

III. NATIONAL STUDY: INDIA*

A. The role of agriculture and rural development in India

1. Contribution of agriculture to the national economy

As in most developing countries, agriculture still is a cornerstone of the Indian economy. It provides 29 per cent of gross domestic product (GDP), as against industry at 26 per cent and services at 45 per cent (Tata Services 2001). The net value added for agriculture and allied activities amounts to 4,112 billion rupees, or US\$ 92 billion (Tata Services 2001). Out of 329 million hectares, the net cropped area is 142.5 million hectares (Ministry of Agriculture 2000).

(a) National agricultural policy

In July 2000, the Ministry of Agriculture produced for the first time in history a national agriculture policy (Ministry of Agriculture 2000). This, of course, does not mean that no agriculture policy existed previously. There have always been policies, although in scattered forms. This agriculture policy tries to integrate all the various aspects. It mentions that over 200 million Indian farmers and farm workers have been the backbone of India's agriculture and that, despite having obtained national food security, the well-being of the farming community continues to be a matter of grave concern. It further aims at:

- A growth rate in excess of 4 per cent a year
- Growth, based on efficient use of resources and conservation of soil, water and biodiversity
- Growth with equity, in other words, widespread across regions and farmers
- Growth that is demand driven and caters to domestic markets and maximizes benefits from exports

- Growth that is technologically, environmentally and economically sustainable

Organic agriculture finds reference only in one place under the chapter "Sustainable Agriculture": "The history and traditional knowledge of agriculture, particularly of tribal communities, relating to organic farming, preservation and processing of food for nutritional and medicinal purposes is one of the oldest in the world. Concerted efforts will be made to pool, distill and evaluate traditional practices, knowledge and wisdom and to harness them for sustainable agricultural growth".

Regarding farmers, labourers, youth and women, the following is mentioned under institutional structure:

"Indian agriculture is characterized by pre-dominance of small and marginal farmers. Institutional reforms will be pursued as to canalize their energies for achieving greater productivity and production. The approach to rural development and land reforms will focus on the following areas:

- Consolidation of holdings on the pattern of the north-western states
- Redistribution of ceiling surplus lands and waste lands among the landless farmers and unemployed youth with initial start-up capital
- Tenancy reforms to recognize the rights of the tenants and sharecroppers
- Development of lease markets for increasing the size of the holdings, by making legal provisions for giving private lands on lease for cultivation and agribusiness
- Updating and improvement of land records, computerization and issue of pass-books to the farmers and
- Recognition of women's rights in land."

The policy has the form of an approach paper and just mentions each and every thinkable aspect related to agriculture. A number of committees have been set up to operationalize the various aspects.

* Prepared by Dr Prabha Mahale, Director, Yardi & Sorée India, Haryana, India.

However, it was learnt from the Ministry of Agriculture that deliberations are on going and no definite results have been reached as yet.

Furthermore, the Ministry of Agriculture has set up a special working committee for organic agriculture to advise the government and to promote organic agriculture. The report of this committee that was to be submitted by June 2001 was postponed to August 2001. However, according to our source at the Ministry, the report even if submitted, would remain as a government document and not be available.

(b) Rural infrastructure

Electrification of villages has been a priority for the last 25 years and most villages, which can be reached by road, are now connected. This, of course, does not mean uninterrupted supply. In most cases a 4-8 hours daily supply is common. In 1995/96 road length, both surfaced as well as un-surfaced, was reported to be 3,320,000 kilometres. However, in remote areas there are still villages unconnected by road. In 1998/99 there were 137,800 post offices in the rural areas, while the number of inhabited villages is 627,000 (Tata Services 2001).

Agricultural production market committees assist the farmers in marketing their produce. They exist in every *taluka* (cluster of villages). Agriculture extension facilities are well established. However, their effectiveness is mainly restricted to the larger farmers, irrigated lands and male farmers. An almost entirely male agricultural extension system that organizes training in residential training centres away from farms and home tends not to be effective in providing technical information to farm women. Proper storage facilities remain the most important bottleneck.

(c) Rural employment and labour situation

In 2001, the total population was estimated at well over 1 billion, of which the rural population constitutes around 70 per cent, or 700 million. The total rural working population is around 350 million: 123 million (35 per cent) are cultivators, 84 million (24 per cent) are agricultural labourers and the remaining 41 per cent are other workers (Ministry of Agriculture 2000). Other main areas of work are in the remaining part of the primary sector, such as forestry, fishing, plantations and allied activities and furthermore in household industries as weavers, potters, etc. (Tata Services 2001). It should, however, be realized that many workers migrate to towns and cities during the lean agricultural season and work as coolies, cycle rickshaws and in construction.

Male migration leads to increasing female responsibility for the economic maintenance of families. The female agricultural labourers are worse

off than women in cultivating households in terms of employment. While only 10 per cent of cultivating households wanted employment to add to family resources, more than 50 per cent among female agricultural workers were seeking work. Seasonal fluctuations in employment affect women much more than men. It is in the class of agricultural workers that four out of five women face insecure employment (Sen 1985).

(d) Women in agriculture and rural areas

In the rural areas, the work participation rate as a percentage to the total population in 1991 was 53 per cent male workers and 27 per cent female workers (Tata Services 2001). Women's contribution to farming is insufficiently recognized and agriculture policy is still dominated by the false view that 'farmers are men', women are only housewives. Their work in agriculture tends not to be recorded as 'work' or as 'production' because it falls outside the so-called 'production boundary'. However, time allocation studies (Bhati and Singh 1987; Raj 1988; Shiva 1991) reflect more closely the multiplicity of tasks undertaken, and the seasonal, even daily movement in and out of the conventional labour force which characterizes the livelihood strategy for most rural women.

Studies with gender perspective prove that women in India are major producers of food in terms of value, volume and hours worked. Whether it is subsistence and low input agriculture or high external input agriculture, women work longer and harder than men. Yet their control over resources is not necessarily assured. Even among women recorded as "cultivators", three out of four do not own or cultivate land independently. They assist in family production units. With increasing deforestation and declining common property resources, women devote longer hours on fuel and fodder collection. Land redistribution has historically ignored both the existence of female-headed households and the rights of married women to a joint share in land. Women's access to credit is severely restricted. They do not have the collateral (land title and cattle) required for agricultural loans. Not only do all occupations in which females are engaged carry a lower wage rate, but even in similar occupations, such as harvesting, reaping and weeding, the male wage is higher than the female rate for equal hours of work.

There is a close relationship between rural poverty and the high incidence of female agriculture labour. The majority of landless women labourers in agriculture have poor literacy, irregular employment and a heavy work burden. Thus a growing imbalance exists between women's access to land, labour, capital, services and facilities on the one hand and the demands of production on the other.

2. *Agro-ecological and biophysical characteristics*

(a) *Agro-ecological zones*

India is a land of many climates and varieties of soils, thus giving scope for a vast agricultural diversity. Although a large part is situated in the sub-tropics, many areas experience tropical characteristics. The diverse climatic and ecological zones of India provide a congenial setting for the evolution of a wide range of ecosystems. From the tropical Western Ghats to the temperate Himalayas, and from the fertile coastal regions to the cold deserts of Ladakh, India supports a strikingly rich floral and faunal diversity. Agricultural biodiversity consists not only of crops, such as wheat, rice, rajma and bananas, but also of immense variation within each of these crops.

The following agro-ecological zones are defined on the basis of climate, soils, crops and stock animals (Randhawa 1986):

- The temperate Himalayan zone, divided into:
 - (a) The Eastern Himalayan region, including upper Assam, Sikkim, Bhutan and Nepal. Heavy rainfall. Tea growing and cultivation of rice in certain areas. Forests.
 - (b) The Western Himalayan region, including Kumaon, Garhwal, Himachal Pradesh and Jammu and Kashmir. Comparably dryer. Winter rainfall in northern parts. Climate is of Mediterranean type. Fruit growing area: apples, pears, almonds, cherries, apricots and peaches. Furthermore potatoes, wheat, maize and rice. Goats and sheep.
- The dry northern wheat zone: Punjab, Haryana, western Utta Pradesh, western Madhya Pradesh and parts of Rajasthan. Annual rainfall between 200–760 mm. Alluvial soils. Wheat, barley, gram, maize and cotton. Cattle, buffaloes and camels.
- The eastern rice region: Assam, West Bengal, Bihar, Orissa, eastern Madhya Pradesh and Utta Pradesh and parts of Andhra Pradesh. Alluvial soil. Annual rainfall over 1,500 mm. Rice, jute, sugar cane and tea. Buffaloes and cows.
- The Malabar coconut zone: Kerala, Karnataka and adjoining areas. Laterite and black cotton soils. Annual rainfall over 2,280 mm. Coffee, rubber, coconut, pepper and cardamom, rice.

The southern millet zone: southern Utta Pradesh, central Madhya Pradesh, western Andhra Pradesh, western Tamil Nadu, eastern Maharashtra and parts of Karnataka. Partly black cotton and partly laterite soils. Rainfall 500–1,000 mm. Sorghum, millet, cotton and groundnut. Sheep.

(b) *Climatic factors*

The year is divided into four seasons: winter (December-February), summer or pre-monsoon period (March-May), monsoon (June-September) and post-monsoon (October-November). In most parts of the country, a large part of the rainfall occurs during the south-west monsoon (June-September). Cyclonic storms are not uncommon and occur along the Bay of Bengal (Orissa 1999 and 2001) and the Arabian Sea. Droughts and floods may occur simultaneously in one state, for example, Andhra Pradesh. India has had a “normal” monsoon for the last eight years and the 2001 monsoon again is expected to be normal. However, “normal” does not necessarily mean that the rainfall is equally divided. For example, in 1997 and 1998, years with excess rainfall of 2 per cent and 6 per cent respectively, 81 per cent of the districts experienced excess/normal rainfall. In 1999, with a 4 per cent rain shortfall, the percentage of districts with normal or excess rainfall was 67 per cent (Ministry of Agriculture 2000).

(c) *Situation of basic natural resources*

India is rich in water resources owing to a vast network of great rivers and vast alluvial basins to hold groundwater. However, conditions vary widely per region. The most important basins are: the Indus, Ganga and Brahmaputra basins and the west and east flowing rivers. The Indo-Gangetic alluvium is by far the largest and most important of the soil groups in India and covers about 777,000 square kilometers. (Randhawa 1986). The Gangetic plains have been known from time immemorial as the fertile lands where food was produced and cultures flourished. However, the situation at present is quite different. Traces of fertilisers and pesticides from fields find their way into rivers and most Indian rivers have become toxic drains.

