in addition to the above-mentioned marketing aspects, the following criteria for product sourcing are important:

Long-Term Relationships

- The organic industry is a relationship-based industry – built on long-term relationships and risk sharing
- Good partnerships are vital – farmer, supplier, co-packer, certifier, logistics, customer
- TRUST is key to long-term relationships – choices are made based on commitment
- Knowledgeable suppliers, farmers, and certifiers can be your best ally

Transparency and Quality Assurance

- Apply general quality standards, e.g., International Organization for Standardization (ISO), Good Agricultural Practices (Global–GAP), pre- and postharvest practices, Food Safety Standards (International Food Standard [IFS], British Retail Consortium [BRC]), and Hazard Analysis and Critical Control Points (HACCP)

- Use food quality grades with packing, sorting, etc. through shipping/handling and distribution to end user
- Take care of traceability, pesticides residue guarantees, etc.

General

- Study the target market
- Study regulations and/or private standards
- Shop for a certification agency
- Contact import companies, brokers, or distributors
- Communication is critical to planning and procurement
- Contact your government/agencies/export

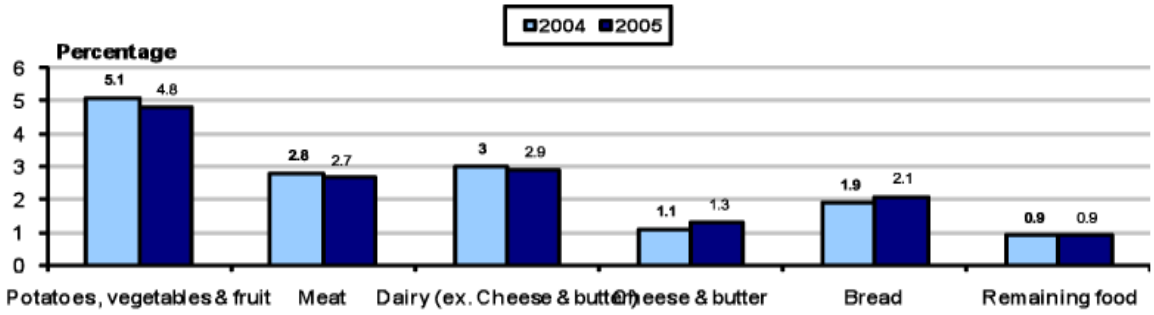
14. ORGANIC SUPPLY CHAIN AND MARKET MANAGEMENT STRATEGIES: THE NETHERLANDS CASE

Ton van de Goor

Organic Market in the Netherlands – Size and Growth

The Netherlands, in 2005, had a total of 81,840 agricultural companies owning 1,949,000 ha of farmland. Organic agriculture takes up about 48,765 ha, which is 2.5% of the total agricultural area of the country. Organic agriculture is divided into product groups. The total spending on food (comprising retail 64% and food service 36%) amounted to EUR24 billion in 2005. In the same year, consumer spending on organic products reached EUR467 million, which was equal to 2% of the total amount on food spending. The most important organic products in retail are milk, potatoes, yoghurt, meat (specifically roasted), pancakes, and eggs. In catering, it is mostly milk (dairy, in general) and bread. The organic market in other sectors, such as hotel and restaurants, is limited.

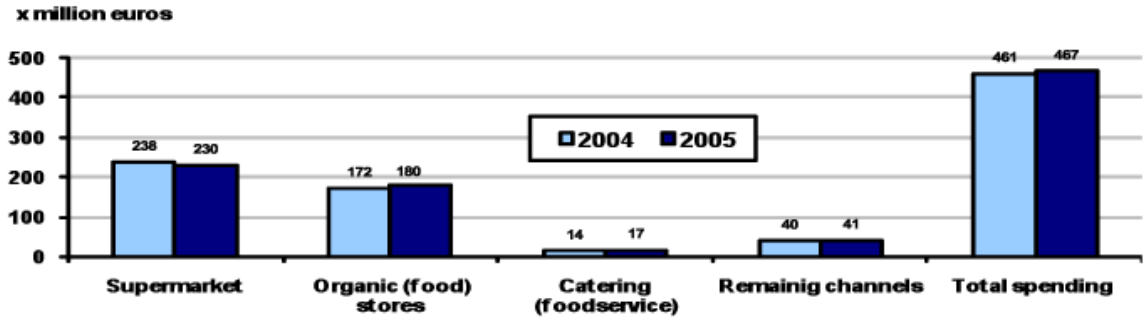
Figure 14-1 Market share of organic products (% of consumer spendings)



