Organic Farming in Lao PDR

Abstract

Organic agriculture production and marketing in Lao PDR
.About 83% of the population of the Lao PDR is rural and 66% depend on subsistence agriculture. Organic agriculture has good potential, both for local consumption and the export market. Four different systems for organic production are common. 1) The upland fallow rotation (slash-and-burn) system the production is largely used for producing rice for home consumption, with job's tear, sesame and maize the most important crops exported. Although not formally certified, they are often referred to as "organically grown".; 2) Wild products collected in the forest and fallow lands for home consumption, local markets and for exports. Important products include bamboo shoot, banana inflorescence, and wild cardamom (Amomum sp); 3) Fruits, mostly produced without any external inputs, and 4) Market driven organic production. The systems 1-3 are largely "organic by default" but products are usually not certified as "organic".

Lao consumer and traders are aware of the idea of organic agriculture. In a recent survey the question "what do you understand under organic agriculture was answered as "natural agriculture, chemical free agriculture or as agriculture using manure as fertilizer source" by 40, 18, and 27% of the consumers, respectively. Consumers are interested to buy organic products but they are generally not available and consumers are not ready to pay more than 20% higher prices for organic products. Urban centres have specialized markets for fresh products but there are presently no traders and shops specialised in organic products.

There is a strong commitment by the government and specially the Ministry of Agriculture and Forest, to support organic agriculture. Activities have been initiated recently to develop standards and legislation for organic agriculture and to introduce a local certification system. Activities and programs which contribute towards a change from conventional systems to organic systems include: discontinuation of subsidies for plant protection chemicals since 1993, promotion of IPM, setting up of bio-fertilizer factories, promotion of bio-pesticides, introduction of pesticide free zones, and NGO programs focusing on organic agriculture.

Laos has a range of conditions which favor organic production for in-country consumption and export including: 1) the low external input systems presently used allows for easy conversion to an organic system, 2) Lao products have a reputation for having low levels of pesticide residues, 3) Hill environments offer opportunities for "out of season" fruit and vegetable production. Products with high potential include: forest products, rice, vegetables, coffee and fruits.

The project for "The promotion of organic farming and marketing in Lao PDR (PROFIL)" initiated recently by the Department of Agriculture and the Swiss Association for International Cooperation is supporting or leading efforts addressing: 1) coordination of efforts aimed at introducing/supporting organic agriculture, 2) creation of an enabling legal environment, 3) support of producers through appropriate extension activities and 4) marketing support for in-country and export markets.

Organic agriculture production and marketing in Lao PDR

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1. General background information

Lao PDR is a landlocked country with an area of about 236,800 km^2 and a population of 5.679 million (NSC, CPC, 2003). Water for hydropower and timber are the principal natural resources. Approximately 3% of the area is used for agriculture. Fallow land in fallow rotation systems may account for another 6–10% of the total land area. About 83% of the population is rural and 66% of these people depend on subsistence agriculture.

Rolling hills and rugged mountains dominate the landscape, with peaks rising up to 2,800 m. The upper limit for rice cultivation is around 1,500 m (Figure 1). Slope gradients range from 0 to 120% with most of the slopes falling in the range of 15–60%. According to recent statistics (World Bank 1995), 69% of the area used for upland agriculture had a slope gradient of less than 20%.

Figure 1. Topography of Lao PDR

The climate is tropical with a pronounced rainy season from May through October and a hot dry season in March and April. The annual precipitation is above 1,000 mm for the entire area but fluctuates widely with the highest amounts, 3,700 mm annually, recorded on the Boloven Plateau in Champassak Province. In addition to the geographic variations, strong interannual fluctuations in rainfall with abnormal droughts pose major hazards to crop production under rainfed conditions. Temperature is mainly a function of latitude and elevation. The average temperature declines with increasing elevation at the rate of approximately 0.5 ºC per 100 m altitude change.

Rice is the most important agricultural commodity followed by maize, peanut, etc. (Table 1). Rainfed rice is the main production system in the lowland, while fallow rotation is the major production system used in the upland environment.

