

VII. NATIONAL STUDY: SRI LANKA*

A. The role of agricultural and rural development in Sri Lanka

Sri Lanka's economy has traditionally been dominated by agriculture. However, it is presently undergoing diversification as other sectors, such as manufacturing, are also making significant progress.

Sri Lanka's mid-year population stood at 19.3 million in 2001 and the annual population growth rate over the period 1991–2001 varied from 1.0 to 1.7 per cent. (Department of Census and Statistics 2001). This means that Sri Lanka is rapidly approaching the low rates of population growth characteristic of the developed world. Sri Lanka is expected to reach a stabilized population of 24 million by the middle of the next century.

1. Contribution of agriculture to the national economy

Agriculture plays a vital role in Sri Lanka's economic development. The agriculture sector constituted 20 per cent of gross domestic product (GDP) in 1999 and in 1996 provided employment to about 37 per cent of the labour force exceeding the contribution of the other major sectors. An estimated 1.8 million families are engaged in farming. In Sri Lanka, agriculture is dominated by small-holders as over 64 per cent of the farming families cultivate holdings of less than 0.8 hectares.

The fertile soils, plentiful rain and good tree cover have given rise to a well-developed agriculture sector. Agriculture has been the backbone of the country's economy and the farmer enjoys an exalted position in Sri Lankan culture. Around 1.9 million hectares or 29 per cent of the total land area of the country is cultivated. Around 40 per cent of the cultivated area is occupied by plantation crops, tea, rubber and coconut.

(a) National agricultural policy and its significance to small farmers

The policy goals in respect of agriculture for the period 1984–1994 were enunciated in the National Agriculture Food Nutrition Strategy formulated in 1984. They were as follows (MFP 1984):

- Self-sufficiency in basic foods, rice, milk, sugar, fish and pulses
- Expansion of export capacity to increase the contribution of agriculture to the balance of payments
- Enhancement of rural incomes and creation of new employment opportunities in the rural sector
- Improvement of the nutritional status of the people

In 1994, the government formulated a comprehensive national policy framework for agriculture, lands and forestry, which is currently being adopted (MALF 1995). In addition to the broad policy objectives of the National Agriculture Food Nutrition Strategy, the national policy framework placed emphasis on an integrated farm planning approach, including production, storage, processing, marketing, value addition and export. It also emphasized institutional-building, including the strengthening of farmer organizations, supply of inputs and produce marketing.

Concurrent with its concern for the welfare of the people, the government has placed the highest priority on increasing the production and availability of rice. The incentive structure for agricultural development clearly reflected the emphasis and patronage given to the rice sector to achieve the goals of self-sufficiency, food security and enhancement of rural incomes. The policy action taken to promote rice production included large-scale investments in infrastructure, such as irrigation schemes, land development/settlement, support services such as research, extension and education, input subsidies such as low – priced fertilizer.

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(b) Agricultural infrastructure

The implementation of the accelerated Mahaweli programme in 1977 was the largest investment by the government on rural infrastructure. It involved diverting the longest river in Sri Lanka, building dams and four reservoirs for the purposes of generating hydroelectric power, irrigating vast tracts of land and the resettlement of people. This project was designed to irrigate about 600,000 hectares of previously arid land. By the end of 1996, a total of 128,360 farming families had been settled under this scheme.

(c) Rural employment and the labour situation in rural areas

Sri Lanka has a large rural population, which accounts for 78 per cent of the total population (NARESA 1991). The high rate of unemployment has traditionally been largely a phenomenon among the relatively young and the more educated members of the labour force. Small farm conventional agriculture failed to attract young people, who had a minimum level of secondary education, as producers. This is mainly because of the poor incentives and lack of support services for small farmers involved in agriculture.

A large number of people engaged in cultivating small farms are owner cultivators or share croppers or wage workers. Those in paddy farming are of particular significance here. Various institutional and structural features characterizing this segment of the agrarian society, such as the predominance of land holdings which are, small and uneconomic to operate, archaic tenurial practices such as sharecropping, absentee landlordism, traditional power structures in village life, dominance of informal credit institutions in spite of the diffusion of formal credit organizations into the countryside, the hold of middlemen in marketing agricultural produce, the absence of effective cooperative and other farmer organizations deterred young people from entering the agriculture sector.

To protect the peasantry in Sri Lanka, the government developed a number of policies. Foremost among these has been the large-scale distribution of state-owned land. In the case of peasant settlement schemes, the government provided infrastructure facilities in addition to distributing land. This infrastructure included not only what was needed for agricultural production, but also what was needed to provide social services to families that were settled.

(d) Women in agriculture

In seasonal agriculture there are activities traditionally done by women, for example, the transplanting of paddy seedlings from the nursery, manual winnowing, and de-husking of paddy using pestle and mortar. In rural areas, it is mainly agriculture related work that has been providing employment /wage earning opportunities for the majority of women in the labour force. In traditional agriculture, the family as a unit share the tasks and responsibilities of agricultural activities. The role of women in conserving seeds using different traditional techniques could still be observed in rural Sri Lanka. Furthermore, in home garden development and management, rural women who primarily remain at home are engaged in nurturing trees and enriching the composition. The contribution of women in planting species that are of consistent use, especially the ones which contribute to the family diet, is significant.

2. Agro-ecological and biophysical characteristics

Sri Lanka is an island lying in the Indian Ocean between latitudes 5° 54' and 9° 52' north and longitudes 79° 39' and 81° 53' east. The country covers about 6.56 million hectares, of which 1.8 per cent is inland water. It is 434 kilometres long and 225 kilometres at its widest. It is a tropical country, but the climate varies across the island owing to differences in rainfall, elevation and soil factors. Further, the central hill masses, which act as an orographic barrier, and the Indian Ocean surrounding the island also influence the climate of Sri Lanka.

(a) Climatic factors

The rainfall of Sri Lanka shows seasonal fluctuations and is dependent on mainly monsoon, conventional and cyclonic effects (Somasinghe and Nayakakorala, 1999).