Source: Ministry of Agriculture (LNV) 2006.

Figure 14-1 shows that, except for the product group comprising potatoes, vegetables, and fruit, the majority of products are not close to the goals formulated by the Government for 2007. In the last 2 years, the different distribution channels for organic products have increased and decreased in various ways, as shown in Figure 14-2.

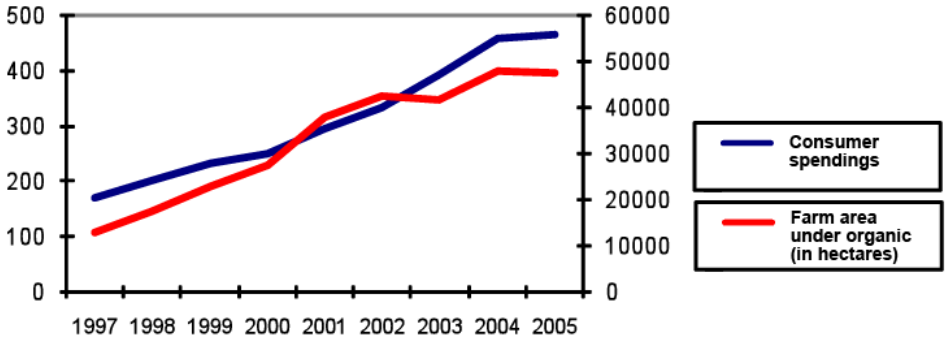
Figure 14-2 Distribution channels of organic products in the Netherlands (in million euros)



Source: Compiled by the author.

From 1997 to 2005, both consumer spendings on organic and organic farm size (in hectares) increased.

Figure 14-3 Total spendings and organic farmland (in hectares), 1997–2005 (in million euros)



To stimulate the organic food market, the Government of the Netherlands invested almost EUR340 million during the last 7 years. Most of the money was invested in tax-friendly arrangements that would help stimulate primarily organic production and knowledge. The Government expected more growth in spending but was hopeful of achieving the goal of 5% organic food spending by the end of 2007.

The five factors determining the success of organic agribusiness are

i. Sustainability, dependent on the four P's (people, planet, profit, and passion)
ii. Dependency between business, government, and research
iii. Consumer orientation and chain cooperation
iv. Empowerment, owning responsibility
v. Learning by doing (bottom-up perspective)

The Task Force to promote organic products in the Netherlands comprises of Bioconnect (demand-driven knowledge network), global food network, and multifunctional agriculture/regional production.