Over-extraction of water for irrigation leaves several rivers dry for most of their course, denying the dilution of pollutants flowing into the river. Of the total geographical area of 329 million hectares, 175 million hectares, or 53 per cent, is termed a problem area because of one or more of the following characteristics: subject to wind and water erosion, water logging, alkali, acid, saline soil etc. (Centre for Science and Environment 1993). Floods and droughts are regular features in some states and affect cropped areas causing heavy losses of agriculture production.

(d) *Predominant farming and production systems*

Irrigated land constitutes nearly 39 per cent of the total area under principal crops in 1996/97 (Ministry of Agriculture 2000). Around 60 per cent is rain-fed. More importantly, the scope for increasing the irrigated area is extremely limited and it is estimated that these figures will not change significantly in the future.

In an agricultural economy, land is the main asset. Every state has set ceiling limits on land holdings, yet the skewed distribution of land ownership shows how around 9 per cent of rural households control almost 44 per cent of the total cultivated land.

The Indian livestock population is also steadily increasing. In 1992 the number of stock animals amounted to 471 million, or about one animal for two people. Cattle, buffaloes and goats constitute the majority (Ministry of Agriculture 2000).

The predominant farming and production systems include:

- Plantations: Restricted to tea, coffee, rubber, spices, bananas
- Farming by farmers with help of agricultural labourers
- Share-cropping: Land is leased to tenants by the owner for cultivation and agricultural produce is shared by both. Only in certain areas has this traditional system been in use for generations
- Contract farming: Predominantly in sugar cane, rice and cotton. It operates with credit and buy-back-guarantees to the farmer. It is assuming increasing importance especially in organic farming because of the requirement of a steady supply. Training and certification is arranged by the contractor. Mainly adopted by private companies
- Forest collection: Mainly by tribal people. Collection includes honey and herbs for medicinal purposes

(e) Environmental problems and trends

A World Bank study (Brandon and Homman 1997) estimated that the major environmental costs for India are 4.5 per cent of GDP. Water pollution, soil degradation and urban air pollution have the highest share, followed by rangeland degradation, deforestation and tourism. What has not been accounted for, however, is the loss of biodiversity, the loss of soil productivity, and health costs arising out of pollution caused by industrial wastes and use of pesticides.

In 1983, about 70 per cent of all pesticides used in India were banned or severely restricted in Western countries and identified by the World Health Organization (WHO) as hazardous. This figure came down to 54 per cent in 1996 and is expected to gradually decrease. However, it is a fact that T-BHC, T-Endosulphan, Dieldrin, Aldrin and even DDT are still widely used in agriculture (Agarwal 1999).

Numerous studies carried out by Indians in India and abroad indicate the high impact of pesticides on the immune system. The studies were held in rural and urban areas and include cotton field workers and factory workers exposed to pesticides and mothers. The world's highest pesticide residue level in body fat is evident in Delhi residents (Dudani 1999).

Most Indian rivers and freshwater streams are highly polluted. Sewage and municipal effluents account for 75 per cent of the pollution load in rivers, while the remaining 25 per cent is credited to industrial effluents and agricultural contaminants such as fertilisers and pesticides that run off from fields into rivers. The Central Pollution Control Board has compiled scientifically competent studies on almost all Indian rivers. River cleaning programmes, such as the Ganga Action Plan, Yamuna Action Plan and more recently, the National River Conservation Plan were envisaged. Despite heavy investments by the government, the situation has simply not improved owing to inept and inefficient government action.

3. Socio-economic background

The population below the poverty line in rural areas has steadily decreased from 37.3 per cent, or 244 million, in 1993/94 to a projected 18.6 per cent, or 138 million, in 2001/02. However, there is a huge difference in the respective states. The states with 40 per cent and above in rural areas are Bihar (58 per cent), Orissa (50 per cent), Assam, Manipur, Nagaland, Sikkim and Tripura (45 per cent), Uttar Pradesh (42 per cent) and West Bengal (41 per cent) (Tata Services 2001). In these eastern states, women and children bear a disproportionate burden of poverty. In regions of the highest agricultural growth (north-west), there is the least incidence of poverty, but discrimination against the female population persists. The southern states are rated somewhere in-between.

The figure of 138 million people below the poverty line for rural areas only (184 million in total) becomes more prominent if we compare it with the population of other countries around the world. It is more than the total population of Japan (127 million), 50 per cent of the total population of the United States of America and equal to the total population of France and Germany, or equal to the total population of the United Kingdom of Great Britain and Northern Ireland, Italy and the Netherlands (Tata Services 2001).

India has witnessed phenomenal agricultural growth that has wiped out earlier food grain deficits and has led to the accumulation of food stocks. Today India has about 60.4 million tons of food grains in its stock against the buffer norms of 15.8 million tons. Yet this has had no significant impact on reducing the incidence of absolute poverty in rural India because

rising output has been accompanied by rising prices owing to price support policies and extensive unemployment, which has reduced the purchasing power of the poor.

Child labour is common in all farming communities and in household industries. However, it has decreased in factories. Statistics are difficult to obtain.

B. Organic farming in the national context

1. Institutional framework

(a) Historical development of organic agriculture and its key actors

(i) Traditional practices

Traditional agriculture in India dates back to the Neolithic Age of 7,500-6,500 BC. The farmers of Ancient India are known to have evolved nature friendly farming systems and practices such as mixed farming, mixed cropping and crop rotation. The balance of cosmic forces, health and fertility were the main characteristics. Hindu philosophy regards the earth as a living being. She is considered the source of all plants, especially crops, and when cultivated or explored, provides all necessities of life not only for human beings, but also for all other forms of life, right from the smallest living cell to the largest animals. Farmers' knowledge of plant life was highly advanced.

The first "scientific" approach to organic farming can be quoted back to the Vedas of the "Later Vedic Period", 1,000 BC to 600 BC. (Randhawa 1986 and Pereira 1993). The essence is to live in partnership with, rather than exploit, nature. The "Vrkshayurveda" (Science of plants), the "Krshisastra" (Science of agriculture) and the "Mrgayurveda" (Animal Science) are the main works, (Mahale and Sorée 1999). Here agriculture was not developed just as a production system, but as a culture. Great attention was paid to agricultural technologies and agronomic practices and sophistication was achieved through genetic diversity, crop rotation and mixed cropping systems. Animal husbandry was an integral part of the farming practice.

Classical Indian plant science, Vrikshayurveda in the form of Sanskrit hymns, is a corpus of rich textual knowledge. It encompasses areas such as the collection, selection and storage of seeds, germination, sowing, various techniques of plant propagation, grafting, nursing and irrigation, testing and classification of soil and selection of soil suitable to various plants/types of plants, manuring, pest and disease management/ preventive and promotive care to build up disease resistance and to cultivate healthy

plants. Favourable and unfavourable meteorological conditions were taken care of. Plants were used as indicators of weather, water, minerals etc. This knowledge system is even today present with millions of Indian farmers as its practitioners. Furthermore, it is propagated in many forms, such as folk songs, rituals, proverbs and riddles. Organic agriculture practices make use of these indigenous knowledge systems and try to integrate them in the modern organic agricultural practices, thus making changes easier and more effective.

Historical evidence indicates high yields in India comparable to today's highest levels which was a result of the careful husbanding of soil and well adapted seeds and crop varieties. In the eighteenth century, Thomas Barnard, a British engineer, who conducted a survey of 800 villages near Madras, reported that if the average yield of wetland rice was 3.6 tons per hectare, in 130 villages it was 8.2 tons per hectare while in many villages the yields surpassed 10 tons a hectare. The present day average is 3.1 tons with extensive use of chemical fertilizers and pesticides. Against insects and disease, the main weapon of these farmers has been genetic diversity. India once had 30,000 varieties of rice. These varieties were not used at random, but were delicately fitted into their appropriate ecological niches.

In the vision of this tradition, there is no distinction between the sacred and the profane: everything is sacred. Farmers paid a great deal of attention to agriculture, livestock, rain, harvest and the art of composting. The wisdom gained and practices adopted by these farmers were passed down through generations and became ingrained in the cultural outlook of the society. Even today the belief system, the myths, rituals and religious festivals of the Indians encompass these principles of soil, plant and animal health. Villagers worship Earth in the form of cow dung, symbolizing the fertility of moist soil and mysterious powers of growth. The practices of seed selection, soil fertility and biodiversity are interwoven in the belief system, the rituals and dietary system of the communities.

In the past five decades, the traditional knowledge and organic principles were eroded because of the influx of modern conventional agriculture. However, this knowledge has been sustained by many Indian communities throughout the millennia and has gained renewed importance recently for present agriculture, especially organic agriculture. Organic farming practices still are a part of the living tradition of most of the Indian communities in the Tribal and dry land areas. With organic production and trade fast increasing globally, there is a growing interest in organic agriculture in the country. Traditional practices in India see the earth as a living being and there is still reluctance to exploit the earth for short gains. Traditional agricultural practices

obviously can be improved and organic agriculture is the closest to the farmer's traditional customs, practices and beliefs. Organic agriculture can make the existing practices more conscious. It is, however, also true that conventional extension services have not reached these dry land areas. Chemical fertilizers and pesticides are not easily available and even if they are, small and marginal farmers would hardly be in a position to buy them.

(ii) Modern developments

N. M. Kansara (1995) emphasizes the importance of the Vedas for present day agriculture and Mohan Deshpande (1996), among others, promotes these practices among the farmers of Maharashtra. Further recent case studies are given for Tamil Nadu and Andhra Pradesh. Winin Pereira (1990,1993) criticizes the Western approach to agriculture and stresses the importance of the traditional sustainable agricultural systems in India. Sir Albert Howard published his *Agricultural Testament* on 1 January 1940. He too criticizes the Western way of dealing with agriculture: "Nothing effective has been done to replace the loss of fertility involved in this vast increase in crop and animal production. The consequences have been disastrous. Agriculture has become unbalanced. The land is in revolt: diseases of all kind are on the increase".

His main effort was to restore soil fertility and he developed the so-called Indore method of composting, named after the city of Indore in India, where he spent nine years on research. The Indore method is still in use in many parts of India. Howard not only criticizes the West for exploiting nature, but also for the Bio-Dynamic Movement in his preface: "But I remain unconvinced that the disciples of Rudolph Steiner can offer any real explanation of natural laws or have yet provided any practical examples which demonstrate the value of their theories". He proved to be wrong, as we will see later. However at that time, the Bio-Dynamic movement was in its nascent period and had not yet entered India. Shortly after his death, the promotion of his work was to be carried out by the Albert Howard Foundation of Organic Husbandry in Sussex, England.