Table 1. Most important agricultural crops, area and production

Crops	Harvested Area (ha)		Production (t)	
	2002	2003	2002	2003
Rainfed Rice	519,471	564,953	1,801,200	1,819,800
Irrigated Rice	84,000	81,360	375,000	369,100
Upland Rice	134,553	109,999	240,300	186,200
Maize	44,956	51,670	124,122	143,177
Peanut	Not available	Not available	16,377	16,019

Source: MAF, National Statistical Centre, Committee for Planning and Cooperation

2. Production of organic products

Organic products are generated by a large number of house holds with different objectives:

1. Upland fallow rotation (slash-and-burn) house holds produce largely for home consumption.
2. Wild products are collected in the forest and fallow lands for home consumption, local markets and for exports.
3. Horticulture and especially coffee production is mostly for the market.
4. Selected products are specifically produced organically for the export market.

The first three production systems are largely "organic by default". Products produced in these systems are usually not certified as "organic" and farmers generally do not receive any premium in the markets because of products being organic. The following crops are marketed with the claim to be "pesticide free" or to be produced by "natural practices/organic farming": maize, rice, cardamom, garlic, castor bean, potatoes, Job's tears, sesame, coffee; vegetables, banana, pineapple, tamarind, shaddock, and orange (EDC, 2003, unpublished).

2.1. Upland fallow rotation

Fallow rotation is the prevalent land use practice throughout the hilly regions, with most of the cultivation limited to the altitude range of 300-1200m. This subsistence system commonly integrates crop production, animal husbandry, and forestry. Rice is the major upland crop, followed by maize, cassava, and peanuts (Roder, 2001). For the traditional upland rice production system no tillage and inputs of fertilizers and chemicals are required. Land preparation consists of slashing secondary shrub vegetation in January or February and burning the dry biomass in March or April. Rice, mostly glutinous, is planted with the onset of the monsoon rain in late May and June using a dibble stick (Roder 2001). A single rice crop is usually followed by fallow periods of 2-8 years. Few farmers cultivate rice for two or more successive years. A variety of other crops are planted in combination with rice. These include, in approximate order of declining importance, maize, cucumber, chilli, eggplant, taro, sesame, gourd, pumpkin, cassava, loofah, sorghum, cowpea, peanut, sweet potato, job's tear, yambean, pigeon pea, sun hemp, tobacco, mungbean, phaseolus bean, watermelon, and spices. The importance of some of the traditional crops has increased in recent years due to demands for the export markets. The most important crops exported are job's tear, sesame and maize. Although not formally certified, they are often referred to as "organically grown". For most upland producers changing to an organic production system would be fairly easy with negligible yield loss and no limited additional labour requirement.

2.2. Wild products

Products from wild growing plants are collected from forest or fallow land (fallow progresses into forest and no clear separation exists) by many house holds. They enrich the diet of the rural families and provide an important source of cash for products sold for local markets or export (Roder et al 1995). The list in table 2 includes the most important species used in Luang Prabang province, but is far from being complete. Interestingly the prices for tree products are quite high. While the rural population may use forestry products mainly during scarcity of other products, this is no more the case for the urban population which has acquired a taste for these "fancy" products. The most important product exported is the “wild cardamom” (Amomum sp.)

Table 2: Forest products collected, volume and use[1]

Product	Frequency[2)]	Volume[3)]	Use
Bamboo shoot	27	220 kg	Home and market
Banana inflorescence	7	230 nos	Home and market
"Posa" *(Broussonetia papyrifera)*	6	73 kg	Market
Cardamom (*Amomum* sp.)	4	2 kg	Market
"Mak kha" *(Pahudia cochinchinensis)*	4	20 kg	Market
Rattan	3		Home and market

1) Source Roder et al. 1995. Data from a household survey, conducted in Luang Prabang province in 1993 covering 72 house holds
2) Percent of households reporting collection of the product
3) Average per house hold collecting product

2.3. Market driven organic production

Several organizations or private individuals have started generating organic products specifically for the export market. Products include: rice, mulberry leaves, processed fruit and coffee. Some examples are briefly described below.

Rice: A Japanese company, the “Aroni corporation ltd” is collaborating with farmers in the Vientiane province to produce organic rice for export to Japan. The variety used is a japonica type rice. In 200? the program started with 66 ha. In 2004 the company exported 200t. In the 2004 season the area has been increased to 800 ha with a total of 2,500 farm households involved. The company is planning to further expand the area. Certification is done by the company.