Insights into Value Chain Systems

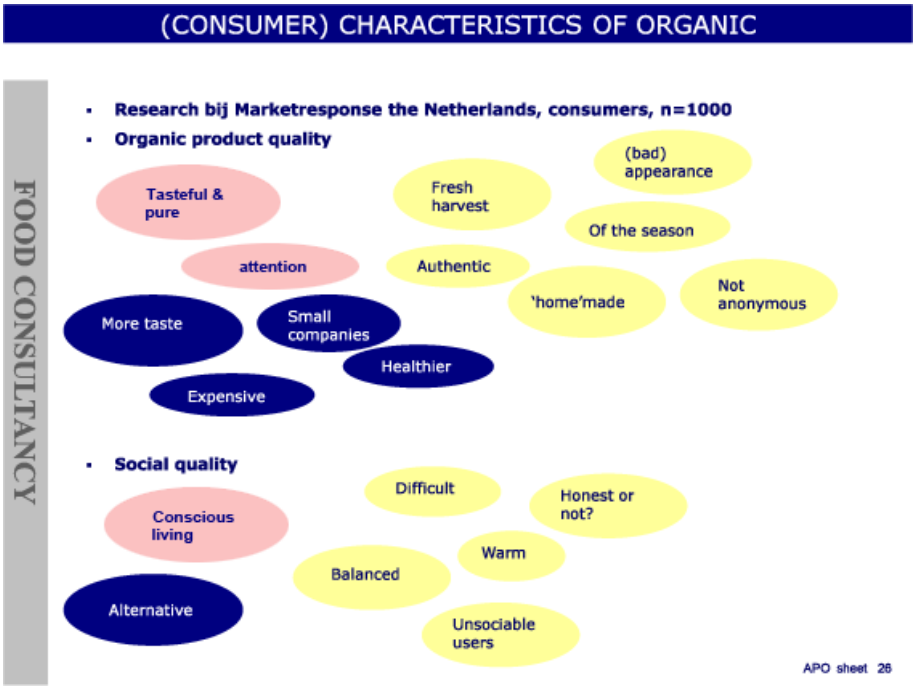
Value chain development, i.e., connecting partners in the value chain, requires the understanding of flows of goods, information, knowledge, and resources. The value chain flow includes consumer, retail industry, and food industry in the industrial countries, and agro-industry, farmer, and input supply issues in the developing countries. The need for chain development is reflected in market segmentation/chain differentiation, product differentiation, and shorter life cycles. In satisfying the need for consumer concerns (integral chain care), one must include quality, sustainability, safety and health, and animal welfare aspects. In a low-cost strategy, chain optimization handles issues, such as why the chain approach is so important, introduction of (new) standards and continuous supply of products, and meeting these standards. Understanding the implications for all partners in the value chain requires insights into the value chain structure, costs and benefits of compliance, and supply chain risks.

The grower and agribusiness, food company retailer, and consumer form the upstream and downstream flows of the value chain. Description of the chain system(s); players (function, role, relationship); chain leadership; and measuring performances and success factors are important aspects while getting insights into the value chain. In building market-oriented value chains, the key players of the process comprise of grower–auction, wholesaler, retailer, and consumer.

Demand-driven Chains

A demand-driven chain is necessary to 'answer' all needs of the consumer and develop the right products; the approach should be the customer 'in control', responsiveness, flexibility, speed (short lead times), and efficiency. The most important products (based on supermarket spending) in the Netherlands are milk, potatoes, yoghurt, meat (specifically roasted), pancakes, and eggs. A remarkable aspect is that farmers try to sell milk (and other dairy products) directly to the consumer (59% versus 8% in common). More sales were conducted through the internet (an increase of +10% in spending in 2004–05). Farmers' markets are more and more professionally developed.

Figure 14-4 Behavior pattern of organic consumers – the landscape of considerations



Source: Designed by the author.

Consumer Attitudes

This famous quote very well reflects the mood of the consumer: "IF YOU DON'T LISTEN, SOMEONE ELSE WILL BE IN BUSINESS." The aspects of **Consumer Well-being** include product plus, product minus, natural, organic, and vegetarian. The aspects of **Experience** include indulgent and premium, new (e.g., flavor), and traditional while in **Time Factor**, one can consider snacking and grazing, and quick assembly.

Marketing strategy that works in the Netherlands:

– One-stop shopping
– Guilt-free indulgence
– Convenience plus

There are four different groups of organic consumers in the Netherlands: the heavy users, the selective purchasers, the connoisseurs, and the non-connoisseurs. The heavy users, comprising only 1–2% of the consumer class, always buy only organic food in specialized shops. The selective purchasers, comprising 3–45% of the consumer segment, always buy some organic products from specialized shops, but also prefer to buy other general food products from conventional channels. The connoisseurs, comprising about 35% of the consumers, are well informed about organic products but buy them only sporadically. On the other hand, the non-connoisseurs, which comprise a large section of the Dutch society, i.e., about 56%, are poorly informed about organic products and usually do not buy organic products.