In 1983, the first training centre in organic agriculture was set up in Pondicherry under a project called agriculture, man and ecology (AME), implemented by Educational Training Consultants, Leusden, the Netherlands and financed by the Government of the Netherlands. In October 1984, the Association for the Propagation of Indigenous Genetic Resources organized the first conference on organic farming in Wardha. In 1992, the Rajasthan College of Agriculture organized a national seminar on natural farming. In the same year, the first known study on ecological agriculture in South India was published (van der Werf and de Jager 1992). Since then,

numerous farmers turned organic and important networks, such as ARISE (Agricultural Renewal in India for a Sustainable Environment), were established. In 1993, a directory of individuals and organizations involved in sustainable agriculture in India, called *Green Farming* was produced (Centre for Science and Environment 1993). In 1994, a register of 365 Indian organizations was published (ICEIA/ETC India 1994). Not all organizations were involved in organic agriculture, but all were at least related.

In a few agricultural universities (Hisar, Bangalore, Coimbatore and Madurai), organic agriculture is promoted by individual faculty members. Many conferences followed. Biodynamic agriculture got a boost, mainly in South India and Darjeeling (tea estates). The export of organic coffee, tea, spices and later Basmati rice increased. The central government set up a special cell for the export of certified organic products under APEEDA of the Ministry of Commerce and Industries. In March 2000, the same Ministry launched the national programme of organic production. In October 2000, the Ministry of Agriculture constituted the task force on organic agriculture.

In June 2001, under the national programme of organic production, a set of four volumes, concerning accreditation regulations, accreditation criteria, accreditation procedure and application forms were published. On 12 June 2001, by Public Notice No.19 (RE-2001/1997-2002) the government introduced regulations for the export of organic produce. It was stated that an agricultural product would be allowed to be exported as an "organic" product only if it was produced, processed or packed under a valid organic certificate issued by a certifying agency duly accredited by one of the following accreditation agencies: APEEDA, the Coffee Board, the Tea Board and the Spices Board. On 16 June 2001, an advertisement appeared in the Economic Times of India calling inspection and certification bodies for accreditation by the government.

(b) Regulatory framework (standards, inspection, certification)

Previously exports were certified by foreign certification bodies such as the Institut für Market Ökologie (IMO) (Switzerland), SKAL (the Netherlands), Ecocert (France) and Naturland (Germany). The Department of Commerce under the Ministry of Commerce and Industry is the nodal agency that has laid down the national programme for organic production and declared the standards for organic products. It will accord recognition to the standards of other nations and seek recognition from other national bodies for Indian standards. Standards are modelled after the IFOAM (International Federation of Organic Agriculture Movement) Basic Standards. Their scope includes production,

processing, handling, labeling and animal husbandry. “India Organic” was established as the logo.

As the institutional arrangements for implementing the programme, a Steering Committee has been set up as an apex advisory body. The Steering Committee consists of representatives of the Ministries of Agriculture, Food Processing Industries, Forests and Environment, Science and Technology, Rural Development and Commerce, and Trade and Exports. The Committee’s functions are:

- To lay down the national accreditation policy
- To set out the general philosophy and principles of organic production
- To prescribe the eligibility criteria for inspection agencies
- To authorize accreditation agencies toward the national organic logo to those found eligible to carry the official logo

The accreditation criteria are the same as those of IFOAM. The accreditation agencies comprise the Tea Board, Coffee Board, Spices Board and APEDA. Each of the three commodity boards prescribe the practices for the production of their respective crops, while APEDA has prepared them for rice, sugar cane and passion fruit. The accreditation agencies are assisted by a common evaluation agency in screening inspection and certification bodies and checking their compliance to norms of organic production.

From 1 October 2001, the export of organic products has been brought under government regulation while the import and domestic market has not. Thus from October 2001 agricultural products can be exported as organic only if they are certified by an inspection and certification body that is accredited by one of the above agencies. This has necessitated the foreign certification bodies to establish local offices.

(c) Challenges of domestic certification

The regulation aimed to help domestic organic producers to overcome international trade barriers and reach a “level playing field”. Yet Indian regulation does not simplify the requirements for Indian exporters, nor does it reduce the costs. Agricultural products from India can be marketed as organic within the European Union (EU) under two exporting options for third countries: ‘Equivalence Granted’ and ‘Imports Granted’. Under the first option organic products can be exported if their production and inspection systems are considered as equivalent to those of the EU. That means India has to be recognized as having equivalent standards to those in the EU as defined in EU Regulation 2092/91. Recently India has requested its inclusion to the third

countries approved list and will have to wait for the EU resolution on its application.

Until the approval is granted and India is added to a granted list, despite following national norms for organic agriculture, producers will have to comply with EU production norms also. Secondly, since Indian local certifiers are not recognized by the EU, certification has to be issued by an EU approved certification body (by law already approved by the control authority in the EU importing country). Further, exporters in third countries are not allowed to apply directly for import authorization. So Indian exporters have to depend on importers in individual EU member states to obtain special import permits from their respective EU control authorities. Moreover, import permits are issued for a defined period either for specific products or product groups from a given EU country. This operates as technical barriers to trade and increases transaction costs, continuing to hamper international trade.

The Japan national standards for organic products became official on 1 April, 2000. The full implementation of United States national standards is expected soon. Thus a similar compliance problem will be faced in export to the United States and Japan. Experience has shown that it can take several years for the negotiations to be worked out. In addition, one has to go through this process with every country to which export is intended.

(d) Key actors

(i) Central government

A number of key central government actors have already been noted above. In addition, the Ministry of Agriculture should be mentioned. It took a long time for this important Ministry to take an active part in the promotion of organic agriculture. In October 2000, it was decided to set up a task force on organic agriculture, separate from the Steering Committee functioning under the Ministry of Commerce. The main objectives of this task force are:

- To advise the Ministry of Agriculture on all aspects of organic agriculture
- To promote organic agriculture in general

The task force was to submit its report in June 2001, but the date was postponed to August 2001. However, at the time of finalizing this study, the report is still awaited. It is hoped that the influence of the task force on the implementation of the National Agriculture Policy will be substantial.

(ii) State governments

India presently consists of 26 states. It is impossible in the limited scope of this study to provide details on what exactly is happening at all state government levels. Nonetheless, the following list gives an insight into what is happening:

- In Assam, Manipur, Meghalya, Sikkim and Orissa: The state governments have set up organic model farms, with assistance from APEDA. Moreover, in Orissa, APEDA has given specific guidance to the Association Kassam at Phulbani, working predominantly with the Tribal Peoples and where more than 4,000 farmers' families with a total acreage of 26,000 have been certified organic by a foreign certifier, mainly for export purposes
- In Gujarat, West Bengal, Modhya Pradesh, Karnataka and Tamil Nadu: Organic model farms will be promoted in the next two to three years
- Uttaranchal: A new state carved out from Uttar Pradesh, it comprises the Western Himalayas. The state is promoting composting as a first step towards organic agriculture as their hill lands are extremely vulnerable. However, nothing official is known as yet
- Haryana: In June 2001, the Haryana government held a conference on biotechnology in the capital Chandigarh, in which organic agriculture featured prominently. The aim was to provide inputs for the formulation of a biotechnology policy. It is expected that organic agriculture will find a place in this policy
- Delhi: The Agriculture Department of Delhi is to start an organic farming project on 10,000 hectares of land to encourage farmers to adopt organic farming. The government is to extend subsidies, training, seeds and other forms of support to grow vegetables, flowers, wheat, rice and spices. Initially this is to promote the domestic market, but there is potential for the international market in the long term

(iii) Non-governmental organizations

India is most likely the country with the densest population of NGOs in the world. Most of the NGOs work in the rural areas with the aim of helping poor people. Many have started the promotion of sustainable agriculture or organic agriculture as a basis. Funds are coming from the Indian governmental organization, CAPART, as well as from foreign donors, who want to circumvent direct government funding. All NGOs receiving funds need to get permission from the Ministry of Home Affairs, under the so-called FCRA permission, which is only

considered after three years of existence. In 1993 the Centre for Science and Environment brought out the first directory of individuals and organizations involved in sustainable agriculture (CSE 1993). A study in 1994 (ILEIA/ETC 1994) described 365 such organizations. The Organic Farming Sourcebook (Alvares 1996) also provides a list of individuals and organizations involved in organic agriculture.

(iv) Academia

The agricultural universities of Guwahati (Assam), Bangalore (Karnataka), Coimbatore (Tamil Nadu) and Hisar (Haryana), are known to have at least an informal section on natural or organic farming. These are represented by open-minded scientists willing to challenge modern agricultural thinking.

(v) Private sector

The private sector is increasingly entering the organic field. There are private companies such as Indian Organic Foods, Grewal's Organic Agriculture Farms and L. T. Overseas (Basmati rice), Burma Trading Company, Tata tea, (tea), Maikaal (cotton, wheat, soybeans etc.), and Kurunji (dry fruits). Almost all of them exclusively deal with exports. They are also traders and have organized "contract farmers". The company pays the certification costs. The "Certificate" for the certified organic farms and products is usually in the company's name and they provide the farmers a buy-back guarantee.

(vi) Farmers

Farmers, of course, are the basis from which the organic production comes. Many organic farmers with irrigated lands we have talked to in the last 10-15 years started organic farming because of an uneasiness with the existing agricultural system, which is predominantly based on chemicals. A number of farmers experienced chemical agriculture as a health hazard to themselves.

However, personal health is not the only reason to convert to organic. Farmers in Punjab, Haryana and Eastern Uttar Pradesh are only able to keep their yields up by a drastic increase in chemical inputs. Soil fertility has gone down drastically and more and more farmers are worried that this will not be sustainable, even in the short run. Increasing global markets for organic products and premium prices in the export market are other considerations in the conversion to organic farming. The concerns of food security and increased income for the rural poor have driven the NGOs to promote organic practices.

Other farmers, predominantly in the rain-fed farming areas and tribal belts, have always farmed naturally or organically. However, they did not know that their practices were those that are called organic.

NGOs working in these areas made them aware and helped them to increase productivity without the use of chemicals. Programmes like COMPAS (Haverkort and Hiemstra 1999) also assisted in raising awareness in why they do what they do.

There are a number of linkages between farmers. ARISE was set up in 1995 as a network of farmers and scientists involved in organic and related agriculture. AME (Agriculture, Man and Ecology), Bangalore, though not fully implementing organic agriculture, works in the states of Karnataka, Andhra Pradesh and Tamil Nadu. Courses and seminars are regularly organized. Other smaller networks exist in the various states, such as the LEISA network in Tamil Nadu. In 2000, the Biodynamic Association of India was established.