Four rainfall seasons are clear in Sri Lanka, namely the south-west monsoon from mid-May to September (*Yala* season), the north-east monsoon from December to February (*Maha* season) and two inter-monsoon periods, the first and second inter-monsoons last from March to mid May and from October to November, respectively. Total annual rainfall of the country varies from 750 to 5,000 mm. Two broad climatic regions, namely the dry and wet zones are recognized based on total annual rainfall and the distribution of dry months.

Rainfall is one of the important factors for determining agricultural land use as well as the use of various genetic resources. The distribution pattern of rainfall throughout the year is more important than the total annual rainfall. The rainfall distribution in most areas of Sri Lanka is markedly seasonal. The bimodal

pattern of rainfall distribution is characteristic of the wet zone whereas the dry zone exhibits a unimodal rainfall pattern. The rainy season of the wet zone lasts from May to November (7 months), which is much shorter in the dry zone (3-4 months; October to January). In the dry zone, the south-west monsoon allows only a small crop (*Yala* season) whereas the main season (*Maha*) is effectively the wet season. Cropping patterns, farming practices and genetic resource utilization are markedly different according to the rainfall distribution patterns, along with other factors.

The topography of Sri Lanka varies remarkably within even a small area, with coastal plains, lowland hills and a mountainous interior. The upcountry (above 1,200 metres) and mid-country (from 300 to 1,000 metres) together constitute the mountain zones consisting of about a fifth of the total area, occupying the south-central parts of the island. The lowlands cover nearly three quarters of the country and are extensively in the north and east. A cross-section of the country consists of a series of platforms and scarps from sea level to 2,440 metres in elevation. Temperature generally decreases with increases in altitude and in the montane region the mean monthly temperature varies from 13-16 degrees Celcius, with the night temperature occasionally dropping to around zero. The mean temperature in the lowland areas is 27 degrees Celcius in the wet region and 30 degrees Celcius in the dry region.

Agricultural land use and land management requirements at a given location depend on the climatic conditions together with the soil properties and conditions. The areas with similar climatic and soil conditions are identified and demarcated as agro-ecological regions. Twenty-four agro-ecological regions based on rainfall, elevation and soil types are demarcated in Sri Lanka. Agro-ecological classification is very useful since it provides basic climatic and edaphic differences of the country for different agricultural production and farming practices.

**(b) Situation of basic natural resources:
environmental problems and challenges**

Sri Lanka has a rich diversity of soils. Fourteen great soil groups have been recognized in the country. It is also rich in water resources, including 103 rivers and more than 20 major wetlands, a sophisticated system of major and minor irrigation systems and significant groundwater resources. Therefore, the availability of water for cultivation is not a major problem, but in certain pockets of dry and arid zones, water scarcity is a problem, especially during the dry season of the year.

Sri Lanka faces a wide range of environmental management challenges that are tied to its economic development. Foremost among these are the

interlinked problems of land and water degradation. Unsustainable agricultural and forestry practices are causing biodiversity loss, severe soil erosion on sloping lands and reduced productivity of irrigated lands. Agricultural chemicals and agro-processing by-products are polluting soil, air and water. Agricultural run-off containing pesticides and fertilizers affects water quality in other areas. With the increasing rural population, more pressure is created for land and this leads to more forest lands being cleared for agriculture and settlement purposes.

Soil erosion also arises when land users have no incentive to invest in maintaining land. Many landowners are encroachers, part-time farmers or absentee landlords. Many of them have little incentive to invest in long-term land management. Although integrated pest management (IPM) is now official government policy, many farmers still use more than the recommended level of chemicals, especially insecticides. Most farmers still depend on private retail suppliers for advice on the use of agrochemicals. Further, occupational health problems such as accidental pesticide poisoning are serious in the agriculture and mining sectors, where labour is less organized.

As agriculture is becoming widespread, coastal habitats are being badly degraded, wetlands are being filled and agriculture is shifting more towards single (mono) crops. Soil erosion is severe in many parts of the wet zone, especially in the mid-country, where slopes are often very steep. This has led to the abandonment of arable lands, costly investments on fertilizer application and heavy saturation of several major reservoirs with sediments.

(c) Predominant farming and production systems

By virtue of the fact Sri Lanka has an exceptionally strong age-old tradition of agroforestry interwoven in the socio-religious fabric of the people, it is not surprising that examples of agroforestry practices are numerous, widespread and found in all climatic zones in the country. In this respect, the example of Sri Lanka is unique in the region, as agroforestry in the country has its roots in the deep past. Furthermore, a bewildering array of species, both trees and crops, are cultivated in these systems.

According to a study from the Food and Agriculture Organization of the United Nations (FAO) and the United Nations Development Programme (UNDP) (1986), Sri Lanka had total forest cover of 28 per cent of the area of the country. Despite this limited extent, 50 per cent of the country's timber demand and 80 per cent of the biomass fuel are met from non-forest resources. This is further proof of the existence of large areas of non-forest vegetation, which includes agroforestry systems and practices.

The most widely practised farming system in Sri Lanka is lowland paddy farming. Lowland can be defined as areas that receive enough water or that can be irrigated. The lowland is also called *Wel yaya* and is mainly cultivated with rice. In the lowlands, rice is the dominant crop both in terms of land use and dietary importance, and it has been the backbone of Sri Lanka's agriculture over 2,500 years. Lowland paddy farming is started with deep ploughing to create a hard pan at the onset of the rains or with irrigated water. Ploughing is followed by harrowing and levelling under submerged conditions. Agricultural operations are begun at an auspicious time with special ceremony and rituals. Sowing, transplanting, weeding, pest and disease management, water management, fertilizing and harvesting are other operations involved in rice farming and each component has special traditional characteristics.