There are certain central problems for organic in the Netherlands, even though compared to other countries the organic market in the Netherlands is 'stable'. The three

central problems, in 2005–06, were i) price (price difference between organic and general product); ii) not enough difference between organic and general product (difference in, among others, taste, packaging, and appearance); and iii) fragmentation of the organic chain.

The Netherland's Organic Program – Achievements and Lessons

i. Campaign financed by the Task Force made organic more 'down to earth'
ii. New business is based on needs of the consumers and not on the profit possibilities of the companies
iii. Chain management and long-term vision are instruments for determining the future
iv. Translated the social goals into goals of the involved organizations
v. Government support in the total process (cofinancing) is a critical factor
vi. Overall market share of 5% in 2007 and 10% by 2010
vii. Reduced price difference (failed price experiment, 2006)
viii. Vigorous campaigns, TV commercials, radio spots, etc.
ix. Demonstration in supermarkets
x. Advertising in 'home to home' papers
xi. Important motives to invest almost EUR350 million in 7 years

Cases of Success and Failure

The Price experiment: One of the problems for organic (based on the price-driven Dutch consumer) is price. The Government was prepared to lower the tax for nine different products (in the experiment, the price-offs were different per product/region) for 4 months. Exact results, which came by the end of 2006, showed the experiment was not successful and only a couple of percentages extra sales were achieved. The lesson learned was that a price-off or more specific price difference between organic and common products (without any added value) should be a maximum of 15–20%.

Co-innovation program for organic project (biojuice):

Acquiring and developing the information is necessary for valorization of remnant streams of organic vegetable processing into vegetable juices. For example, the Netherlands produces about 33,000 tons of winter carrots per year. Approximately 1,200 tons are lost due to washing of carrots. With the project, it is possible to up the value of the remnant steams. Project goals include inventory of remnant vegetable streams, technology development, and acquiring insights into the market demands. The first quantitative goal, achieved in 2007, was the production of 750 tons of biojuice during the year. Out of the total budget of EUR400,000, government agencies alone invested about EUR100,000 and the rest of the amount was shared by other agencies.

Bioconnect was responsible for maintaining knowledge network for organic foods, connecting businesses, problem-solving research, gathering knowledge and experiences of entrepreneurs, and for managing one central office.

Product with a Story: Nature & More (Eosta)

Nature & More is a unique "Trace `n Tell" scheme that makes the supply chain visible and tells the story of the grower behind the product. A 3–4 digit product code gives customers access to detailed information about the product itself and the associated ecological and social qualities.

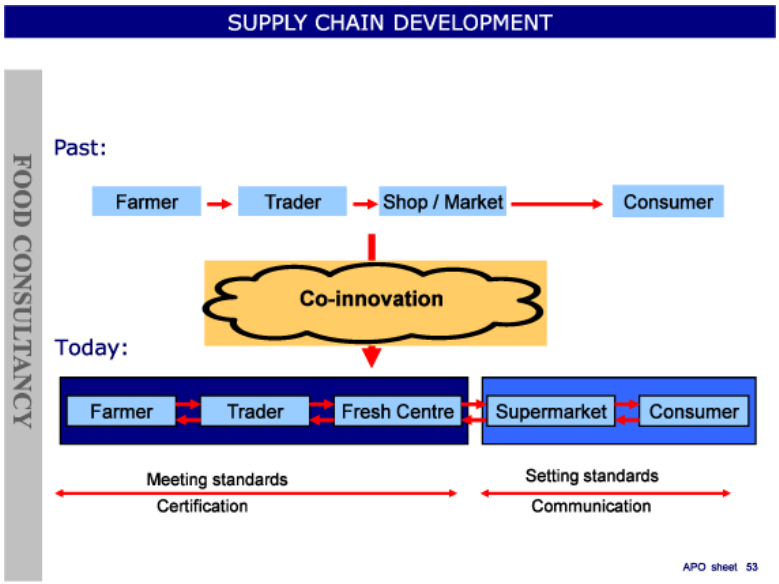
Value chain success and failure factors

Success factors: Complementary competencies, commitment, openness (communication), and trust

Failure factors: Wrong expectations, disappointing results, mutual competition, new participants

Guidelines: Clear goals for the cooperation, agreements on division of work, expected costs and profits, create commitment from all project participants, attention for power structures and communication, mutual understanding for differences in culture, and independent/ neutral project coordinator.