(vii) Fair trade organizations

To the author's knowledge, no fair trade organizations exist in India. Recently, a delegation of the Dutch institution, Max Havelaar, visited India in search of small farmers growing Basmati rice.

(e) International linkages

As for all exporting countries, the same regulations, such as EU 2092/91, apply to India as well. There are or have been a number of international linkages. The Asian Development Bank and the International Fund for Agricultural Development supported the Biovillage programme initiated by the M.S. Swaminathan Research Foundation. Later this programme was expanded with support from the United Nations Development Programme (UNDP) as well as the Hunger Projects of India, Japan and Sweden. The German Technical Cooperation (GTZ) funded an organic project in Maharashtra, primarily with the cotton growers. The Dutch co-financing agency, Caritas, funded a project on sustainable agriculture, for their member organizations from 1994-1997. The Swedish organization, "Future Earth", organizes workshops on organic agriculture for their member NGOs and promotes networking.

The UNCTAD/WTO International Trade Centre is closely examining the feasibility of entering into organic farming by collaborating with farmers for cultivating crops such as wheat, rice and soyabean. Through organic farming the International Trade Centre aims to tap niche consumption markets emerging internationally for agricultural produce. It is looking at providing inputs and specialized technology to farmers, while setting up a cultivation system for them. The plan envisages guaranteed purchase of organically cultivated products from farmers with whom the International Trade Centre networks. The Food and Agricultural Organization of the United Nations (FAO) through its NGO programme has promoted networking among farmers' groups involved

in organic farming in Asian countries. There are at present 32 IFOAM members and 37 member organizations in India. The Asia regional conference was held in Bangalore in 1997.

(f) Official research and development, education and extension

The Indian Council of Agricultural Research coordinates agricultural research in all 26 agricultural universities. Moreover, it is responsible for the curricula and agricultural extension (ICAR 1997). Much scientific research on specific elements, plant species and agricultural inputs has been and is being carried out. However, at the time of writing this report, no official research in organic agriculture as a farming system has been completed, while the agricultural extension services follow the old pattern of agricultural extension and no official extension service on organic agriculture exists.

(g) Official support and pricing policies

At present, there is no official support for the organic sector, except by APEDA, the export development agency. APEDA recently distributed a questionnaire with the title "Questionnaire for collection of information for formulating assistance schemes for organic farming" (APEDA 2001). The main questions relate to possible yield loss in conversion, costs of certification, prices in export markets and assistance available from state governments. However, since APEDA did not receive many responses, a meeting was organized early August, with representatives of all stakeholders, in which the main questions were discussed. The results are awaited. The Director of the Spices Board informed the author that organic farmers growing organic spices would receive support towards the costs of certification. The pricing policy for organic products is non-existent.

(h) Official documents and statements

As mentioned above, the report of the task force on organic agriculture was expected by the end of August, but has not yet been finalized. The following official documents and statements regarding organic agriculture were released:

- National Agriculture Policy, Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India, July 2000. However, this document only makes a minor reference to organic agriculture
- National programme for organic production, containing the standards for organic products, Department of Commerce, Ministry of Commerce and Industry, Government of India, March 2000

Table 1. Organic crops on India

Organic crop	Area	Producers
Tea (Orthodox, CTC, Green)	Darjeeling, Assam, Dooar, Nilgiris	Plantations
Coffee (Arabica, Robusta)	Western Ghats, Nilgiris	Plantations and individual small farmers
Spices:		
Pepper and cardamom	Western Ghats, Nilgiris	Plantations and individual small farmers
Cloves, nutmeg, mace,	Kerala, Tamil Nadu	Small farmers + farmers' organizations
Garlic, ginger, turmeric	Throughout India	Small farmers + farmers' organizations
Fenugreek, fennel, cumin, coriander	Throughout India	Small farmers + farmers' organizations
Sesame	Gujarat	Contract farmers
Coconuts	Along all coasts	Small farmers
Fruits:		
Apples, pears, peaches,	Himachal Pradesh and Kumaon	Small and medium farmers
Mango, bananas, pineapple, papaya	Maharashtra, Madhya Pradesh	Small and medium farmers
Apricots	Himachal Pradesh and Kumaon	Small and medium farmers
Dry fruits:		
Chestnuts	Jammu and Kashmir	Small farmers, one processor
Pear, mango	Kodaikanal	One processor
Cashew nuts	Pondicherry, Tamil Nadu	Small farmers, few processors
Vegetables:		
Potatoes	Kumaon hills	Small farmers
Cabbage	Kumaon hills	Small farmers
Wheat, maize and sorghum	Haryana, Punjab, Madhya Pradesh, Uttar Pradesh, Maharashtra	Farmers and farmers' groups
Rice:		
Basmati	Haryana	Medium and big farmers
Other varieties	Throughout	Small and medium farmers
Pulses	Throughout	Small farmers
Oilseeds	Madhya Pradesh	Medium and big farmers
Coarse grains	North-east, Gujarat, Orissa	Small farmers
Honey	Forest areas	Individual collectors
Cotton	Gujarat, Madhya Pradesh	Farmers' organizations

- Proceedings of the National Awareness Programme on Organic Farming, Bhubaneshwar, 27 February 2001
- National programme for organic production, accreditation regulations, procedures for accreditation, accreditation criteria for inspection and certification agencies, and formats and application forms, Government of India, May 2001
- Public Notice No. 19 (RE-2001) 1997-2002, New Delhi, 11 June 2001, Government of India, Ministry of Commerce and Industry, Department of Commerce
- APEDA: Questionnaire for the collection of information for formulating assistance schemes for organic farming. Undated. Presumably April 2001

2. Organic production

(a) Predominant cultivation systems under organic production

The predominant cultivation systems under organic production are no different from the conventional systems. In addition, it is interesting to note the type of crops that are under organic cultivation. This does not necessarily mean that they are sold as "organic". However, when products are not certified, the export market cannot be accessed. As the local market is virtually non-existent, these products are sold under the conventional marketing system. Often, however, they fetch a higher price because of their superior quality. Organic animal husbandry, poultry and fisheries are not existent. There is potential, especially in the Himalayan region.

(b) Quantitative information on crops and areas under organic cultivation

Information is extremely limited. As the production or exports of organic products are not listed separately in the government's statistics, official figures are not available. The only semi-official reference that can be made here is the information given by the then Chairman of APEDA, during the national awareness programme on organic farming, 27 February 2001. He stated that on the basis of data collected from certified exporters, during the fiscal year 2000/2001, a total of 600 million tons had been exported, valued at 30 million rupees (approximately US\$ 650,000). This figure is on the very low side, as it only includes rice, pulses, sugar cane products, oilseeds and fruit pulps. It does not include spices, tea, coffee and cotton. A more realistic response was received from IMO-Control Bangalore. IMO calculates the total area for certified organic tea at 9,640 acres, yielding 3,880 tons. However, the Tea Board mentions an organic tea production of only 2,000 tons for 1999. Certified coffee, spices, cotton, rice and fruits cover 14,700 acres with a yield of 4,680 tons. Moreover, it is known that Safal has a fruit pulp producing factory with an annual capacity of 15,000 million tons.

The author received no response from the Coffee Board. Among the few certifiers with a presence in India, only IMO-Control, Switzerland, responded.

Assuming that IMO certifies around 50 per cent of the organic production in India, the total figure of certified production in 2001 was around 20,000 hectares, and the total yield around 17,000 tons. Taking the same average financial figure by APEDA at 50,000 rupees per ton, the total value of certified organic produce is estimated at Rs. 50,000 x 17,000 tons = Rs. 850 million (approximately US\$ 18.5

Table 2. Areas of high conversion potential

Area	Crops	Rationale
Himalayan region	Tea, fruits, vegetables, nuts, forest produce	Delicate soils; organic agriculture has made inroads
Western Ghats and Nilgiris	Coarse grains, fruits, vegetables, forest products	Delicate soils, dry land farming and forest collection
Tribal areas in low land: Orissa, Modhya Pradesh	Cereals, pulses, millets	Traditional agriculture, dry land farming
Other dry land areas.	Cereals, pulses, millets	Potential productivity not yet reached. Not touched by official research and extension services
Green Revolution areas: Punjab, Haryana, Western Uttar Pradesh and Tamil Nadu	Rice, wheat, pulses, oilseeds, cotton, cattle	Overexploitation visible, increased chemical inputs and costs of production

million). Yardi & Sorée (1997) producers' survey calculated the area under certified production of at least 18,800 hectares, which is very close to the IMO-Control figures.

In the absence of sufficient scientific data, except what is mentioned above, no firm inference can be made on the productivity, crop losses and costs. However, it is generally accepted that in rain-fed agriculture, organic agriculture practices enhance productivity from the beginning, whereas in irrigated areas, farmers report a yield drop of 20 to 40 per cent.

(c) Quantitative information on organic cultivation potential

APEDA (2001) estimates that the area of non-certified organic crops, other than tea, coffee, spices and cotton is 3,020 hectares, with an estimated production of 8,704 million tons and a value of 161,570,000 rupees (US\$ 3.5 million).

The Yardi & Sorée survey arrives at an estimate of 600 hectares. This seems to be on the very low side; however, this was not a national survey. If we take the APEDA estimates and assume that it is 50 per cent of all Indian "in conversion" crops, then it comes to an area of around 6,050 hectares, or around one third of the certified organic area. Unfortunately this could not be further verified, as even IMO-Control could not provide an estimate for "not-certified" production.

The immediate potential areas that could be brought under certified organic are large areas of virgin land available in tribal and forest regions, the hilly terrain of the country and the dry land areas where by and large traditional farming practices are followed. The areas, which have a high potential for immediate conversion into organic agriculture, are shown in Table 2.

(d) Organizational characteristics of farmers engaged in organic production

Table 3 shows the organizational characteristics of farmers engaged in organic production.

(e) Competencies available for organic production

The following competencies for organic production are available in India:

- Organic/biodynamic inputs: Ahmedabad, Bangalore, Delhi, Kolkata, Mumbai
- Consultancies: NGOs and consultancy firms
- Training: Bio-Dynamic Society, Bangalore; ENCON, Aurangabad: Yardi & Sorée, New Delhi.
- Inspection and certification: Foreign inspection companies IMO, SKAL and SGS have offices in India. NATURLAND and Ecocert are planning to open offices. KRAV is operating in India. The entry of new Indian certifiers is likely in the near future.

Organic seeds are not available in India.

(f) Conversion issues

Yields in irrigated farms may go down in the conversion period because yields are boosted by artificial fertilizers and on conversion soil fertility takes some years to increase. After that, yields are equal or even higher than during the conventional period. In rain-fed farming the situation is different. Yields here are significantly lower and thus the difference in yields between the conventional and conversion period is less.