Coffee: Coffee is an important export product (Table 3). There are currently 28 companies registered under the “coffee group” of Lao National Chamber of Commerce and Industry. As it is largely grown without any inputs of fertilizers or plant protection chemicals some of the coffee is traded as “Lao organic” but this is done without formal certification (Figure 2). Currently there are companies who are purchasing special qualities of coffee to be exported as organic. They are planning to use an international accredited organisation for certification.

Figure 2 packaging of organic coffee

Processed fruit products: The Lao Farmers Products company uses approximately 180 t of fruits purchased from farmers (mainly from Luang Prabang and Vientiane province) and sells processed products in the European markets including France, Belgium, and Germany. The products are not certified but it is assumed that farmers are not using any chemical inputs for fruit production.

3. Distribution and marketing

3.1. In-country

Promoting the trade of agricultural products / getting improved access to markets at regional and international level are among the priority objectives of the government. The market is considered as the main driving force, and production must therefore be adapted according to market opportunities, and not the other way around. This is also valid for organic products. A new approach “New economic Mechanism” (NEM) began the transition to a market economy in 1986.

Self-sufficiency in cereals (rice) is an important objective of the government agricultural policy, an objective that has been reportedly achieved since 1997. However, the geographic distribution of cereal production is such that there are surpluses of rice in the south while there is a shortage in northern areas. Transporting large quantities of rice through the country is a big challenge, and border trade with Vietnam and Thailand is seen as a more economic solution.

Urban centres throughout the country have specialized markets for fresh products. A number of projects have made localized attempts to market organic products but none of these efforts have resulted in the establishment of a market systems or trading houses for organic products. There are presently no traders and shops specialised in organic products. Informed consumers my select certain products or producers in attempts to minimize exposure to chemical contaminated fresh products.

3.2. Export markets

In 2003, maize, coffee and rice were the most important commodities exported (Table 3). Agriculture products are mainly sold in the neighbouring countries of Thailand, Vietnam and China. Established export companies purchase products directly from farmers. Many of the companies are joint Lao-Thai ventures. Several products exported are advertised as being organic or chemical free but only very few of them are certified as organic. There is also a widely hold belief that products from Laos are comparatively less contaminated with chemicals than those from the neighbouring countries especially Thailand and Vietnam. This belief is favouring Lao products in the markets of Thailand.

4. Regulations and certification systems for organic farming

There is no certification system for organic products in Laos. Currently, the Department of Agriculture is in charge of issuing the conventional “Phytosanitary Certification”, which certifies that the plants or plant products to be exported have been inspected and found free from quarantine pests and substantially free from other injurious pests. The certification also requires the exporter to declare the “Disinfestation and/or Disinfection treatment”.

For the formal production of organic products described above the rules stipulated by the target market are followed and in some cases the products are certified by bodies accredited by the consumer groups targeted. Sometimes the buyers and producers make agreements about “not applying chemical substances in their cultivation” (such as potato and cabbage).

Table 3. Quantities of selected agricultural product exported (t)

Items	2000	2001	2002	2003
Maize	150	8,057	5,877	13,504
Job's tear	-	435	438	2,590
Sesame	-	50	49	83
Coffee (raw)	16,905	17,025	19,206	22,000
Potatoes	-	9	914	1,504
Peanut	26,631	2,152	479	1,006
Milling Rice		969	2,520	504,455
Paddy rice	-	-	-	230
Black Rice	-	-	-	49
Cotton	34	5	-	123
Cabbage	775	180	644	-
Banana	292	54	119	121
Ginger	6	-	63	25
Garlic	14	50	-	25
Soy bean	-	198	20	786

Source: Department of Agriculture, Department of Custom, Department of Food and Drug

The project PROFIL (Promotion of organic farming and marketing in Lao PDR) which started in March 2004, has initiated activities with the objective to:

- liaise among government institutions and NGO's in attempts to introduce an enabling environment for organic agriculture
- generate the development of standards and legislation for organic agriculture
- facilitate certification through internationally accredited bodies
- introduce a local certification system

5. Measures enhancing/ensuring the quality and safety

There is a strong awareness at the highest level of the Government on the need to limit the use of chemicals in agriculture (Decree of Plant Quarantine in Lao PDR No. 66/PM, dated March 3, 1993). Similarly, many projects and NGO's have emphasized the importance of sustainability, biodiversity and the need to protect the environment and the natural resources.