Figure 14-5 Supply chain development



Source: Author.

Future of Organic in the Netherlands

- Depends on the product (added value)
- The market will rationalize more and more
- Scaling up may take place
- Divided market between heavy users (more difference between the product, more well balanced) and light users
- Organic less distinguished (compared to commonly used products)
- **Heavy users will always exist, but the light users will make the market**

15. MAKING ORGANIC AGRIBUSINESS VIABLE THROUGH CLUSTER VILLAGE APPROACH: INNOVATIONS IN SRI LANKA

Dr. D.B.T. Wijeratne

"Experiences of Small and Medium-sized Organic Enterprises (SME) set up with organic export objective, by a nucleus producer, processor, or trading company in association with small farmers in a cluster village approach"

Export-Focused Strategy and Institutions

Agriculture occupies a dominant position in Sri Lanka. About 17% of Sri Lanka's population lives in the rural areas, and a majority of them are living directly or indirectly through agriculture. The agriculture sector comprises plantation crops; Export Agricultural Crops (EAC); annual field crops (vegetables, legumes, and other field crops); livestock; forestry; and fisheries. The Ministry of Agriculture is also responsible for the Department of Export Agriculture (DEA). The main players in the EAC sector are comprised of small farmers, family-owned plantations, plantation companies, traders, exporters, industrialists, processors, brokers, and other stakeholders.

EAC, particularly spices, are important foreign exchange earners of Sri Lanka and, therefore, occupy a significant place in the Sri Lankan economy. Since the increased production of perennial spices has a desirable effect on economic growth and welfare of the Sri Lankan people, the DEA places much emphasis on the production of these crops in its annual crop production programs. However, because of the World Trade Organization and other international trade requirements falling under safe food trade conditions, it has become necessary for Sri Lanka to produce all EAC organically.

EAC, namely, pepper, cinnamon, cacao, coffee, cloves, and nutmegs, are grown under natural conditions in the production areas. Growers make no or limited use of chemical inputs for spice crops. More than 90% are small home gardens. Pepper (*Piper nigrum*) is a smallholders' crop and, currently, there are about 64,000 pepper holdings either pure or mixed.

The presence of pesticides in crops, such as pepper and cinnamon, is a major concern for consumers, and this has become the most important non-tariff barrier in the international trade of agricultural products. The contamination of pepper berries and cinnamon bark with other forms of pesticides, such as postemergence herbicide or long-lasting insecticides, can also be important issues.

Organic Spice Promotion Program of DEA

The Government of Sri Lanka supports organic farming of any crops that are cultivated by small- and large-scale farmers in the country. The Government provides some facilities and subsidies through related department for promotion of organic agriculture in the country. *Organic farm village program:* Implemented since 1995, one village is selected in every potential district each year, and all kinds of support are provided to farmers in that village for converting to organic farming. The DEA also provides subsidy for compost units and vermiculture units. The extension officers of the division guide and follow up the

programs. This program is successfully implemented each year, and interest of farmers has dramatically increased.

Small Farmers and Private Processors/Traders-Centered Organic Enterprise

The Asian food market is valued at more than USD600 million, and the main share has come from the Japanese market. The Asian region is expected to remain an important supplier of organic fresh products, such as fruits, tea, and spices. In Sri Lanka, more than 17,000 ha of farmlands (or about 0.7% of the total land extent of the country) are certified as organic. Also, there are about 2,500 ha of land under transition stage. Although Sri Lanka still does not have a local organic certification system, the percentage land extent under organic is one of the highest in the region. In most of the countries, certified organic cultivation is limited only to private organizations and large-scale cultivators. However, in Sri Lanka, some of the small-scale farmers also reap the benefits of organic agriculture system, as many private enterprises are promoting organic agriculture in rural areas so that they can initiate a supply chain through rural villages.