One of the basic constraints is the lack of governmental subsidies or support to make conversion to organic status easier or cheaper, as in the European Union and the United States. The conversion period

Table 3. Organizational characteristics of organic production

Organizational level	Farmers/workers	Examples
Plantation-companies	Plantation workers	Tea companies
Corporate farming	Agricultural workers and contract farmers	LT Oversees, Indian Organic Food
Marketing organizations	Contract farmers	KASAM, Orissa, Amar Singh, Jammu, Yardi & Sorée, Haryana
Interest groups	Individual farmers	ARISE
Farmers' organizations	Individual farmers	Maikaal/Bio-re, Peeramid Society, KeyStone
Individual farmers	Individual farmers	Small/medium and large farmers

can be very costly owing to the initial loss of yields and the high costs of inspection and ultimately certification, which have to be paid during the conversion period as well. Moreover, the products under conversion cannot be sold in the export market at a premium and normally are restricted to the conventional market.

The length of the conversion period depends largely on the past land use and the ecological situation. The Indian Standards prescribe that plant products produced annually can be certified organic when the National Standards stipulations have been met for a minimum of twelve months before the start of the production cycle, while perennial plants (excluding pastures and meadows) can be certified organic at the first harvest after at least 36 months of management according to the national standards stipulations (2.2.1, National Programme of Organic Production). The accredited certifier can extend the conversion period depending on factors like past land use and environmental conditions (2.2.2, National Programme of Organic Production).

Under “crop production”, it is stipulated that products under conversion may be sold as “Produce of organic agriculture in process of conversion”, or a similar description, when the National Standards stipulations have been met for at least twelve months. Under the chapter “labelling”, it is recommended: “The use of in-conversion labels may be confusing to the consumer and is not recommended”. However, further on, it is stipulated that “The label for conversion products shall be clearly distinguishable from the label of organic products” (5.1.5, National Programme of Organic Production).

(g) Limitations, challenges and recommendations

(i) Limitations

The government has recently completed its part in relation to the National Standards and Accreditation Programme. A limitation is the fact that organic agriculture has been neglected in agricultural policy. There is, therefore, no government assistance for the promotion of organic agriculture, as it exists for conventional agriculture in the form of subsidies, agricultural extension services and official research. There is room for improvement and this will be a challenge in the coming four years.

Limitations at present are:

- Lack of government support, many government departments lack information about organic farming
- Insufficient training and extension for farmers
- Lack of market information and market access

constraints, difficulties with export licences and organic certification requirements

- Lack of multidisciplinary research
- Supply difficulties, lack of consistent quality and regular supply
- Lack of processing facilities
- Lack of organic input such as organic seeds, bio-fertilizers, bio-pesticides

(ii) Challenges

The most important challenges relate to:

- Government policy initiatives and assistance to conversion processes
- Development of a local Indian market to supplement the growing export market
- Organic agricultural faculties in a number of prominent agricultural universities
- Extension services and training for the farmers
- Scientific validation of traditional agricultural practices that have increased land productivity and used resources sustainably, scientific studies on organic farms that report higher yield than conventional farms (Down To Earth 2001)
- Production and supply of organic seeds, organic manure, organic bio-fertilizers and bio-pesticides

3. Post-harvest handling and markets

(a) Market demand and potential for primary and processed organic products

India mainly produces primary organic products. Processed products include cotton ginning, fruit drying, juice and pulp processing of fruits, sorting and drying of walnuts and wheat flour milling. Tea estates usually have their tea factories on the estates. Coffee processing is restricted to drying (cherry) and de-pulping and drying (parchment) on the premises. Curing and roasting is done by specialised enterprises. All other products, such as honey, jams and chutneys that need some further treatment are processed in home-industries.

Indian certified organic products are predominantly exported, mainly to Europe. The rapid growth in the European market (increasing 15 per cent annually) ensures an equal growth from the main producing countries, such as India. There is some export to Japan, but this market has not been explored sufficiently as yet. Moreover, export is inhibited by the fact that all products have to be re-certified by a

Japanese certifier. Other Asian countries have an extremely limited domestic market, with the possible exception of Singapore, which is picking up.

A domestic market is virtually non-existent. Most initiatives to tap that market failed despite an optimism that was triggered by the fact that imported conventional food products of high quality have entered the market. Thus, the immediate potential for an increase lies in the European market. The United States, as the second largest organic market in the world valued at US\$ 4.2 billion (ITC 1999) is another possibility.

(b) Organization of post-harvest handling

As stated earlier, post-harvest handling of organic products is still rather limited. It mainly concerns ginning (cotton), drying (tea, coffee, fruits), pulping and juice making (fruits). The organization of this post-harvest handling is either in the hands of the producers, such as tea and to some extent coffee and sometimes fruit drying (Kurunji), or is done by a separate organization, which is either related or not (cotton ginning, fruit processing). A serious limitation is the lack of proper storage. The Ministry of Agriculture has made proper storage facilities a core item in their policies.

(c) Marketing: channels and organization

As has been mentioned earlier, the major marketing channel is export. Domestic marketing is still in its infancy. However, five-star hotels and airline caterers have shown a serious interest in fresh fruits and vegetables. A regular supply, however, has proved extremely difficult so far. There are farmers groups and NGOs, such as Peermade Society, KeyStone and Navadanya, who have organized marketing for the rural/tribal farmers with whom they work. Very few alternative marketing channels have been tried. The Indian Institute for Rural Development organizes weekly markets and direct producer consumer marketing. Retailing efforts are thwarted by insufficient product range, irregular quality supply of organic products and inconveniently located outlets.

The main actors in marketing are: APEDA, the Tea, Coffee, and Spices Boards, traders and the Certification bodies operating in India. Some state governments have set up independent marketing associations, such as Kasam in Orissa. Some foreign buyers have placed a representative in India, for sourcing and control, for example, Tradin, the Netherlands. Several smaller traders have participated in the largest international trade fair at BIOFACH in Nuremberg, Germany, under the wings of APEDA and the Spices Board. However, they were absent at the 2001 Fair. This may change, as the Ministry of Commerce has taken an active promotional role in the national programme.

Infrastructure in general is not a severe limitation. Most areas are well connected by road, rail and air. Even products from more difficult areas such as the north-eastern states can be transported to fairly nearby airports and harbours. However, products are to be sourced from multiple locations and distances to be covered are usually huge. Moreover, transportation other than by own means is not necessarily reliable. Storage problems, such as the lack of segregated storage facilities and cold storage, shelf-life and eco-friendly storage methods, hamper marketing.

(d) Labelling systems

The recently launched national programme is very liberal as far as labelling is concerned. It recommends that: "When the full standards requirements are fulfilled, products shall be sold as 'produce of organic agriculture' or a similar description". Furthermore, they do not recommend use of in-conversion labels as it may confuse the customer. However, if they are used, they should be clearly distinguishable from the label for organic products.

Mixed products (not all ingredients, including additives, are of organic origin) may be labelled in the following way (raw material weight):

- Where a minimum of 95 per cent of the ingredients are of certified origin, products may be labelled "certified organic" or a similar description and should carry the logo of the accredited certification programmed
- Where less than 95 per cent, but not less than 70 per cent of the ingredients are of certified organic origin, products may not be called "organic, but may be used in statements like "made with organic ingredients"
- Where less than 70 per cent of the ingredients are of certified origin, the indication that an ingredient is organic may appear in the ingredients list. Such a product may not be called organic

Organic products should not be labelled as GE (genetically engineered) or GM (genetically modified) free, in order to avoid potentially misleading claims about the end product (Government of India 2000).

The logo "India Organic" will be used for certified organic products only if certified by a government approved accreditation agency.

(e) Marketing and information services

The marketing and information services available in the country all relate to conventional products. The Agribusiness Information Centre, New Delhi, compiles monthly worldwide reports on spices, rice, fruits and vegetables. *The Economic Times* gives

the wholesale prices for many food commodities in major markets throughout India, as well as the transportation costs from major producing centres to the mega-cities, on a daily basis. Newspapers in Hindi and major local languages also provide market information. Some international market information can be obtained, of course, via the Internet. The Agribusiness Information Centre also produces regular overseas reports on spices, rice and other items. The inclusion of organic product information would increase awareness among conventional farmers and traders as well.

(f) Guarantee system requirements for domestic, regional and international markets

The new national accreditation and certification system is in place. External certification bodies operating in India will be registered and continue operating. At present this only relates to exports. However, the government-to-government recognition of the Indian Organic Guarantee system is not yet established with the EU, the United States and Japan. Therefore, in addition to certification at home, the traders/producers will have to rely on individual import permits and certification by foreign certifiers.

Imports and the domestic market are not covered by the system. Regionally there are no separate provisions in place.

(g) Consumer characteristics and promotion of organic products

In 1998, market research was conducted in Delhi (Yardi & Sorée 1997) to determine what people knew about organic products, whether they would be prepared to buy them and at what premium. The results were encouraging:

- 36 per cent of the older housewives and 27 per cent of the younger ones knew that organic farms existed
- 46 per cent were prepared to try out organic products: 50 per cent of the younger and 43 per cent of the older ones
- A premium of 25-30 per cent was acceptable. When the premium was reduced from 50 per cent to 25-30 per cent, the percentage of "would buy definitely" increases from 22-28 per cent among the younger housewives, while negative responses reduce from 27 to 14 per cent
- Only 30 per cent indicated they would buy over the phone, 59 per cent were unable to decide as they wanted to see the product first
- 75 per cent were open to receiving regular information about health and foods

Despite these favourable inclinations, consumer preparedness in reality worked out to be much less positive. A consumer cooperative in Bangalore (Coco) for the marketing of organic fresh fruits and vegetables had to close shop. The losses were too high, despite a simple infrastructure and lots of volunteer work. A well-known health food shop in Mumbai shifting to organic foods experienced virtually the same fate. A well-planned marketing venture in Delhi had to stop the local marketing of organic products as its efforts over two years to raise consumer awareness resulted in a limited sale of organic foods and insurmountable losses. Expensive conventional food items have been imported during the last two years and one can find products from Europe and the United States on the shelves of upmarket food stores. Organic marketers considered this as a positive push, as it would prepare the Indian customer for paying higher prices for quality goods. (The import duty for processed organic and conventional food-items is still 67 per cent).

During the last five years, an increasing number of articles, booklets etc. have been published, vividly describing the ill effects on health of pesticides and herbicides existent in food and the use of industrial dyes in food preparations etc. However, the relation between these ill effects and the purchase of organic food has remained obscure.