The upland can be defined as land above the water sources, which therefore can be cultivated only under rain-fed conditions or by providing lift irrigation. Following ploughing, using buffalo and traditional plough, the seed paddy, which has been soaked overnight, is sown when rain is expected. The soil is mixed using a fork. This method increases the soil nutrients and water retention / absorption capacity of soil. Sometimes, after broadcasting, the field is covered with straw as mulch, which enhances weed control, soil moisture and nutrient retention. When grasses and hedges are grown in the field, they are cut and allowed to dry for burning. The field is turned using a hoe. Two to three weeks after turning, harrowing is done. Then seed is broadcast during mild rain. The intensity of management practices, such as weeding, fertilizing, pest and disease control, is very low in this system. Water management is entirely dependent on rainfall. Usually, paddy is only cultivated in the *Maha* season.

Chena (shifting) cultivation is an old form of tropical agroforestry practised in Sri Lanka where forest and crops alternate in a temporal sequence. It was sustainable as long as there was a reasonable fallow time interval of at least 15 years. This was possible when the country had a large area of undisturbed natural forest vegetation and rural population pressure was minimal. This was a time proven system. However, with an increase in rural population and a lessening extent of tracts, the intervals between the cultivation of crops decreased, with a resulting loss of soil fertility, increase in erosion and loss of soil structure, finally resulting in total land degradation.

Kandyan Forest Gardens are the classical system of agroforestry in Sri Lanka. It has evolved with time to become almost the ideal form of land use, combining agriculture, forestry and even livestock rearing. This system almost simulates a tropical rain forest ecosystem. It is also referred to as Kandyan

Gardens or Kandyan Home Gardens. The land sizes are small, having an average of about 1 hectare. However, there are some holdings of about 2.5 hectares while others are very small, about 0.3 hectares. The system is primarily based on perennial and semi-perennial trees and shrubs. Nearly 30 crops or components are grown in the system.

In upland vegetable farming, the land is prepared by hoe and the field is prepared by making bunds. The field is incorporated with organic matter. Planting holes are made according to the size of plants and planting is usually done during the rainy season. The planting holes are usually covered with mulch after planting.

In certain cultivation systems, the main bunds of the paddy field are cleared and residues are bumed. Once planting holes are made, beans, maize, green gram, cowpea, finger millet and vegetables can be cultivated on the main bunds. This avoids soil erosion and does not require additional land or the application of fertilizers.

3. Socio – economic background

In spite of recent economic progress and emphasis on food security, poverty still remains a serious problem for Sri Lanka. The rural sector has the greatest incidence of poverty. However, surveys conducted in 1985/86 and 1990/91 reveal a statistically significant decline from 4.3 million or by about 12 per cent (World Bank 1995). The depth and severity of poverty have also declined during this period.

Most studies agree that the poverty ratio has been the highest in the rural sector and the lowest in the estate sector. Over time, the rural dominance in the distribution of the country's poor has not undergone any significant change. As most of the poor live in the countryside, the fact that the rural sector holds the largest number as well as the largest proportion of the poor in the country is not surprising. Ratnayake (1998) reported that female-headed households, particularly those with no adult children, are among the poorest of the poor.

In spite of the higher prevalence of poverty in the rural sector, the farmers who practise the forest garden system (Kandyan Forest Gardens) in Sri Lanka enjoy a relatively better level of living by virtue of returns from both the economic cash crops and the subsistence products (Jacob and Alles 1987). It is a highly diversified and economically viable form of land use adapted to local conditions and evolved over centuries. People deriving a livelihood from this system live to a ripe old age, have good eyesight and are much healthier than people who live in the dry zone or in urban areas.

B. Organic farming in the national context

1. Institutional framework

(a) Historical development

The cultivation of trees in home gardens, social tree planting, the protection and management of forests and the protection and appreciation of wildlife in Sri Lanka go back over 25 centuries with the advent of the Aryan civilization. Three ancient chronicles, or epics of Sri Lankan history, the Mahawamsa, the Rajaratnacari and the Rajavali refer to tree planting from the year 543 BC during the reign of the first Sinhalese King in Sri Lanka, King Vijaya. During this and in subsequent periods, the whole country was well covered with vegetation, both forest and non-forest home gardens.

The key actors in nurturing organic methods of agriculture have been the traditional peasant communities and the subsistence farmers of indigenous communities. Organic agriculture is not novel to Sri Lanka, since traditional agriculture was practised based on local resources and less dependency on external inputs. Organic agriculture, in the traditional context, is subsistence farming or non-chemical agriculture. Conservation farming used indigenous knowledge and traditional agricultural equipments and tools, whereas modern organic agriculture is market oriented and production has to adhere to certain standards or at least accepted norms in cultivation methods and practices.

Modern organic agriculture is practised based on standards and certification. It differs from IPM/conventional agriculture, particularly on the level of fertilizers and agrochemicals used. Further, it differs from subsistence agriculture as it produces for the market, including export markets.

In Sri Lanka, IPM is considered as more of a kind of low-external-input and sustainable agricultural method because it uses fewer synthetic, agrochemicals and resorts to other ways of pest and disease management such as mechanical, cultural and biological. IPM is not an organic method of pest management as it involves the use of chemicals, but at reduced dosages, at less frequencies and integrated with other methods.

(b) Organic standards

Sri Lanka has not yet developed local or national organic standards. However, recent initiatives confirm that Sri Lanka will have developed its own national standards in one or two years. The networks involved in the organic sector in Sri Lanka, the Lanka Organic Agricultural Movements, the Ecological and

Sustainable Farming Systems network, the organic agriculture network of Gami Seva Sevana and Analog Forestry Network (for forest garden produce) have decided to organize a national workshop to decide on how to continue the process of developing national organic standards started in 1996.

The initiative in 1996 resulted in a preliminary draft set of standards for organic production. This initiative is planned to be revitalized in early 2002. However, foreign organic certifying organizations operate for certifying organic farms and processing units. There are seven certifying organizations (SKAL, the Netherlands; NASAA, Australia; Naturland, Germany; Institute for Market Ecology-IMO, Switzerland; Eco Cert, Switzerland; Organic Farmers and Growers Ltd. United Kingdom; Demeter and BioSuisse, Switzerland) involved in organic certification. Their standards, which should be in compliance with EU regulation 2092/91, are the basis for organic certification in Sri Lanka.