Figure 15-1 Marketing the unmarketable: processing and value addition

Source: Wijeratne (2006) APO Resource paper.

According to a recent study in Sri Lanka, village-level organic farmer community network is about 35,000. At present, several private sector organic supply chains are working smoothly for agricultural commodities, such as black pepper, cinnamon, pineapple, lime, mango, coconut, cashew, and medicinal herbs. In this process, the exporter or the processor uses the cluster village system and sets up a collection point or a processing center in a place close to the cultivating areas. The contractor not only certifies the lands of the villages, but also runs a private extension arm to handle day-to-day issues of the small farmers. Usually, the contractor promotes a few agricultural commodities for a cluster of villages, making the farmer income stable throughout the year. This activity is

a win–win situation for farmer, as well as the contractor, since farmer gets a better price and the contractor gets a better volume with less management issues. In addition, in the process of contract cultivation, small-scale organic farmer does not have to invest in high-cost certification, and all the input supplies are taken care of by the contractor through the nucleus farm.

Sri Lanka is in the process of developing a national organic certification system. At present, all organic farms and processing facilities depend on the importing country certification, which is a major investment. However, when the whole village is certified, the cost involved is within the reach of the contractor, who has no capital investment of land or land preparation. Also, the product during the conversion period is collected by the contractor, who has a special market for such products under eco-label. Application of organic manure and botanic extracts is guided by the extension arm of the private contractor. However, sometimes, there are technical difficulties in record keeping and auditing of inputs and outputs as some of the small-scale farmers are illiterate. In such cases, fertilizer suppliers and crop collectors are assisting the farmers to keep records, which is a necessary activity of organic farming. The collectors are also keeping records of the collection, which is known as product-with-a-face, so that they can track down any complaint from the later part of the value chain. In this system, the contractor will add value to the commodities by means of primary or secondary processing, fair trading, or using biodynamic practices. Hence, small-scale organic farmer will get the benefits of the value addition without major investments.

Some of the traditional farming practices used by the small growers are now adopted for the organic farming system in Sri Lanka. In rice, organic farming is mainly done using traditional varieties. However, this traditional rice is cultivated using a new system named System of Rice Intensification (SRI), which originated from Madagascar. It has now gone through several changes to make it more suitable for local conditions. In the SRI method for rice cultivation, very young rice shoots are transplanted at 10-inch distance. Also, the SRI method requires 60% less water than conventional rice paddy cultivation. The marketability of the rice varieties is high because of quality characteristics similar to that of wild rice.

In fruit cultivation, pineapple, papaya, and mango are the most popular fruits among small farmers. The major organic fruit product exported from Sri Lanka is dehydrated pineapple. A recent value addition to dehydrated pineapple is osmotic dehydration using a local sweet product, which is prepared using the sap of palm tree. In addition, caning of guava pulp, mango pulp, and pineapple in pineapple juice is produced in fair amounts. Also, frozen single strength juice is produced for pineapple and passion fruit juice.

Spices are another popular commodity among small-scale farmers. In Sri Lanka, most of the spices are grown in the backyards of small-scale farmers, who usually do not use any chemical fertilizers or pesticides. Hence, it is somewhat easy to convert to certified organic products with some financial and technical inputs. As the spices are grown in village home gardens, a new concept was created to certify these organic products as *Kandiyan-Home-Garden* products, and is now internationally accepted. Due to the small farmlands, maintaining product quality is a serious issue in the spice sector. However, in the organic sector, the quality problems are handled by the central processing units built and managed by the contractor.