The relationship between organic agriculture and the environment is hardly perceived by the consumer. This is surprising as India has a strong tradition in healthy foods and ecologically sound farming. Purity, pollution and tending the earth as a living being have been the mainstay of Hindu philosophy. Much more positive reinforcement for the consumer to buy organic products is necessary before local marketing can actually take off. It is obvious that this needs heavy investment in promotional activities over a longer period.

(h) Price structure for organic products

(i) Price for the farmer

Often the prices expected by farmers are unrealistic. There have been many documented examples where a non-certified organic farmer wanted a price varying from 100-400 per cent more than comparable conventional products. A drop in the yields is often claimed as the reason for claiming a higher price. It is important to note that awareness-raising for farmers is of equal importance as it is for consumers. Self-claimed organic agricultural produce can only be sold in the local market. As an organic market is virtually non-existent, the only valid strategies are:

- To sell it to friends and the neighbourhood, who know and trust the farmer and are prepared to pay the retail price or some premium. In such direct

transactions, consumers as well as producers benefit. However, the scale of operation is limited

- To sell it in the local *Mandi* (wholesale market) at the normal conventional price. As organic products often are of higher quality, they usually fetch a higher price compared with conventional products.

As for certified organic products, the situation is quite different in the export market. If the farmer has paid the costs for certification and thus owns the certificate and exports directly, the premium is around 50 per cent. If he owns the certificate and sells it to an exporter, the premium is around 25-30 per cent. If he does not own the certificate, the premium is between 15 and 25 per cent.

(ii) Price for the consumer

In the local market, the maximum retail price is a maximum of 30 per cent above comparable conventional packed products. For fresh fruits and vegetables, the difference may be up to 100 per cent, depending on the product. For example, if conventional potatoes are priced in the shop at Rs. 7 per kg. (\$ 0.15), organic potatoes may fetch double that amount. A large part of the higher price difference is generated after the product has left the farm. The cost is increased by factors such as small-scale production, widely dispersed farms, separate packaging facilities and commissions of wholesalers and retailers.

If producers' associations can organize direct home delivery to consumers with a weekly box system of vegetables, it would benefit both the producers and consumers. This system wherein intermediaries are absent and food is distributed locally is successfully practised in Japan, Europe and the United States.

(i) *Limitations, challenges and recommendations*

(i) Limitations

- A stagnating local market
- Small volumes, limited and scattered product range, irregular supply line
- High prices for organic produce
- Limited number of processed products
- Lack of domestic and international market information on suppliers, prices and qualities
- Lack of consumer awareness
- Absence of Fair Trade Practices

- Insufficient storage and post-harvest facilities as well as adequate technical knowledge
- Lack of segregated cold storage facilities for perishable products
- Unreliable transportation systems
- High costs of certification, especially for small farmers
- Certification primarily based on documentation, while most small farmers are illiterate

(ii) Challenges

- To increase the number and variety of processed products
- To increase consumer awareness about the safe and environmentally friendly production of food
- To add organic information to the existing

Box 1. KeyStone Foundation in Tamil Nadu

KeyStone started working with the tribal peoples primarily engaged in wage labour on coffee estates. KeyStone developed the entire organic agriculture design system aimed at improving the food security, and nutrition of these peoples. They set up small nurseries of economically useful species and promoted traditional agriculture on tribal lands that had been lying fallow for the last 15-20 years. The programme activities were focused on soil conservation, food security, production of viable crops and maintenance of overall crop diversity.

A participatory approach, integrating traditional knowledge with modern scientific methods was exercised. The programme also integrated other natural resource systems of the area and attempted to understand the close link of the tribal peoples with their ecosystem. One thousand families, owning 1-2 acres per family, grew 16 crops for home consumption. Crops grown for the market included pepper, coffee, tea and beans on 500 acres of tribal land. The venture provided the people an opportunity to work on their own land. It has enhanced their income, as they receive a 10 per cent premium on their products and an assured market through KeyStone. Since the emphasis was on household food security (for at least 6-7 months), only the surplus was sold. When no work was required on the farm, income was supplemented by wage labour.

Organic practices have not entailed any particular change or increase in women's work

participation. Problems encountered are the mindset of farmers, initial lower returns, more work to make their own manure and pesticides, and getting organic seeds (coffee, beans). Rural areas can be important in producing large-scale organic manure and compost. Changes to organic agriculture will increase when farmers work on their own fields as opposed to working for large estates and earning wages. Organic agriculture is more successful where the farmer and his family benefit from increased food security and better nutrition. Promoting only organic cash crops would not be a successful strategy.

Box 2. The Indian Institute for Rural Development, Aurangabad, Maharashtra

The Indian Institute for Rural Development, a network of grass-roots women's organizations, promotes organic agriculture through awareness and community action programmes, training of farmers and networking. Its School of Organic Agriculture provides short-term courses to farmers and NGOs. Five thousand organic home gardens have been promoted with the help of women's groups to solve food and nutrition problems. In 72 villages, organic extension programmes are implemented by eco-volunteers; 450 farmers, with a farm size of 2.5 – 50 acres of dry land are covered, of which 350 are farms owned by women. This covers an area of 12,500 acres in which cereals, pulses, vegetables, oilseeds, cotton, sugar cane, small spices and horticultural crops are grown. Sixty per cent of the products are marketed at a price premium of 20-40 per cent. Farmers are helped to develop marketing by direct contact between producers and consumers. Moreover, fortnightly organic bazaars are organized in the neighbouring city of Aurangabad. Nothing is exported.

Organic agriculture may increase rural labour because of its labour intensive practices in farming and marketing. Women are already doing 70 per cent of the labour. In some cases (not specified), organic agriculture requires marginally more labour. But the decision-making capacity of women farmers increases significantly and leads to their empowerment. Further, organic agriculture improves income by multiple sources, such as livestock and herbs. Home gardens and income from the sale of products certainly improves household food security.

overseas reports on markets

- To develop the domestic market, as the exporting and shipping of food around the globe may have a limited life
- To make the farmers aware of the importance of certification, as it provides an organic guarantee to the consumers and helps in value addition
- To develop an organizational system (cooperative or NGOs) that can assist the farmers in internal control and necessary farm bookkeeping
- Adequate infrastructure for transport, storage, processing and market facilities

(iii) Recommendations

1. Opportunities for entrepreneurship development should be created through the Department of Cooperatives and the Khadi & Village Boards to take up the processing of organic products, close to the production areas.
2. A media campaign should be launched to educate consumers that by choosing organic agriculture products they are not only getting safe products but are contributing to environmental protection.
3. Private or public promoters willing to invest in or take up awareness campaigns should be sought.
4. The government should set up a number of organic farmers' field schools.
5. NGOs should be encouraged to organize internal control systems for small farmers' group certification.
6. Government storage facilities should not be used, as segregation is not guaranteed and warehouses are often sprayed with DDT. Organic farmers' groups need to invest in proper storage facilities.
7. In order to create a proper balance between export and local consumption, it is necessary to promote the domestic market and marketing alternatives, such as weekly farmer's markets, buyers-sellers meet, organic fairs, box delivery scheme of fresh fruits and vegetables.

4. Socio-economic potential for organic farming

(a) Review and synthesis of existing studies

During the last five years, scientists of agricultural universities have carried out a number of studies related to various aspects of organic and natural farming. However, most of them relate to only one aspect of farming, or only one specific crop

(ISNF/CCS, HAU 2001). In addition, there are studies related to bio-dynamic preparations (Biodynamic Association of India 2001).

The following studies on organic agriculture in relation to other farm management approaches, implemented by outside agencies, were reviewed and a synthesis prepared:

- “Ecological agriculture in South India: an agro-economic comparison and study of transition” by van der Werf and de Jager 1992, LEI-DLO/ETC-Foundation, The Netherlands
- “Farm system comparison: country case report”, June 1997 – May 1999 (AME)
- “Empowering farmers in decision-making: IPM process training in cotton” (AME, undated)

(i) Synthesis

- All studies worked with self-claimed, non-certified organic farmers
- The income and profitability of organic farms was equal or higher compared with conventional and traditional farms. This is confirmed in all three studies and is a surprising conclusion, given that most proponents of conventional farming use the argument of profitability against organic farms
- Labour use was equal (study 1) or lower (study 2) when compared with conventional and traditional farms. This is also surprising, as it is widely believed that organic farms require more labour. In developed countries mechanization is much higher than in developing countries such as India. The concept of higher labour input for organic farming is based on the Western scenario and may not be valid for countries like India
- High biodiversity on organic farms, including a higher share of livestock
- A lower dependency on external nutrients

(b) Linkages to value systems of producers and consumers

(i) Producers

The main value systems of producers are always described as profitability and risk limitations. In addition to this, health aspects often play a role. Commercial farmers often have their own plot of land, basically organic, on which they produce vegetables and staple food for their own family. Thus, there is a clear difference between “What is good for the market” and “What is good for us”. Another aspect, which is clearly increasing, especially in the Green Revolution areas such as Haryana and Punjab, is that

farmers are increasingly worried about the loss of soil fertility. In the tribal areas as well as the remote areas where subsistence farming is predominant, the cultural aspects play a major role. This includes farming according to the “calendar”, dominated by the planets and star constellations. Farmers all over the country celebrate festivals and rituals that signify the Hindu philosophy of human beings, plants and animals living in harmony with each other.

There are farmers’ groups who resist certification and expect that based on faith, their organic products should be accepted by consumers. These groups demonstrate nationalistic feelings and do not like the fact that quality control is exercised by external certification bodies.

(ii) Consumers

India has a long Ayurvedic tradition in health. Contrary to this, contamination in the present food is commonplace and is common knowledge. Despite this, the local marketing of organic products has not picked up. It is often argued that the Indian consumer is not willing to pay a premium on organic products. However, this is questionable. Consumers pay a much higher price for so-called “Desi” fresh products. These are local, non-high yielding varieties, produced in smaller quantities, such as potatoes, wheat, and vegetables.

(c) Comparative contribution of organic products to the farm household income

A major advantage of organic farming is the reduced cost of inputs and reduced borrowings from moneylenders. Moreover, as has been described earlier, organic farms provide the same or higher yields and higher income to the household than conventional farms. It should be noted, however, that the studies on this aspect did not take into consideration additional premiums obtained when the farm and products were duly certified for export. It can be concluded that for these farmers, additional farm household income is generated. As for small and marginal farmers, organic agriculture provides the possibility for a gradual increase in yields and therefore contributes directly to the farm household income (Deshpande 1996; Alraes 1996). Moreover, as organic farms have a larger biodiversity, this may be reflected in the health of the family.