5.1. Measures by the government

The government, mostly through the Ministry of Agriculture and Forest has initiated a wide range of activities and programs with the main objectives of maintaining/improving the production resources and ensure consumer safety and quality. The most important activities/programs are listed below.

- *Supply of plant protection chemicals:* Subsidies and other support by the Government for the supply of plant protection chemicals has been stopped since 1993. By making chemicals less available and/or more expensive it is expected that farmers will be less likely to use them.
- *Integrated Pest management (IPM)*: The Ministry has a long history of promoting IPM, and newly also ICM (integrated crop management) concepts.
- *Biofertiliser factories* have been set-up in various parts of the country (at this date, 10 such factories exist), and some of them have begun to export their products to Thailand.
- *Pesticide free zones:* The Government has decided to select 3 zones that must remain free of pesticides and chemicals. These 3 zones are: the Boloven Plateau in

the south, Vangvieng area in the centre and Luang Prabang in the Northern part of the country.

- *Projects and NGO's:* The Government supports NGO's and projects focusing on organic agriculture and the promotion of bio-pesticides

5.2. Measures by non-government organizations, producers, traders

Many NGO's are promoting organic agriculture, sustainable agriculture and the use of biofertilizer or bio pesticides. Often the marketing aspects are not given enough attention.

The most visible organization which was also successful in the export market is the Lao farmers association. Recently the Department of Agriculture in collaboration with Helvetas (Swiss Association for International Cooperation) started a project for "The promotion of organic farming and marketing in Lao PDR (PROFIL). The main goal of the project is "*to contribute to improved living conditions in rural areas of the Lao PDR, the good health of consumers, the sustainable use of natural resources, and economic growth through the promotion of organic agriculture"*. The project activities include all aspects of production, processing, marketing and regulations. The project is expected to become a platform for organic farming, where specific knowledge is made available, and where the various stakeholders can exchange their experiences in this field.

6. Future perspectives

6.1. Potentials

Organic agriculture has good potential in Laos, both for in-country consumption and for export. Many of the production systems used are based on no or minimal external inputs. Furthermore, the mountainous topography provides a wide range of environments. Products with high potential include: forest products, rice, vegetables, coffee, and fruits. This situation puts the country in a special position because:

- For many farmers changing to organic agriculture is easily possible with minimal or no yield loss and minimal or no extra cost.
- Consumers in Laos and abroad have more confidence in Lao products because they have a reputation for having no or lower levels of residues from plant protection chemicals
- Hill environments offer opportunities for "out of season" fruit and vegetable production with high market potential

Other strengths of the Lao conditions identified based on a recent stack holder interviews (Table 4, PROFIL, 2003) included: high level of farmers organization, experiences with biological pesticides, and strong political support.

Lao consumers and traders are aware of the concept of organic agriculture (Table 5 and 6). The perception by consumers for the concept of "organic agriculture" reflects the existing situation. The largest proportion (40%) equated "organic agriculture" to "natural agriculture" a term which probably describes the traditional farming systems with no external inputs, especially the upland fallow rotation system, the collection of wild products or the production of traditional fruits.

The consumers are used to buy fresh products produced by small holder farmers or collected in the forest. They would like to buy organic products but they are not available in the market. Only 13.7% of the consumers knew a trader selling organic (not certified) products. At this stage most consumers are, however not ready to pay more than 20% higher prices for organic products (Figure 3).

4. Strength and potentials for organic farming[1]

Market	Good reputation of Lao products
	Growing international market for organic products
	Big demand for organic products in domestic and border markets
	Reportedly unsafe imported agricultural commodities (with pesticide residues)
Production	Favourable conditions for organic products in the Lao PDR (not much mineral fertiliser is imported / applied)
	Existing farmers' groups organisation, but geographically limited (e.g. Boloven Plateau)
	There are motivated farmers
	Impact on farms of conversion to organic farming is known in the region (Vietnam, Thailand, China)
Experience	Existing experience in the country (e.g. Lao Farmers' Products)
	Strong "domino" effect among farmers
	Experience with organic farming in the region and worldwide
	Experience with organic fertilisers (EM, BE)
Interest and support	High interest for organic farming at all levels
	Existing network for sustainable farming in the Lao PDR (SAForum)
	Public awareness of problems linked to the use of mineral fertilisers and pesticides
	Agro-chemical industries (lobby) are not strong in Lao PDR
	Existing biofertilisers factories in the country
	Support from the government policy
Commodities with potential	Fruit and vegetables for the domestic and regional markets
	Mulberry tea for the international market
	Purple rice for the international market
	Organic coffee for the international market
	Cotton for processing in the country (handicrafts)