In Sri Lanka, group certification of organic smallholder farmers is commonly practised by certifiers. The inspection of small farmers' groups, which can comprise several thousand members with widely scattered plots of less than two hectares on average, is a severe challenge to any certifying organization. For example, Naturland, as one such certifying organization, has devised special criteria for quality assurance in cooperation with the inspection organization IMO and in accordance with the International Federation of Organic Agricultural Movement (IFOAM) accreditation programme. Those criteria are the basis for Naturland certification of small farmer groups.

Similar to inspecting and certifying organizations, fair trade organizations such as the Dutch-based Max Havelaar, are also active in the fair trade of organic products (organic tea and spices). Max Havelaar is one of the major international fair trade organizations and focuses on agricultural products produced by small farmers in third world countries.

(c) Key actors in research and other support services

In the organic agriculture subsector, the key institutions are private and non-governmental and certain farmer organizations. Government initiatives were not prominent in the past. However, in the recent past some governmental organizations have taken steps to conduct research and initiate development in organic agriculture. For example, the Horticultural Crop Research and Development Institute of the Department of Agriculture has started conducting research on crop performance, yield etc., under an organic mixed cropping system. In addition, some of the universities conduct research on natural ways of soil fertility management and pest and disease

management. The Tea Research Institute also conducts research on organic amendments of tea soils and natural or biological pest and disease management. Farmer participatory research on organic cultivation is carried out by certain non-governmental organizations (NGOs) and the Department of Agriculture.

Almost all the private-sector companies involved in organic trade export organic products. This includes mainly processed products. Many such companies work with small farmer groups and directly export the products to buyers in Europe, Japan and the Middle East (Kuwait). Unlike conventional tea, organic tea does not have to go through the general tea auction in Sri Lanka.

Many NGO initiatives aim at small farmers and community development and empowerment through the promotion of organic agriculture. For instance, the development programmes of certain national and international NGOs focus on promoting the income of small farmers through organic farming and ensuring food security. NGO activities on organic agriculture particularly focus more on the dissemination of knowledge through awareness, training, demonstration, extension, and exposure visits.

The official support by the government for organic agriculture in Sri Lanka is confined to certain programmes for awareness raising and training. Currently, the Department of Agriculture focuses on training and programmes on IPM, especially on paddy cultivation. In general, the lack of public financing for organic agriculture has been one of the limiting factors in the development of organic agriculture in Sri Lanka. The little available public financing is utilized for small studies on organic farming and training programmes, which partly focus on methods practised in organic agriculture.

Mono crops in conventional agriculture, such as paddy and tea, are made more profitable by current crop-based subsidies. These subsidies are input and/or output (harvest) based. Both the subsidies are given in the form of price. This means a farmer is able to buy, for example, synthetic fertilizers at a subsidized price and sell their harvest, for example, paddy for a guaranteed price. The guaranteed price system for conventional paddy does not actively operate now since the private sector has started playing a main role in buying paddy from farmers. The credit-based subsidies, concessional interest rates, now involve spices as well. The Department of Export Agriculture is a key actor in handling subsidies for spices. However, no subsidies are exclusively available for more bio-diverse land uses such as home-gardens and smallholder organic farms with annual and/or perennial crops.

Further, there is no government subsidy for buying or using compost and other fertilizer substitutes or natural manure. However, farmers do have an indirect incentive for using compost, since it is not as expensive as chemical fertilizers. Governmental organizations such as the Department of Agriculture, Department of Export Agriculture, Agrarian Services Department, and research institutes do promote the use of compost and other organic manure, such as cow dung and poultry manure, among farmers based on their research findings. The Ministry of Agriculture claims that crop intensification - increasing yield per unit area cultivated - is its main objective. Following this line, the government promotes a mixture of organic and non - organic practices in achieving its main objective.

The director in charge of development in the Ministry of Agriculture says that looking at growing interest, the government, in time to come, may become interested in organic agriculture, specially among smallholder farmers. In addition to training and awareness raising, obtaining credit from certain development banks for the conversion of smallholder lands into organic farms could also be made possible. However, there are no official credit/subsidy facilities which focus exclusively on organic agriculture.

(d) Pricing policies

Even though there is a price support system for conventional paddy, for organic paddy or any other organic produce, there is no official pricing policy by the government. The Guaranteed Price Scheme operated by the government since 1948 has been the main support programme for paddy. Since 1972 it has been operated by the Paddy Marketing Board which had a monopoly in the purchase of paddy. The economic reforms brought out in 1978 attracted the private sector into paddy purchases and this sector began playing the dominant role relative to the state sector. Most of the functions of the Paddy Marketing Board, which was the main government agency that bought paddy from producers, have been curtailed. Currently it operates merely as a floor price scheme for paddy.

Government support for paddy does not distinguish between organic and conventional. The organic paddy farmers could only derive the same benefits as chemical farmers. This implies that the government has to formulate a clear policy on agriculture and spell out how to "reward" those organic farmers (current and future) for their contribution to conserving the environment and its natural resources from agrochemical residues.

A premium price scheme is in operation among the organizations in the export trade of organic produce in Sri Lanka. For example, in the case of organic tea, a kilogram of fresh tea leaves (green

leaves) is purchased at an average price of 30 rupees while the same for conventional tea is 12 rupees. This price difference has been made possible by the premium price scheme. The government does not interfere in fixing prices for organic produce.

The export market price of an organic product is determined partly by the organic market in the importing country and partly by the buyer, the influence of fair trade, price premium etc. In the domestic market, though there is no formal premium price system, organic produce (not certified) is usually sold at higher prices in Colombo. This is because of the difference in quality between organic and conventional produce and consumer demand for chemical-free produce.

(e) Official documents and statements

The National Environmental Action Plan (1998-2001), prepared by the Ministry of Forestry and Environment, states that a number of innovative conservation farming technologies and institutional approaches for agriculture are being developed to provide high economic benefits and protection for the environment. These include crop-livestock integration, greater use of organic fertilizer, sloping agriculture land technology which uses leaf mulch and IPM. The adoption of participatory land-use planning and watershed-based land-use planning are being promoted on the institutional side.