(d) Success stories in income generation and employment

Unfortunately, there is no documentation available on success stories in income generation and employment. Therefore, we requested 11 organizations to share their experiences with us. We received two positive responses.

Box 1. KeyStone Foundation in Tamil Nadu

KeyStone started working with the tribal peoples primarily engaged in wage labour on coffee estates. KeyStone developed the entire organic agriculture design system aimed at improving the food security, and nutrition of these peoples. They set up small nurseries of economically useful species and promoted traditional agriculture on tribal lands that had been lying fallow for the last 15-20 years. The programme activities were focused on soil conservation, food security, production of viable crops and maintenance of overall crop diversity.

A participatory approach, integrating traditional knowledge with modern scientific methods was exercised. The programme also integrated other natural resource systems of the area and attempted to understand the close link of the tribal peoples with their ecosystem. One thousand families, owning 1-2 acres per family, grew 16 crops for home consumption. Crops grown for the market included pepper, coffee, tea and beans on 500 acres of tribal land. The venture provided the people an opportunity to work on their own land. It has enhanced their income, as they receive a 10 per cent premium on their products and an assured market through KeyStone. Since the emphasis was on household food security (for at least 67 months), only the surplus was sold. When no work was required on the farm, income was supplemented by wage labour.

Organic practices have not entailed any particular change or increase in women's work participation. Problems encountered are the mindset of farmers, initial lower returns, more work to make their own manure and pesticides, and getting organic seeds (coffee, beans). Rural areas can be important in producing large-scale organic manure and compost. Changes to organic agriculture will increase when farmers work on their own fields as opposed to working for large estates and earning wages. Organic agriculture is more successful where the farmer and his family benefit from increased food security and better nutrition. Promoting only organic cash crops would not be a successful strategy.

Box 2. The Indian Institute for Rural Development, Aurangabad, Maharashtra

The Indian Institute for Rural Development, a network of grass-roots women's organizations, promotes organic agriculture through awareness and community action programmes, training of farmers and networking. Its School of Organic Agriculture provides short-term courses to farmers and NGOs. Five thousand organic home gardens have been promoted with the help of women's groups to solve food and nutrition problems. In 72 villages, organic extension programmes are implemented by eco-volunteers; 450 farmers, with a farm size of 2.5 – 50 acres of dry land are covered, of which 350 are farms owned by women. This covers an area of 12,500 acres in which cereals, pulses, vegetables, oilseeds, cotton, sugar cane, small spices and horticultural crops are grown. Sixty per cent of the products are marketed at a price premium of 20-40 per cent. Farmers are helped to develop marketing by direct contact between producers and consumers. Moreover, fortnightly organic bazaars are organized in the neighbouring city of Aurangabad. Nothing is exported.

Organic agriculture may increase rural labour because of its labour intensive practices in farming and marketing. Women are already doing 70 per cent of the labour. In some cases (not specified), organic agriculture requires marginally more labour. But the decision-making capacity of women farmers increases significantly and leads to their empowerment. Further, organic agriculture improves income by multiple sources, such as livestock and herbs. Home gardens and income from the sale of products certainly improves household food security.

(e) Limitations, challenges and recommendations

(i) Limitations

- The number of studies in income generation, employment, yields, biodiversity and food security is extremely limited
- Because of the limited scope of these studies, the conclusions drawn cannot be generalized. Yet a situational analysis, of whatever type, helps as a rough indication to direct intervention strategies
- In the domestic market, producers often demand unrealistic prices, based on the assumption of direct producer-consumer marketing or export prices F.O.B. (free on board).
- Organic farming as such does not provide food security to small and marginal farmers if it aims at cash crops only and does not diversify the cropping system.

(ii) Challenges

- To increase the number and scope of studies on food security and income generation in organic agriculture
- To create farmers' awareness on realistic domestic prices
- To formulate a healthy mix of crops for own consumption and for the market

(iii) Recommendations

1. The possibilities of funding studies on food security and income generation in the main areas of organic production in India should be investigated, and suitable institutions/organizations with renowned experience to carry out these studies should be selected.
2. A monthly information bulletin should be created for organic farmers on the local prices of the most common food items. Funding may be for three years initially, after which this service would be paid for by subscriptions. The same bulletin could cover information about the preferable mix of crops for own consumption and for the market relating to specific agro-ecological zones and market demand.

5. Support services

(a) Training and extension

Currently, no government scheme exists for organic agricultural extension services in the country. However, India probably has the most well developed conventional agricultural extension service in the world. Organic agriculture needs to be linked up in one way or the other with the existing support services, as was done in Europe, where gradually agricultural universities opened a faculty for organic agriculture and organic agricultural extension workers were incorporated in the existing extension services. Agricultural training and extension is carried out by three major organizational streams: the extension service of the Ministry of Agriculture, the university-affiliated extension services of the Indian Council of Agricultural Research and training and extension services of a large number of rural-based NGOs.

(b) Quality control system

Confidence and trust are essential market sentiments to be established between alternative marketing/ trade operators and consumers. Credibility is particularly crucial when promoting additional values in a similar product category. How do labels guarantee the organic values claimed with their products? Claims are assessed against standards set by the government that are mandatory for export. Organic quality cannot be fully verified through product testing, for example, residue testing. It is not just the product, but also the farming or processing method that is certified. Certification of organic production includes three components:

- The producer, fields and facilities used in the production, including the producer's motivation, understanding of requirements and production units
- The production system (farming and processing methods) including precautionary measures taken to protect the integrity of the production system, for example, transparent documentation, audit trail, correct labelling
- The products themselves labelled with the mark of the certification programme or trade transaction certificate

Each organic farmer needs a strict internal quality control system before getting certified. Experience with not or not yet certified farmers shows that this crucial step is not always taken. Before farmers can be expected to comply with the national standards, they need to orient themselves to the standards and learn to maintain documentation. Certification is the next important step in the quality control system. So far, external certification bodies

have conducted inspection and certification on an annual basis. The costs for certification were relatively high. Now with the Indian regulation in place, the external certification bodies have to establish their country offices. Yet, the constraint of high certification cost is expected to continue. For small landholdings, the certification costs are too high unless they go for small grower group certification.

With the accreditation system in place, the government has the possibility to check the performance of certifiers. However, the Indian regulation is not independent. The Technical Barriers to Trade Agreement of the World Trade Organization obliges governments to reference an existing international standard. The Indian Regulation references IFOAM Basic Standards and Criteria for Accreditation. Yet, the export market requires country-to-country recognition or farmers have to depend on import permits from individual countries. The country-to-country recognition is not swift enough and cannot deal with the complexities of multi-ingredient products sourced from across the globe. Therefore, until the Indian Government obtains country recognition, farmers have to comply with the importing countries regulation and depend on import licences. Since international harmonization and equivalency in organic agriculture is not yet established, undoubtedly international marketing is made unnecessarily difficult:

- Government agencies lack information on market and regulatory requirements. They need capacity-building in standards setting, certification and accreditation
- Particularly the small grower groups require a high level of service and infrastructure support to organize quality control systems and third party certification
- Harmonization of standards and certification procedure with importing countries is necessary to reduce the need of certification and re-certification as products move from one country to another

While there are applicable product standards, sanitary and handling laws, there are no process or impact-related standards for agriculture/food products. Regarding product-related qualities, such as size, colour, shape, variety and consistency, there is no difference in marketing organic or conventional produce. To make a real market impact, organic produce must meet or exceed acceptable cosmetic standards, in other words, the appearance of organic produce must be at least close to, or as good as, conventional produce.

The organic process (production methods, inputs and additives used) and impact-related qualities (health, environment and social) are not easily visible.

The consumers are unfamiliar with the need to support these additional qualities (Wai 1999). Often farmers are unaware of the organic standards. They restrict quality control mechanisms to abstinence from chemical fertilizers and pesticides in crop production, while using chemically treated seeds, chemical treatment of produce in storage or selling in-conversion produce as organic produce in the domestic market. Genetic modified organisms are excluded from the standards of organic production. However, there is nothing stated in the Indian labelling regulation.

▪ Ministry of Commerce and Industries

The only known support service under the Ministry of Commerce and Industries is APEDA. Apart from launching the national programme for organic production, APEDA assists in the export of organic products. Moreover, it organized exhibitions at the annual organic Trade Fair Biofach in Nuremberg, Germany.

Recently, APEDA has distributed a questionnaire to collect information for formulating assistance schemes for organic farming (APEDA 2001). However, without the cooperation of the Ministry of Agriculture, the initiative will have little meaning as all aspects related to the production of organic produce, such as agriculture crops, organic seeds, horticulture, subsidies, bio-fertilizers etc., are dealt with by the Ministry of Agriculture. APEDA continues with the initiation of so-called “organic model farms” in various states to promote the concept of organic farming.

The Union Planning Commission, Pondicherry administration and UNDP have requested the M.S. Swaminathan Research Foundation to prepare “The Biovillage-Oriented Development Plan for the Union Territory of Pondicherry” to extend the concept of the biovillage programme to all 64 villages in the Union Territory of Pondicherry. The pro-poor, pro-nature and pro-women orientation of the programme addresses small and marginal farmers and the landless poor, aiming to raise them above the poverty line and afford them a better quality of life and living standards.

(c) *Costs of support systems*

The costs of the (conventional) agricultural support system, including extension, godowns, storage, marketing etc. were estimated for 1998 and 2000 at around 200,000 million rupees (US\$ 4,255 million) and constituted 12 per cent of actual expenditure (Ministry of Agriculture 2000).

The most important costs for organic agriculture are the costs for the consultants and the inspection and certification process. The costs for

external consultants and certifiers amount to US\$ 400-450 a day, with board and lodging at US\$ 75 and travel at US\$ 850. These costs should be related to the acreage under organic farming, as well as distributed over the number of other organic farms to be visited during the same trip. Assuming a 3-day visit plus travel, the costs will amount to 100,000 rupees a year. Assuming that between 250 and 500 rupees per acre could be economically feasible, a minimum of 200 acres has to be inspected. In most, if not all cases, this means group certification.

(d) Improvement of support services

In a personal interview, Mr. J. N. L. Srivastava, the Secretary, Ministry of Agriculture reported that the government would implement organic agriculture programmes from the tenth PLAN period. The programme will cover organic production, quality control mechanisms and research. However, the task force advising the government has yet to submit its report. For the Ministry of Agriculture it is basically their training and extension system that could be used, while the Indian Council of Agriculture Research's education, research and extension institutions could be geared towards organic agriculture.