Vanilla is another crop that requires manual labor for cultivation, as well as for processing. Small-scale cultivation of vanilla is more suitable as each and every flower has to be manually pollinated from 8:00 am to 10:00 am (as the flowers bloom only for a few hours). Also, the curing of pods should begin the same day of harvesting. The curing process, which involves blanching, shade-drying during daytime, and bundling and curing during nighttime, will take about 3 months in order to obtain optimum flavor characteristics. Therefore, the traditional technologies available with the farmers were promoted to obtain high-quality organic vanilla production.

Cinnamon is an important crop for Sri Lanka, which produces more than 90% of the world's requirement. Eighty percent of the crop is produced by the small farmers, where the cultivated land extent is less than 2 acres. Cinnamon is an expensive commodity compared to its counterpart, Cassia, because cinnamon drying and curling are labor-intensive activities. Organic cinnamon is a very expensive commodity, and further value addition is done by processing to a special grade (Alba) that is preferred by buyers. Most of the local spices are used to extract essential oils. Even though the oleoresin extraction is possible, it is not usually carried out for organic products in Sri Lanka, as the extraction methods are very expensive. However, the essential oil extraction process is essentially a steam distillation activity, and the traditional distillation units are as good as their modern counterparts. The current market price of organic cinnamon bark oil is about USD400–500 per liter, depending on the constituents, and is mainly used in food, perfumery, and aromatherapy industry. As a further value addition activity, some of the organic essential oils are fractionated as per customer requirements.

Coconut is a nationally important crop as it is a very important component of the local diet and also provides foreign exchange. The coconut palm is very sensitive to moisture stress, and converting to organic shows the benefits in a couple of years. The main issue of the coconut lands is the low carbon content in soil, which results in poor fertilization and moisture retention. In addition, application of nitrogen–phosphorus–potassium has now aggravated the situation by depleting the soil micronutrients. Both the small-scale cultivators and estate owners are now in the process of applying more organic matter to their coconut lands. Most of the small-scale farmers own at least five coconut trees, and the organic farming method has improved their yield in addition to increasing the plant vigor. Some of the cultural practices, such as growing nitrogen-fixing plants, use of cover crop, collecting water bodies, and animal husbandry, are well adapted in organic farming of coconut.

Cluster Village Approach

Because of the unique features of rainfed areas inhabited by small farmers, such as small landholdings, variety of crops, marketing issues, processing issues, seasonality of crops, it would benefit these farmers if they agree to join a cluster village approach. The cluster village approach benefits from the group farming because it increases the scale of economy of the cluster village. Similarly, the producer company gets the advantage of larger volumes of the products and the business.

Since being introduced by Sri Lanka to the world market in the early 1990s, organic tea is gaining popularity, especially as a health beverage. However, the local scenario has changed since then, and now tea smallholders are producing more volume of tea than that of the estate owners. Since tea has been growing in the same field for a long time, there is a

yield drop initially when converted to organic, but the decline levels off after about 2 years. Also, small-scale farmers are cultivating other crops in the same field as their plant density is low. Planting trees for shade, such as avocado trees, as well as ground cover, such as *Gotu kola,* is a common practice among most of the smallholder organic tea growers. Producing flavored tea is a common value addition practice in the tea trade. Flavoring with natural ingredients, which has been initiated in organic tea, is doing well in the local, as well as international, market. In addition, traditional herbal tea and functional teas have been introduced to the market, and the initial response is very positive.

Cashew is a socially important crop as it grows in very dry areas where no other cash crop grows. Also, Sri Lankan cashew fetches a very good price in international market due to its special flavor. Growing of cashew in the villages throughout the dry zone has been initiated by several nongovernment organizations and private enterprises. To add value to the commodity, some of the lands are certified as organic. Since cashew crop is seasonal, farmers also grow few other crops, such as *Gotu kola* and mango, in the same land to get regular income. In addition, cashew processing is a very labor-intensive activity, which provides employment opportunities for the rural villagers.

Hence, organic agriculture has created an excellent opportunity to promote the rural agricultural produce of the small farmers through small and medium business.

Note: Paper was compiled by the author based on his information and several years of experience.

PART IV

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