The National Environmental Action Plan further states that the environmental concerns provide opportunities for new products and activities, such as organic foods, and nature-based natural products such as coconut coir products and reed mats. While companies are starting to exploit this potential, much more can be done. Nature Tourism, for example, is one of the fastest growing segments of the global tourist industry. There are already several specialized nature tour companies in Sri Lanka, marketing activities such as bird watching, coral diving and camping. Some other companies are experimenting with organic tea exports.

(f) Constraints on development because of the civil war

The civil war in the north and eastern parts of Sri Lanka does not greatly influence the development of organic farming in the southern part of the country. However, the civil war has badly influenced not only the development of organic agriculture in the north and east, but also the agriculture sector as a whole.

2. Organic production

(a) Predominant cultivation systems

It is often the mixed garden system, such as the Kandyan Forest Garden and integrated farm (crop and livestock or crop, livestock with aquaculture), which are predominant organic systems among small farmers in Sri Lanka. Organic paddy is grown as a mono crop with ecological pest management technology for pest and disease management. Plantation crops, such as organic tea, are grown as a mono crop. However, a certain degree of diversification could be observed with spices, especially with pepper. Even though organic means the diversification of crops and cropping systems, the degree of diversification varies depending on crop types and the cropping systems in which they are grown.

In the cultivation of certain crops, the farming systems do use appropriate technology, mainly biogas and solar power. These systems could sustain and be self-reliant for many agricultural inputs. Analog forestry is another organic system, which is an agroforestry system with a higher degree of diversification. The system harbours ecologically and economically benefiting species to ensure not only financial viability but also ecological sustainability.

Organic systems based on different types of crops may be divided into two categories. One is a system with mainly perennial crops, such as tea, coconut, coffee and spices. The other system includes mainly annual or seasonal crops, such as vegetables, fruits and grains. Many organic systems are integrated

Table 1. Quantities and value of different types of organic products exported in 1999/2000

Commodity	Year 1999/2000	
	Quantity (metric tonnes)	Value Sri Lankan rupees (million)
Organic tea	336	200
Organic spices, essential oils and cashew	133	72
Organic desiccated coconut	274	270
Organic dried fruits, vegetables and herbs	10	0.63

Source: Export Development Board.

with livestock. Animal rearing in Sri Lanka cannot be fully organic because of the non-availability of organic feed and drugs. Organic animal feed and medicine are not available in Sri Lanka because the raw materials, for example, maize for animal feed, is not organically grown widely. Similarly, animal drugs are produced by pharmaceutical companies and they are produced using inorganic raw materials. Only the traditional treatment technique and Ayurvedic preparations used in animal rearing are organic.

Generally, there is no official data from government sources or information available on the number of organic farmers, their extent of land, costs incurred, yield etc. in the country as a whole. However, the Sri Lanka Export Development Board is the one and only official source that has fairly good information particularly on the export of organic produce.

(b) Export market and market potential

The Export Development Board states that in 1999, there were about 7,500 farmers involved in organic cultivation in about 3,200 hectares of land, out of which about 1,200 hectares was recorded as land in conversion. Information on the export performance of different organic products is given below in Table 1.

Fifteen companies operate in the organic trade and they cover organic production from about 3,000 hectares of certified land. The annual export earnings from 1998-2000 are given in Table 2.

Table 3 gives information on the main private-sector companies and a non-governmental producer cooperative involved in organic production, processing and export.

(c) Domestic market

The Export Development Board database does not include information on the extent of uncertified organic land cultivated and producing for the domestic market. An NGO working in the dry zone indicates that some 600 farmers are involved in the cultivation of organic paddy, vegetables, fruits etc. in 314 acres. In addition, there are about 50 acres of land certified by a local certifying agency, which is involved in

certifying forest garden produce. This certification is an effort by a local NGO involved in promoting analog forestry systems in Sri Lanka. However, this certification is not official because it is yet to be accredited by the government and/or a recognized certification body, such as the Forest Stewardship Council or IFOAM.

There is no information available on crop losses and serious pest and disease problems encountered in the original farms. However, the crops in organic cultivation are usually grown in mixed cropping systems. Under normal circumstances these systems do not record a level of pest and diseases and crop losses which would cause economic injury.

Since the Export Development Board database does not distinguish between organic green tea and organic black tea, it is interesting to provide information from a private company, Bio Foods (Pvt) Ltd, which is involved in producing organic green and black tea of different types, flavoured and unflavoured.

In 2000, Bio Foods exported 20,517 kilograms of organic green tea and 24,780 kilograms of black tea. In addition, Bio Foods is experimenting with the demand for flavoured tea among consumers abroad.

Regarding information on the quantity produced for the domestic market, the main limitation is a lack of official information pertaining to the extent grown and the number of organic farmers operating, despite not being officially 'certified organic' or 'in conversion'.

The local market for organic produce is operating within a niche market and so far on the basis of mutual trust as the guarantee. In contrast to export, the formal arrangement of a premium price is not in operation.

(d) Areas of organic cultivation potential

The areas under agroforestry systems, home gardens, and marginal tea lands are high potential areas for conversion. The total land area of home gardens alone amounts to about 615,700 hectares in the south-western part of the country (Multi-purpose Tree Species in Sri Lanka 1996). The majority of the

Table 2. Export earnings from organic products, 1998 –2000

No. of companies in the export of organically certified products	Certified extent (hectares)	Export performance (millions of rupees)		
		1998	1999	2000
15	3 000	215.00	299.00	563.00

Source: Export Development Board.