The Ministry of Commerce and Industries has proved to be the main promoter of organic agriculture in India. Its main concern is exports, as organic products fetch a premium. APEDA provides financial assistance to the exporters under various schemes, such as export promotion and market development, infrastructure development, feasibility studies, surveys, consultancy and database up-gradation, packaging development, to promote quality and quality control. APEDA has moved beyond those conventional export promotion services with the introduction of organic model farms in tribal and north-eastern areas.

IFOAM has 37 member organizations in India. IFOAM networks these members with 700 members from 100 countries and links them with the organic movement worldwide. IFOAM provides its members with a platform for the exchange of knowledge and expertise through numerous international, continental and regional IFOAM conferences. The members receive information through publications such as the magazine *Ecology and Farming* and conference proceedings. IFOAM does have project funding available and this could be a potential basis for more Indian initiatives.

C. Conclusions and recommendations

1. *Synthesis of potential, limitations and challenges*

(a) *Potential of organic agriculture*

Organic agriculture in India has a large potential. This is due to a number of factors:

- India's large geographical and arable area, with a wide variety of agro-climatic zones
- Two thirds of the arable area is under rain-fed conditions. These areas, spread over India have not been touched by the Green Revolution techniques, as the expected yield is modest and it was not considered to be worth the investment
- Irrigation potential has reached a limit and hardly any further growth can be expected. All Green Revolution techniques are directed towards irrigated areas. The Green Revolution success stories relate to Haryana, Punjab and Western Uttar Pradesh. These are the areas where farmers increasingly experience difficulties. Owing to over-use of water and chemicals and under-use of organic matter, soils have become ill and yields can only be maintained with a heavy increase in inputs and increased costs of production
- India has a thousand-year old culture, in which the earth is referred to as mother, where "organic" techniques are provided to enhance the health of soils, plants, animals and human beings. Organic agriculture has the capacity to make use of this culture
- The demand from the global market can provide premium prices. As demand is growing rapidly and supply is still behind, India can profit from this situation

However, there are a number of limitations, leading to challenges, necessary to take up. These will be discussed in the following paragraphs.

(b) *Limitations for organic agriculture*

The most important limitations are:

- Lack of adequate information to farmers and consumers about the advantages of organic agriculture and products
- Lack of domestic and international market information on suppliers, prices and qualities
- Lack of training, organic farmers' field schools and the non-existence of an adequate extension system, except in those areas covered by NGOs

and private traders making use of contract farmers

- Lack of adequate storage facilities
- Lack of a guarantee system for the domestic market. The consumer wants to know whether the organic products to be bought are truly organic or not
- A stagnating local market, owing to a lack of consumer awareness, but also because a limited number of processed products are offered
- Lack of sufficient government support
- High costs of certification, especially for small farmers
- Lack of scientific and socio-economic data on organic agriculture

(c) Challenges for future developments

- To increase and enhance government policy initiatives and assistance, especially for and during the conversion process
- To create organic agricultural faculties at the most important agricultural universities
- To introduce organic extension services and training for farmers, such as organic farmers' field schools
- To build up adequate infrastructure for transport, storage, processing and market facilities
- To create a guarantee system for the domestic market
- To increase consumer awareness about the safe and environmentally friendly production of food
- To add organic information to the existing overseas reports on markets
- To spur production and supply of organic seeds, organic manure, organic bio-fertilizers and bio-pesticides
- To provide funds for proper scientific studies on income generation, household income and food security, yields and soil improvement from organic agriculture

2. Policy recommendations

(a) Recommendations on the national level

The Ministry of Agriculture should introduce favourable government policies and strategies for the promotion of organic agriculture. These should include:

- A programme of assistance to farmers who want to convert their lands to organic farming.
- An increase in investment and research in organic agriculture and a scale-up of projects that have already proven successful. There should be an emphasis on comparative research of the costs of production, productivity and other benefits accruing from organic farming as compared to conventional agriculture. To this end, the Indian Council of Agricultural Research could initiate organic faculties in key agricultural universities.
- A strengthening of links and cooperation between the government, the private sector and NGOs on the national level.
- Government assistance in microcredit and micro-enterprises to self-help groups of landless agricultural families, particularly women, for organic seed preparation, organic compost, bio-pesticides and bio-fertilizers (accessing usufruct rights of common property resources, such as waste land, exclusively for resource poor).
- Awareness campaigns on the benefits of organic agriculture products.
- Support structures should be introduced for small farmers' group certification.
- The establishment of a monthly information bulletin for organic farmers on local and international prices of the most common food items should be supported.
- There should be special emphasis placed on supporting the implementation of the IFOAM Accreditation system as a basis to enable reciprocity of guarantees, and to reduce overlapping certification work, bureaucracy and costs.

(b) Recommendations for regional cooperation activities

- To make relevant reports of the United Nations system available to government departments and major organizations in all Asian countries.
- To enhance regional information exchange on organic research.
- To liaise with and create awareness of existing best practices in Asia among governments in Europe, Japan and the United States.
- To update these studies at least once every two years.

D. References

- Agarwal, Anil et al, 1999. *State of India's Environment 5: The Citizens' Fifth Report*, part I and II, (New Delhi, Centre for Science and Environment).
- Alvares, Claude, 1996. *The Organic Farming Source Book*. (Goa, India, Other India Press).
- AME (undated), "Empowering farmers in decision-making: IPM process training in cotton" (Bangalore, India, AME).
- AME, 1999. "Farm system comparison; country case study report", draft, June 1997-May 1999.
- Agarwal, Anil, 1997, *Homicide by Pesticides*, (New Delhi, Centre for Science and Environment).
- APEDA, 2001. Questionnaire for collection of information for formulating assistance schemes for organic farming.
- APEDA, 2001. Proceedings of the National Awareness Programme on Organic Farming, Bhubaneswar, India.
- APEDA, 2001. "The export market for organic products from India" internal note, APEDA, New Delhi.
- Bhati, J. B. and D.V. Singh, 1987. "Women's contribution to agricultural economy in hill regions of north-west India", *Economic and Political Weekly*, 22(17).
- Biodynamic Association of India, 2001. Proceedings of the Second International Conference on Biodynamic Agriculture, Bangalore, Bangalore, India.
- Brandon, Carter and Homman, Kirsten, 1995. *The Cost of Inaction: Valuing the Economy-Wide Cost of Environmental Degradation in India*, Asia Environment division, World Bank.
- Centre for Science and Environment, 1993. *Green Farming: A directory of individuals and organizations, involved in sustainable agriculture in India*, New Delhi.
- Deshpande, Mohan Shankar, 1996. *Rishi-Krishi*, Shri Samartha Farm Sanshodhan Kendra, Khede-Ajra, Kolhapur, India (only available in Marathi language).
- Down to Earth, 2001. *Organic Food: Untapped Potential*, (New Delhi, Centre for Science and Environment).
- Dudani, A.T. 1999. *Alternatives to Pesticides in Tropical Countries* (New Delhi, Vigyan Prasar).
- Government of India, Ministry of Commerce and Industry, 2000. *National Programme for Organic Production*, containing the standards for organic products, New Delhi.
- Government of India, 2001. *National Programme for Organic Production: Accreditation Regulations* (New Delhi).
- Government of India, 2001. *National Programme for Organic Production: Procedures for Accreditation* (New Delhi).
- Government of India, 2001. *National Programme for Organic Production: Accreditation Criteria for Inspection & Certification Agencies* (New Delhi).
- Government of India, 2001. *National Programme for Organic Production: Formats and Application Forms* (New Delhi).
- Government of India, 2001. Public Notice No. 19 (RE-2001)1997-2002, Ministry of Commerce and Industry, Department of Commerce, New Delhi.
- Haverkort and Hiemstra, 1999. *Food for Thought: Ancient Visions and New Experiments of Rural People*. (Bangalore, India, Books for Change).
- Howard, Sir Albert, 1940. *An Agricultural Testament*, (Goa, India, republished by The Other India Press).
- ILEIA/ETC-India, 1994. *ILEIA/LEISA Network in India: A Register of Indian Organizations Involved in Low-external-input and Sustainable Agriculture*, (New Delhi).

- Indian Council of Agricultural Research (ICAR), 1997. *Handbook of Agriculture*, (New Delhi).
- ISNF/CCS, HAU, 2001. Abstracts: International Conference on Nature Farming and Ecological Balance, Hisar, India.
- Kansara, N.M. 1995. *Agriculture and animal husbandry in the Vedas* New Delhi.
- Mahale, Prabha and Sorée, Hay 1999. “Ancient visions and new experiments of rural people”, In *Food for Thought* (Bangalore, India Books for Change).
- Ministry of Agriculture, 2000. *National Agriculture Policy*, Department of Agriculture and Cooperation, New Delhi.
- Ministry of Agriculture, 2000. *Agricultural Statistics at a Glance*, New Delhi.
- Pereira, Winin, 1993. *Tending the Earth* (Bombay, India, Earthcare Books).
- Pereira, Winin and Jeremy Seabrook, 1990. *Asking the Earth*, (Goa, India, OIP).
- Raj, Maithreyi Krishna, 1988. “Women and Development: The Indian Experience”, Women’s University monographs on sociology.
- Randhawa, M.S. 1986. *A History of Agriculture in India 1980-1986*, vol. I –IV, Indian Council of Agricultural Research , New Delhi.
- Sen, Gita, 1985. “Interregional aspects of the incidence of women agricultural labourers, employment and earnings” Devaki Jain and Nirmala Banerjee, ed. *Tyranny of the Household* (New Delhi, Vikas).
- Shiva, Vandana, 1991. *Most Farmers in India are Women*, Rome, Food and Agriculture Organization of the United Nations).
- Tata Services, 2001. *Statistical Outline of India 2000-2001*, (Mumbai, India).
- van der Werf, E. and A. de Jager, 1992. “Ecological agriculture in South India: an agro-economic comparison and study of transition”, LEI/DLO & ETC-Foundation, the Netherlands.
- Wai, Ong Kung 1999. “Alternative trade/marketing in agriculture: from farm to table”, a training module.
- WTO/UNCTAD International Trade Centre (ITC), 1999. *Organic Food and Beverages* (Geneva, Switzerland).
- Yardi & Sorée (India) Pvt. Ltd, 1997. “Organic producers survey”. internal document, Gurgaon, India.

E. Abbreviations

AME	Agriculture, Man and Ecology
APEDA	Export development agency of the Ministry of Commerce and Industries
ARISE	Agricultural Renewal in India for a Sustainable Environment Network
EU	European Union
FAO	Food and Agricultural Organization of the United Nations
F.O.B.	free on board
GDP	gross domestic product
GE	genetically engineered
GM	genetically modified
IFOAM	International Federation of Organic Agriculture Movements
IMO	Institut für Market Ökologie
UNDP	United Nations Development Programme
WHO	World Health Organization