[1]Source: Helvetas 2003 (Based on stack holder interviews)

Table 5. Consumer and trader awareness for and interest in organic in Vientiane[1]

Question asked	Consumer	Trader
Did you hear about organic products	79.5	88
Would buy[2]/sell[3] organic products	94.3	92
Knows trader[2]/producer[3] selling organic product	13.7	15
Knows product label	4.0	0

[1]Source: Baseline survey Profil 2004, unpublished
[2]Consumer; [3]Trader

Table 6. Consumer and trader's understanding of the organic concept[1]

Response to question what is organic agriculture	Proportion of respondents (%)	
	Consumer	Trader
Natural agriculture	39.8	42.9
Chemical free	18.3	33.3
Uses manure as fertilizer source	26.9	19
Don't know	14.0	4.8

[1]Source: Baseline survey Profil 2004, unpublished

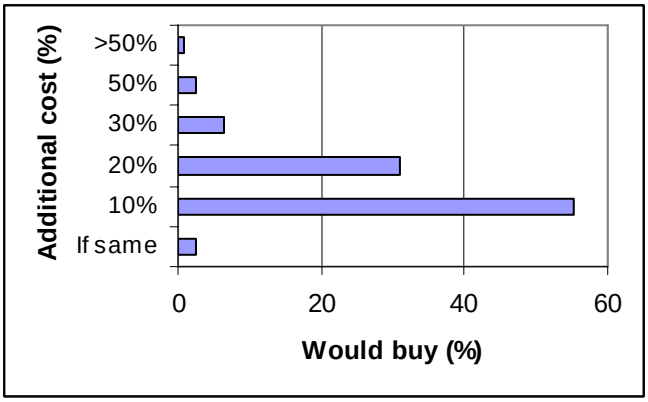

Figure 3. How much more are consumers ready to pay for organic products (proportion of consumers who would buy if the cost was 10-50% higher)

6.2. Promotion and support

The Government, especially the Ministry of Agriculture will play an important role in promoting and supporting the development of organic agriculture. NGO's, consumer groups, producer groups and traders will however have to play an equally important role. The most important issues to address are:

- Coordination of the various efforts aimed at introducing/supporting organic agriculture
- Creation of an enabling legal environment trough appropriate rules and regulations.
- Support of producers through appropriate extension activities
- Marketing support for in-country and export markets

It is expected that the Department of Agriculture in collaboration with the project PROFIL will play a leading role in addressing those issues. The project has an ambitious list of activities (Table 7). It represents the Department of Agriculture and the NGO's and it will be in a good position to facilitate efforts in coordination.

Table 7. Activities planned by PROFIL[1] for 2005[2]

Coordination
Establish an information and exchange platform (network) on organic farming (on-line (website), multi-media information technology, workshop, meeting room)
Coordinate with food and drugs department to carry out sample analyses of organic and conventional products on the market (for comparison purpose)
Support to producers
Translate research results and extension contents into organic farmers' training material
Train interested farmers on organic farming
Generate information relating to organic production, problems and potentials
Identify the research needs of organic farmers and to coordinate research with NAFRI
Elaborate a concept for the supply of subsidised equipment to organic farmers
Facilitate the access to credit for organic farmers
Support networking of organic farmers' groups (to federate the organic agriculture movement)
Creation of an enabling legal environment
Raise awareness about organic farming among decision makers
Support the DoA in drafting a legal base and national standards for organic farming
Develop a concept for certification of organic products for the Lao PDR
Test the certification procedures in the Lao PDR with internationally recognized institution
To train local staff in-country and abroad on certification issues (including study tours)
Marketing promotion and support
Conduct market studies on organic products (various markets)
Provide market information to interested traders
Create links between potential traders and international buyers
Assist certification of Lao organic products for the international and regional markets
Train traders and wholesalers on storage, distribution, quality management of organic products, and the usage of by-products
Advertise for organic products through media (TV, newspaper, radio, posters, etc.)
Elaborate and introduce a label for organic products (domestic market

[1]Project for the promotion of organic farming and marketing in Lao PDR
[2]Source: PROFIL Annual program 2005

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