Table 3. Companies and non-governmental organizations engaged in organic production, processing and trade

Company	Product range	Type of company	Export markets
Lanka Organics (Pvt.) Ltd.	Organic tea, spices, herbs, desiccated coconut and cashew	Limited liability private company	USA, Australia, Japan, Canada, UK, Germany
Need Wood Emmage (Pvt.) Ltd.	Organic tea, coffee	Limited liability private company	USA, Australia, Japan, Germany, Sweden
Bio Foods (Pvt.) Ltd.	Organic green tea and spices	Limited liability private company	UK, France, Germany, Netherlands
Tea Masters Ceylon (Pvt.) Ltd.	Organic tea and herbal tea	Limited liability private company	USA, Canada
Eaos Organics (Pvt.) Ltd.	Organic spices and essential oils	Limited liability private company	France, USA
Santushi Basel Ceylon (Pvt.) Ltd.	Organic cashew, spices and fruits	Limited liability private company	Germany, Australia
Gami Seva Sevana	Organic tea and spices	Local NGO	Germany, Switzerland
St. Annes Factory	Organic desiccated coconut	Limited liability private company	Germany, Singapore, USA
Stassen Natural Foods (Pvt.) Ltd.	Organic tea	Limited liability private company	Japan, USA, UK, Italy, Kuwait
Maskeliya Plantations Ltd.	Organic tea	Public company	Poland, USA, UK
Canela Organica (Pvt.) Ltd.	Organic cinnamon	Limited liability private company	---
Suriya Compost Fertilizer (Pvt.) Ltd.	Organic compost	Limited liability private company	---
Prime Food Products (Pvt.) Ltd.	Organic spices, dehydrated fruits, vegetables and herbs	Limited liability private company	---
Cicil Food Pvt. Ltd. 131 Maya Avenue, Colombo 06	---	Limited liability private company	---
Ni - Cey International Pvt. Ltd 190 Sri Jayawardena pura Mawatha, Rajagiriya	---	Limited liability private company	---

Table 4. Current and projected export of organic products

Commodity	2001 (in MT)	2002 (in MT)	Growth (percentage)
Organic spices, essential oils and cashew	450	500	11
Organic tea	175	200	14
Organic desiccated coconut	365	420	15

Source: Export Development Board.

land under home garden cultivation could be categorized as “organic”, despite the fact that they have not undergone a formal organic certification process. In the domestic market the products from these systems are partly consumed by producers/farmers themselves and the rest are usually sold in the village fair or in shops.

Coconut is reported to consume only 1 per cent of the total annual consumption of synthetic fertilizers used in the country. Similarly, export agricultural crops also consume 1 per cent of synthetic fertilizers. Therefore, another area of potential conversion is coconut lands and lands cultivated with export agricultural crops. Coconut is the third biggest plantation crop, which could successfully be intercropped with some seasonal crops, including pasture.

(e) Organizational characteristics of small farmers

Small farmers are encouraged to take up and stay in organic farming because of the prospect of being able to:

- Produce more food at subsistence level
- Have a larger surplus for local sale
- Being able to cultivate a product of significant export value

Small farmers have been organized into producer groups, cooperatives and producer organizations for organic growing and processing. Marketing, especially export, is often facilitated by a capable organization to provide the necessary management support services because the minimum scale of operations needed to run an export business is far beyond the scope of small and often isolated farmers.

(f) Conversion issues

Farmers are less likely to take up organic farming if they do not have a plot of land of their own, in times of labour scarcity, because organic farming requires more labour input, and where there has been an overexposure to the “chemical message”. Farmers with a relatively mechanized farm and a commitment to high input and high output strategies are also less likely to convert.

In the absence of subsidies for conversion, many small farmers are not in a position to bear the risk of conversion because of reduced yield during the first and second years of conversion. Experiences from certain organic farmers reveal that the yield from converted land gradually increases over two to three years and reaches the level of a relatively high input conventional crop. This calls for a structured subsidy

during the period of conversion in which farmers are more likely to suffer from a reduction in yield/harvest causing them to forego part of their income.

Insecure land tenure means small farmers will be reluctant to plant permanent crops. The large number of people engaged in cultivating small farms owner cultivators, sharecroppers as well as wagedworkers, do not have any incentive for conversion. Therefore, some kind of a clearly defined policy by the government followed by support services focusing on the organic agriculture sector to back those agencies or farmers who want to embark on conversion has become vitally important.

3. Markets and post-harvest handling

(a) Export and domestic markets

Gradually, a growing number of farmers in Sri Lanka are receiving higher prices and more long-term security by selling their products into environmental friendly fair trade markets in Europe and North America. Consumer demand, especially in the North, is gradually increasing in response to the concern about the environmental and health implications of industrial agriculture.

Quantitative information on the potential organic production for export shows that the export of different products is projected to grow in 2002. Based on the current production and export figures the amounts projected for 2002 are given in Table 4.

As mentioned before, the major market channel for organic produce in Sri Lanka is the export market. The Export Development Board helps organic exporters to participate in international trade fairs (for example, BioFach, Germany and Foodex, Japan) to explore market opportunities for certified organic produce. The domestic market is slowly growing, but has not come up to the stage of a formal organic market as has happened in export.

The produce for export is organized from small farmer groups or organizations that have undergone a group certification procedure every year. The group certification involves spot checks in the form of on-site inspections and interviews with randomly selected small farmers by the organic inspector. In addition, the inspector also examines the internal quality control system followed by a producer organization. Then the certificate is issued for the organization.

It is not only the cultivation process, but also the collection, transport, processing, storage, packing and labelling that will have to be checked for compliance with standards. All these steps will have to undergo a strong internal control system to ensure that each of the organic units is complying with the standards to fulfil the requirement of EU regulation

2092/91 (Heid 1998). Farmers and the organization facilitating the export often share tasks involved in these steps. However, the costs incurred in these steps are covered within the export price.

Logistical and administrative work related to export is not directly handled by small farmer organizations. This is because farmers, being smallholders, often lack the institutional capacity to do the administrative work related to export. The small farmer organizations do work hand in hand with the organization, be it a private company or a local NGO, which supported them through awareness raising, subject matter training and motivating them to convert their lands into organic farming. It is usually the same organizations along with the producer farmer groups that will share the responsibilities and work together in arranging the export. Such support from an organization considerably helps producer groups or farmer cooperatives to access market information too.

(b) Post-harvest handling

For conventional agricultural produce, it is estimated that around 20-45 per cent of the food crops is lost owing to poor pre-harvest and post-harvest practices. A considerable increase in available food supplies could be made by minimizing these losses. Similar data or information pertaining to the post-harvest loss of organic produce is not available. But, the post-harvest loss of organic produce will be relatively less because of their high-keeping quality and with the overall production being less, unlike conventional/chemical produce, they will not be exposed to all the steps in post-harvest handling.

Regional markets have not developed to the level of international markets. Domestic markets in the absence of local/national standards have not developed, unlike the export market. The main actors in the organization of post-harvest handling and marketing are members of a producer cooperative or producer group along with a facilitating organization, either a private company or a local NGO.

(c) Labelling systems

In Sri Lanka, except for the export of organic products, such as organic tea, coffee, herbs, spices and vanilla, inspection and certification have not become operational. Further, certification is costly and it is difficult for small farmers to bear the cost involved. When farmers incur more cost on certification, it will result in organic products becoming too expensive. Thus, ordinary/average consumers cannot afford to buy such products.

The main and common labelling system for exported organic produce is a fair-trade label and the label of the certifying agency. Local labels, not necessarily based on formal inspection and

certification of lands, are available in the domestic market. It is a label to generally inform consumers that a product is free from chemicals. However, we could see in the domestic market front, it is still based on the trust between the consumer and seller.

Nevertheless, there is one local certification system for certifying and labelling forest garden produce from analog forestry. Analog forestry is a kind of agroforestry system that involves growing economically and ecologically beneficial crop species in a biologically diversified model similar to that of the forest. This certification has not yet become official.

Further, a farmer organization producing 'organic' rice has received authorization from the government and the provincial Department of Agriculture to use a label, belonging to a farmer organization, stating their rice is "pesticide free" for local markets. This rice is tested for pesticide residues by a research institute, which is a semi-governmental organization, and it issues a report based on its analysis. This label is not purely an organic label because synthetic fertilizers are being used in the cultivation of this rice.

For certain produce, a label saying "no synthetic chemicals were used in the production process of the main ingredient in this product" has been used by a private company. This company is mainly involved in processing vegetables and fruits. This label belongs to that company and it is not an official label.

(d) Sources of market information

The Export Development Board is the only official source available for providing information pertaining to the export market and on organic producers, processors and exporters.

Another source of information is the directory of IFOAM members, which provides information on private-sector companies, NGOs and research institutes in the organic sector from countries around the world. It is published every two years with updated information. This directory provides market information and services provided by IFOAM members. It carries information on Sri Lankan members involved in organic trade and development too. Further, it has information on IFOAM accredited certifying agencies operating in various countries.

(e) Guarantee system requirements

The first pillar of an organic guarantee system is organic standards, rules and governmental regulations that clearly define the practice of organic farming and inspection and certification.

The guarantee system requirement for certified organic products and processes should comply with the standards of the respective certifying organization / labelling organization. In the case of export products, the internal quality control system is examined by the external European inspector. If inspectors discover flaws in the internal inspection system, the number of spot checks and on-site inspections are increased. This is followed in the group certification of organic smallholders.

A contract has to be drawn between each small farmer and the organization to which he or she belongs. In this contract the small farmer pledges to maintain internal standards as determined and specific penalties are agreed for every infringement.

Since there are no official local standards, the guarantee system for the domestic market is the trust between the farmers and consumers and any internal control system in force locally.

(f) Consumer characteristics and price structure

In a survey done among the organic consumers in Sri Lanka (PALM Foundation 1999), it was revealed that they wanted fresh, attractive, tasty, nutritious and convenient organic foods. Consumers wanted to purchase produce of high quality at affordable prices. Many of the organic consumers wanted to know who grew their food and under what cultivation practices. They wanted to buy fresh organic products, especially vegetables and fruits. They were also conscious of the extra travelling time they had to spend to reach the place, the extent to which the place sold all kinds of organic vegetables and other food products on a regular basis, and the extent to which they were permitted to pick out the items etc. Prices did not seem to influence their choice when there was a guarantee of organic produce.

Although a high proportion of consumers in urban and metropolitan areas do like to consume organic produce, if they are supplied on a regular basis, no outlet in Sri Lanka has the capacity to supply organic vegetables and fruits everyday. A considerable number of consumers would be able and willing to pay higher prices, if a guarantee of supply and quality were assured. However, there is no minimum price or any other systematized pricing structure for organic products.

When consumers are willing to pay high prices for organic produce, it helps to assure them that the production and marketing of high value, non-conventional, indigenous and local agricultural products, such as medicinal herbs and traditional agricultural and non-timber forest products, may offer small farmers and indigenous people, particularly those who work in marginal areas, ways of increasing their income in an ecologically sound way. Depending

on the standard of living and the income level of people, their willingness to pay higher or a premium price for organic produce varies. However, for health-related benefits, all consumers, irrespective of their income level, want to buy organic produce on regular basis.

4. Socio-economic potential of organic farming

(a) Review and synthesis of existing studies

Organic agriculture in its holistic sense is one of the areas which has not been broadly studied in Sri Lanka. However, there have been small and short-term studies done by graduates and undergraduates from certain universities in the past few years. Further, some research institutes and international organizations have done some studies to assess the status of organic agriculture in certain areas in Sri Lanka. This is an indication of the trend and interest in studying organic agriculture by different actors.

Some of the recent studies have looked at the specific aspects of organic agriculture. For example, one study has looked at the economics of organic agriculture among a small group of organic farmers compared with conventional or chemical farmers in the same area. Two undergraduates looked at the socio-economic aspects of organic farmers and their standard of living from what they could earn from organic agriculture. A postgraduate study has looked at how biodegradable urban waste could be potentially used in organic agriculture as an input in making compost for use among organic farmers in the area. The focus of this study was on waste management as an environmental management problem. It analyzed how organic agriculture could be utilized for solving this problem by reducing pollution from urban biodegradable waste.

A 1997 assessment by an international donor agency (Helvetas 1997) on the status of organic agriculture revealed that the existing capacity was not widespread and what was available, in terms of capacity and experience locally, was not systematically utilized for improving the sector. Among the initiatives of small NGOs, the study revealed that capacity was considerably lacking. Another study conducted by Pesticide Action Network Asia Pacific, Malaysia, which looked at the status of organic agriculture in 1996, found that the initiatives on organic agriculture methods/ practices mainly by NGOs was confined to small farmer groups scattered in certain pockets across the country (today the situation has changed as more and more private companies and individuals are also interested in organic agriculture).

In 1999, IFOAM made a social-economic-ecological comparison of three different farming systems, traditional, organic and chemical/conventional, in Asia, including Sri Lanka. Although, the report of this study has not yet been finalized, the study held in Sri Lanka revealed that a systematic conversion of smallholder lands, if they were integrated with livestock, would become financially viable two to three years after conversion. This finding was more relevant to the conversion of marginal tea lands.

Organic agriculture in its traditional mode has many linkages to value systems and traditional beliefs. Nurturing trees and certain animal species, maintaining biological diversity, conserving traditional knowledge-based practices, such as the conservation of seeds and agricultural practices, had been part and parcel of the pro - green revolution in agriculture in Sri Lanka.

Although there are success stories from small farmers and cultivators of home gardens that a substantial monthly income could be generated in the organic subsector, its capacity to generate for a family unit of a farmer has not been exclusively looked at.

5. Support services

(a) Training and extension

As mentioned previously, government support services that exclusively target organic agriculture are not very common.

Formal organic agriculture training is mainly provided by NGOs in Sri Lanka. Gami Seva Sevana, a local NGO involved in organic agriculture, is one of the main training organizations. The training varies in terms of the subject areas (curriculum) covered and duration of training. Training courses cover permaculture, bio-dynamic agriculture and analog forestry etc.

In addition, NGOs are also involved in extension. Usually, their extension services are confined to the members of their farmer groups or producer groups. Certain governmental organizations do conduct training. However, their curriculum does not cover organic agriculture exclusively, but does cover certain methods involved (for example, soil fertility management using natural manure). Certain institutes coming under the purview of the Department of Agriculture and Agrarian Services Department conduct this type of training.

(b) Quality control

There is no quality control system in place that exclusively addresses organic products. The Sri Lanka Standards Institute provides a label to some agro-processed products. This institute, perhaps, should expand its scope and capacity to cover organic products as well. This may help to fill the gap created by the absence of such an institute for organic products. Since local consumers already know this label, the acceptance of organic products with this label among consumers may not be a problem.

(c) Applied research

In Sri Lanka, one of the areas that needs to be tackled in the organic agriculture sector is applied research on organic agriculture. For example, research on natural methods of pest and disease management and information/dissemination on such experiments will have to reach farmers practising organic agriculture and those in conversion. Prioritization of subject areas for research on organic agriculture will have to be done not only by mainstream research institutes but also by other stakeholders in organic agriculture, thus promoting farmer participatory research.

C. Conclusions and recommendations

1. Conclusions

Organic agriculture requires time and well-trained extension workers. Active organic management is required for at least twelve months before organic status is conferred. Benefits are not immediate and small farmers require considerable support in the first years. High input farmers require financial support such as capital grants or annual area payments to offset the financial problems associated with conversion.

Farmers are most responsive to organic agriculture when they have not been exposed to the "chemical message" and their farming already involves traditional or less or no inputs, as happens in cultivating marginal and degraded lands. When production is relatively labour intensive and if farmers have the chance of developing the organic concept themselves, they are also more inclined to convert to organic agriculture.

2. Recommendations for the public sector

A structured subsidy during conversion would be an incentive for small farmers to go for conversion. In the long run, the farmers could benefit from the growing demand for organic products from and within the tropics. This not only provides hundreds of thousands of farmers in the tropics, including Sri Lanka, with an opportunity to obtain a premium price, but also to cultivate in an ecologically sound way.

In the light of the increasing commercialization of agriculture and the greater liberalization of the land market, the government must strategically select lands for conservation purposes, such as watershed protection, and provide more information and incentives to encourage environmentally sound land-use practices.

Lack of information pertaining to the area cultivated, amount produced, number of farmers and kinds of organic production systems in operation is a major limitation in Sri Lanka. Further, no study has elaborated the status and potential of different sustainable farming systems in a national context. Increasing public sector financing for research and development on organic agriculture and making policy decisions to ensure the government gave due recognition to organic agriculture are the challenges to be faced by the organic agriculture sector in Sri Lanka.

Identifying research priorities and devising subsidies for conversion, facilitating farmers in organic agriculture by providing support services such as awareness, extension, training and necessary information and infrastructure for the production and marketing of organic agriculture require the urgent attention of the government and other stakeholders too. The provision of market information on organic products and market access and fair price for small and medium-scale farmers needs to be improved and strengthened.

Organic certification is a slow, laborious and relatively costly process and a particular challenge to small producers. Meeting the costs involved in certification is far beyond the scope of small producers.

In order to overcome certain limitations, forming cooperatives and sharing the workload involved in the chain of production, processing and marketing will be one of the better options for scattered organic smallholder farmers. Small and medium-sized exporters often face serious capacity constraints in responding to the challenges presented by sustainable trade. NGOs, governmental agencies and buyers can all play an important role by providing technical or financial assistance, and long-term security in helping to develop producer organizations. Positive policy decisions will also help to expand

sustainable trade opportunities. Government can do much to promote sustainable trade by integrating evaluation factors into the export production strategies.

Looking at the current developments of the organic sector in Sri Lanka, a coordinated approach to identify the priority needs of the sector, such as national/local organic standards development, and to strengthen current initiatives involving mainstream governmental organizations (Ministry of Agriculture, Department of Agriculture, research institutes etc.) will ensure that the poverty target group, smallholder farmers, receives a boost.

3. Regional cooperation activities

In improving and streamlining organic production, processing and marketing, regional cooperation activities need to be developed. Systematic documentation of experiences in the region could be a first step. It could help to widen the scope later to share experiences and exchange within the region. Establishing formal and informal networks at national and regional levels could help to develop and strengthen such cooperation.

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